INDUSTRY COMMISSION

Industry assistance data for SALTER

by

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GLOSSARY

Ad valorem tariffs are taxes levied as a percentage of the value of imported goods.

Border protection covers those instruments that directly affect a country's exports and imports.

Consumer subsidies are transfers to consumers by the government for which it receives no goods or services in return.

Consumer subsidy equivalents estimate the value of transfers from government to consumers of a given commodity.

Deficiency payments are payments to producers by the government to make up the difference between target prices and market prices.

Direct payments are cash payments made to producers such as deficiency payments.

Diversion payments are payments to producers by the government for limiting production.

Domestic assistance directly affects the domestic production and consumption of a commodity.

Domestic price controls occur when the government sets the producer price and/or the consumer price.

Domestic subsidies are payments to individuals or businesses by the government for which it receives no goods or services in return.

Economic rent earned by a factor of production is the total amount by which payments to the factor exceed the minimum amount necessary to keep it in its present employment.

Effective rate of protection measures the net assistance afforded by border protection to activities producing tradeable goods.

Effective rate of assistance measures the net assistance afforded by border protection and domestic assistance to activities producing tradeable goods.

Indirect payments are non-cash transfers to producers that reduce the cost of production, such as marketing and fuel subsidies.

Industry assistance is any instrument that affects a country's imports, exports, production or consumption of a commodity. Industry assistance provides a

complete picture of the pattern of distortions industries face as a result of government intervention.

Industry protection is any instrument that affects a country's imports or exports. Industry protection is synonymous with border protection.

Market price support refers to any instrument of industry assistance that forces the producer price above the world price. Examples include tariffs and domestic price controls. Market price support is synonymous with producer price support.

Multifibre arrangement (MFA) is an agreement that limits the growth of textile and clothing exports by major exporters to major importing regions.

Nominal rates of assistance measure the gross assistance afforded by border protection and domestic assistance to activities producing tradeable goods.

Nominal rates of protection measure the gross assistance afforded by border protection to activities producing tradeable goods.

Non-price policies are any government interventions that do not directly affect prices. Examples include income transfers and subsidised inputs.

Non-tariff barriers (NTBs) are any barriers to trade that are not tariffs, for example, import quotas. NTBs do not include production subsidies and consumer subsidies.

Power of the tax is one plus the rate of tax.

Price policies are government interventions that directly affect prices. Some examples include tariffs, domestic price controls and export taxes.

Producer levy is a form of production subsidy.

Producer price supports set the producer price above the world price. They have the same distortionary effects as a tariff. This form of assistance is commonly used to increase agricultural production.

Producer subsidy equivalents estimate the value of transfers from government to producers of a given commodity.

Production subsidies are transfers to producers by the government for which the government receives no goods or services in return.

Simulations are experiments to show the effects of a given set of policy changes introduced into the model.

Specific taxes are levied as a fixed charge for each physical unit of a good.

Tariffs are taxes levied on imports. There are two types of tariffs - specific and *ad valorem tariffs*. Specific tariffs are taxes levied per physical unit of an imported good. Ad valorem tariffs are percentage rate taxes levied on the value of imported goods.

User subsidies are payments made to all purchasers of commodities by the government for which it receives no goods or services in return. User subsidies include subsidies on the use of intermediate inputs by industries, subsidies on commodities consumed by the government, subsidies on industry investment and private consumption.

Variable levy is a tariff equal to the difference between the world price and a determined fixed target price. The levy therefore varies as the world price varies.

Voluntary Export Restraint (VER) is action undertaken by the government of an exporting country to restrict exports of a particular good to a particular country

1   INTRODUCTION

Governments around the world adopt policies to assist domestic industries. *Industry assistance*[1] introduces distortions that affect production, consumption and trade of commodities.

The SALTER model, a general equilibrium model of world trade, is used to analyse the effects of trade liberalisation. It uses a database that is a picture of the world economy. The SALTER database contains the information needed to capture distortions created by the patterns of assistance used in the world.

This paper shows how industry assistance is estimated and included in the SALTER database. Chapter 2 uses partial equilibrium analysis to outline the various types of industry assistance used to support industries. Chapter 3 explains how industry assistance included in the SALTER model is estimated. Chapters 4 and 5 include the data sources used and the results obtained. Chapter 6 outlines the procedures used to incorporate assistance estimates into the SALTER database.

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[1] Definitions of the words in italics are included in the glossary.

2   CONCEPTS OF INDUSTRY ASSISTANCE

In the SALTER model regions are linked by trade. An important determinant of world trade flows is the distortions caused by industry assistance. Estimates of *border protection* and *domestic assistance* instruments are included in the SALTER database to reflect the effects of government intervention. Border protection instruments directly affect the flow of imports and exports. The three main types of border protection are *tariffs and non-tariff barriers* on competing imports, and *export subsidies*. Domestic assistance directly affects the domestic production or consumption of a product. The main types of domestic assistance are *production subsidies* and *consumer or user subsidies*.

Some types of assistance affect prices directly while others do not. Therefore assistance is divided into price and *non-price policies*. *Price policies* involve government assistance to producers and consumers through policies that distort market prices. Some examples include *domestic price controls*, tariffs, non-tariff barriers, export subsidies and *consumer subsidies*. *Non-price policies* assist producers and consumers without directly influencing the price. Some examples include income support for producers, input assistance, marketing assistance and infrastructure support.

This section uses a partial equilibrium framework to describe the various forms of assistance included in the SALTER database. A partial equilibrium framework is a useful tool as it concentrates on a single market; all prices other than the price of the good concerned are assumed to be fixed. With this framework it is easy to see the direct distortionary effects of restrictive trade policies.

The partial equilibrium framework in which assistance is often analysed and quantified assumes goods produced in different countries are perfect substitutes. One problem with this assumption is that it rules out cross-hauling, or two-way trade in the same commodity, a phenomenon found in the real world and allowed for in the SALTER model's theoretical structure via the Armington assumption. The approach taken here is to use the perfect substitutes partial equilibrium framework to quantify the extent of current interventions for incorporation in the initial SALTER database, but to recognise that at least some interventions on trade in one direction would need to be supported by interventions on trade in the other direction to be tenable.

A graphical analysis of trade linkages

Partial equilibrium analysis provides a simple framework to illustrate how regions are linked by trade. Consider the simple one commodity, two country trade model shown in Figure 1.

Assume that country A is a low cost producer and country B is a high cost producer. Domestic demand in country A and country B is represented by demand curves D_a and D_b, respectively, while supply curves S_a and S_b represent corresponding marginal cost curves. In autarky country A would sell output of a single commodity domestically at price P_a. For prices above P_a, production exceeds consumption. Excess supply can be sold on the world market and forms the excess supply function ES shown. The excess supply function shows the levels of output producers are willing to sell abroad at various prices. Country B, on the other hand, is a high cost producer. In autarky country B would sell output domestically at price P_b. For prices below P_b consumers in country B demand more than domestic producers produce. ED represents excess demand by country B. The excess demand function shows the levels of output consumers are willing to buy from abroad at various prices.

When trade occurs between country A and country B, equilibrium occurs where excess demand equals excess supply at price P_w. At P_w country A exports Q_{2A}-Q_{1A}, equal to the volume traded on world markets Q^*, and country B imports Q_{2B}-Q_{1B}.

Figure 1: **Two country, one commodity model of international trade**

| Country A (exporter) | World Market | Country B (importer) |
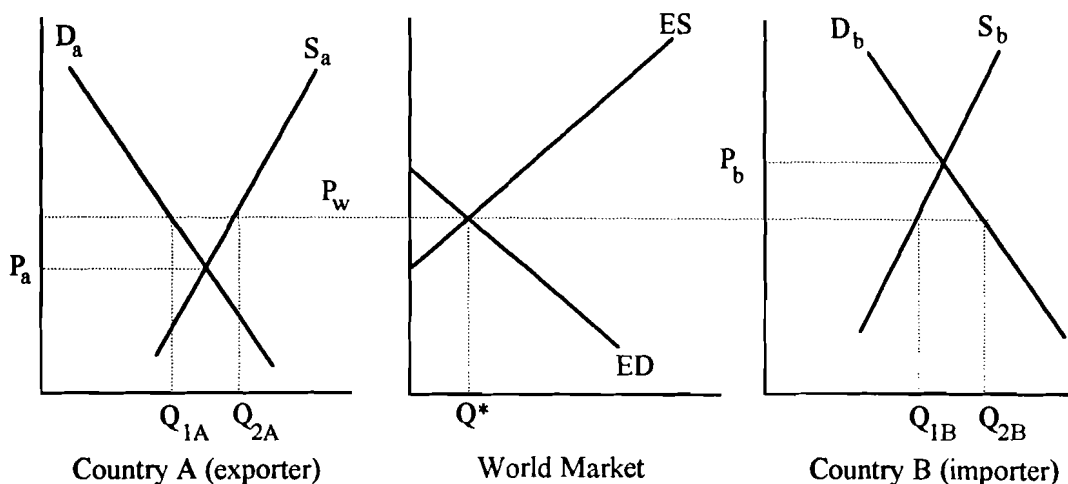
Types of industry assistance

Tariffs

A tariff is a tax levied on imports. Types of tariffs include *specific tariffs* and *ad valorem tariffs*. Ad valorem tariffs are taxes levied as a percentage of the value of the imported goods. Specific tariffs are taxes levied as a fixed charge for each physical unit of the imported good.

The effects of imposing a tariff in the importing country are shown in Figure 2. When country B (importer) imposes a tariff equal to $P_b'P_w'$, the excess demand curve shifts downward by the amount of the tariff to ED'. The world price and hence the price in the exporting country falls from P_w to P_w'. As a result, consumption increases and production decreases in the exporting country. The tariff raises the price in country B to P_b', leading to a reduction in consumption and an increase in domestic production. The volume of trade falls from Q^* to Q^{**} as country A exports less and country B imports less.

Figure 2: Imposing a tariff

| Country A (exporter) | World Market | Country B (importer) |
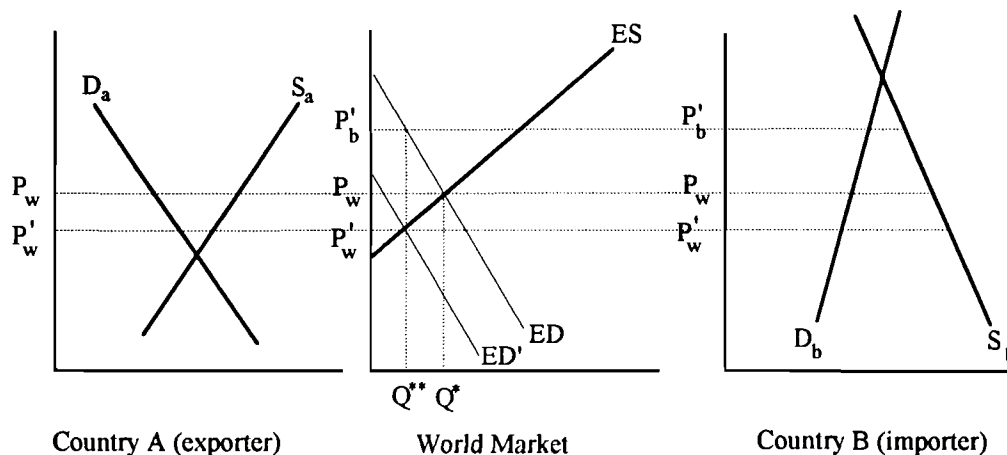
Non-tariff barriers

Non-tariff barriers (NTBs) include any barriers to imports that are not tariffs. In general, NTBs lack transparency, ie their effects are difficult to evaluate even when detected. They can be discriminatory. This means that NTBs can target particular exporters, usually the most competitive, for special treatment. Box 1 gives examples of NTBs and their definitions.

Box 1: **Types of non-tariff barrier**

Type	*Definition*
Import quota	Quantitative restrictions on imports.
Voluntary Export Restraints (VER)	Action undertaken by the government of an exporting country to restrict exports of a particular good to a particular country.
Government procurement regulations	Preference by a government for its own country's products over imports.
Exchange controls	Rationing of foreign exchange which usually involves some form of import licensing and therefore has similar effects to a quota.
Domestic content requirement	Requirement that goods sold on the domestic market have a certain fraction of domestic value added.
Customs valuation procedures	Various valuation procedures applied to imports which slow the flow of imports into a country.
Technical barriers	Certain standards and methods of certification applied to imports that slow the flow of imports into a country.

Source: Adapted from Deardorff and Stern (1984)

Comparing actual imports resulting from the imposition of a NTB with potential imports determines whether the NTB is binding or not. If the actual imports are less than potential imports then the NTB is binding, that is the NTB reduces the volume of imports and has an effect on domestic prices.

It is difficult to obtain data on actual and potential imports so an alternative way of determining if a NTB is binding is by comparing the domestic price and world price. If the domestic price is above the world price the NTB is binding. However, if the domestic price is less than or equal to the world price the NTB is not binding.

NTBs have distortionary effects similar to tariffs but their distribution effects may differ.

The effects of the importing country (country B) imposing an import quota are shown in Figure 3. When country B (importer) restricts imports to Q^{**} a new excess demand curve ED' results. The world price in the presence of the import quota falls from P_w to P_w'. The reduction in the world price leads to an increase in domestic consumption and a reduction in production in the exporting country (country A). However, because imports are restricted the price now faced by country B increases to P_b'. As country A exports less and country B imports less the volume of trade is reduced.

Figure 3: Imposing an import quota

Country A (exporter)   World Market   Country B (importer)
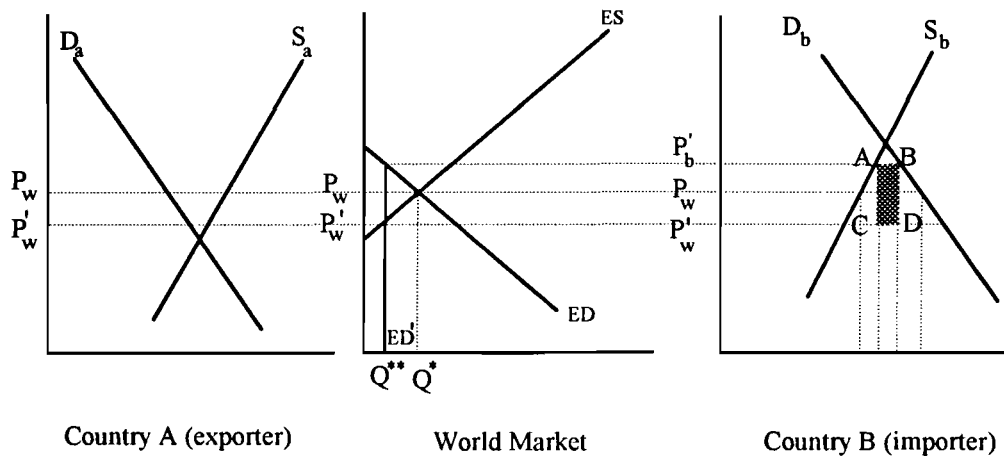
In Figure 3, area ABCD is the quota rent resulting from the difference between the new world price P_w' and the price P_b' that country B pays for imports when an import quota is imposed. Quota rent generally accrues either to importers or the government of the importing country. The distribution effects of an import quota differ from a tariff when the importers receive the quota rent. The government may capture the quota rent by charging a licence fee equal to the quota rent. In this case the distribution effects are the same as those under a tariff.

Voluntary Export Restraints

A *Voluntary Export Restraint* (VER) is an action undertaken by the government of an exporting country to restrict exports of a particular good to a particular country. At the request of the importer a VER may be imposed and agreed to by the exporter to stop other trade barriers being introduced.

VERs and import quotas are similar. An import quota generally requires that licences are issued in the importing country to restrict imports. The VER may also require issuing licences. However, VERs would differ because licenses would be issued by the exporting country to restrict exports. The distribution effects of VERs also differ because when an import quota is imposed the quota rent generally accrues to the importing country while under a VER the quota rent is generally retained by the exporting country.

The effects of imposing a VER by the country A (exporting country) are shown in Figure 4. When country A (exporter) restricts exports to Q** a new excess supply curve ES' results. The world price in the presence of the VER increases to P_w'. With country A exporting less, the supply of output on country A's domestic market increases, reducing the domestic price to P_a'. In addition, while

country A exporters receive a higher price for exports P_w', they may be asked to pay a licence fee to their government equivalent to a tax of P_w'-P_a'.

Area ABCD is the quota rent resulting from the difference between the world price P_w' and the domestic price P_a' in country A when a VER is imposed. The quota rent is received either by the exporters or by the government in the exporting country.

Figure 4: **Voluntary export restraint**

| Country A (exporter) | World Market | Country B (importer) |
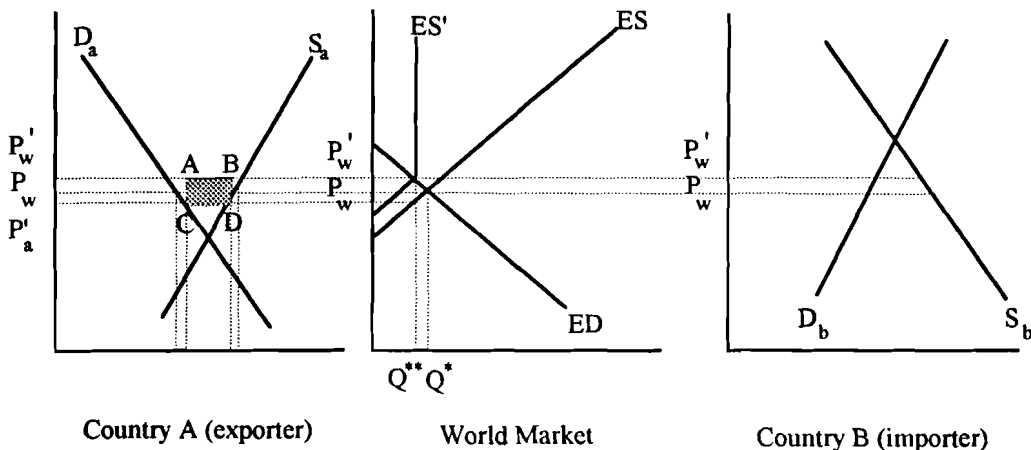
One example of a VER is that imposed on the volume of Japanese automobile exports to various markets including the United States. This involves bilateral agreements where Japan voluntarily restricts automobile exports to these markets.

The *Multifibre Arrangement (MFA)* is another form of VER. The MFA is an agreement that places restrictions on the growth of textile and clothing exports by major exporters to major importing regions. The MFA limits the bilateral trade between individual importing and exporting regions (Whalley 1992). The MFA operates through a system of quotas where major exporters are allocated a licence that determines the growth in the volume of textiles and clothing that they can export. MFA includes flexible provisions for quota use. This means the United States, for example, could apply different export quotas from those specified under the MFA.

As of 1987 nine importing countries and thirty-three exporting countries participated in the MFA. The main importers are Austria, Canada, EC, Finland, Norway, Sweden and United States. The main exporting countries are Indonesia, Malaysia, Philippines, Singapore, Thailand, Korea, Hong Kong, Taiwan and China. Australia, New Zealand and Japan do not participate in the MFA. However, these countries apply their own duties and import quotas to imports of clothing and textiles.

The MFA is intended to provide temporary protection for producers in industrial countries to give them time to adjust to the foreign competition mainly from developing countries, while giving exporters access to industrial country markets. Exporting countries consider this preferable to having their exports subject to more restrictive controls.

Export subsidies

Export subsidies are transfers by government to producers who sell goods abroad. These subsidies may be allocated to producers for two reasons:

- to expand existing exports; or

- to export surplus production resulting from an importing country imposing an extremely high *producer price support*.

Box 2 lists various types of direct and indirect export enhancing measures.

The effects of using export subsidies to expand existing exports are shown in Figure 5. When country A (exporter) introduces a subsidy on exports equal to $P_w'P_a'$, the excess supply curve shifts downward by the amount of the export subsidy to ES', increasing output on the world market to Q^{**}. As a result the world price falls to P_w', increasing imports by country B, while the domestic price in country A increases due to the contraction in sales to the domestic market. The price to domestic producers and consumers will only be sustained at P_a', however, if there are no reverse trade flows arising from arbitragers buying goods in country B at price P_w' and reselling in country A at price P_a'. Alternatively the higher domestic price in country A may be sustained by some preexisting distortion such as a *market price support* or because the goods produced in country A and country B are imperfect substitutes.

Figure 5: The export subsidy used to expand existing exports

Country A (exporter)   World Market   Country B (importer)
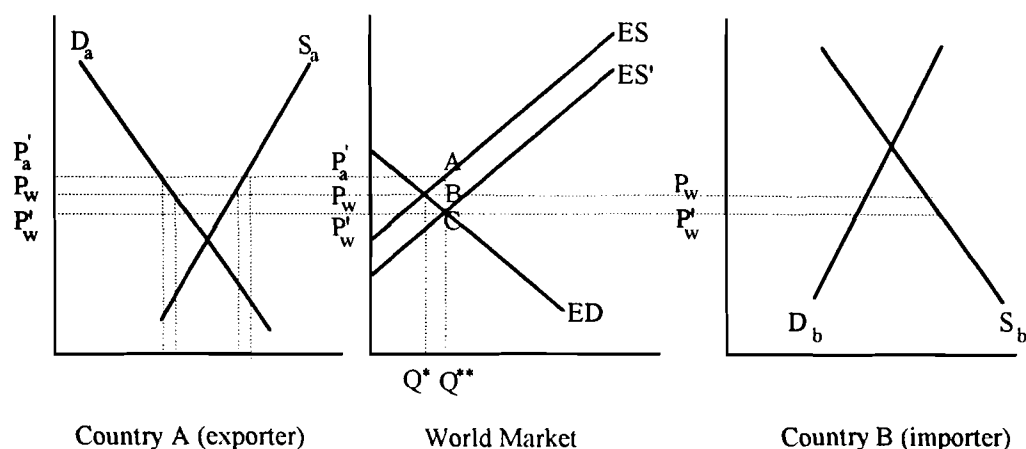
Box 2: Types of export enhancement measures

Type of measure	*Example*
Direct subsidies (Export grants)	The European Community and the United States give large export subsidies under agricultural assistance schemes.
Finance assistance (export credit and credit insurance guarantees)	France offers exporters a wide range of services. It is the most active provider of subsided export credit. It provides insurance and guarantees for over 20 per cent of its exports.
Tax incentives (tax holidays, favourable depreciation provision, tax concessions)	Malaysia provides tax breaks based on export performance.
Export processing zones (EPZs) (Special manufacturing areas in which industries receive special incentives such as tax incentives and duty exemptions)	Indonesia's Batam Island, near Singapore, has an EPZ aimed at attracting manufacturing investment to a relatively low-cost location.
Marketing assistance (marketing support, information services, product exhibition support)	The Hong Kong Trade Development Council provides marketing services to local businesses and maintains a network of international offices and agencies.
Trade-related investment measures (export requirements and investment incentives)	An industry development agreement for customer premises telecommunications equipment restricts access to Australia's telecommunications network to firms that achieve certain levels of exports, local content and research and development (R&D).
Indirect assistance (R&D assistance and subsidised infrastructure)	Korean R&D is stimulated by a range of tax incentives and a $US2 billion program to develop 919 high-technology items now imported from Japan. High quality infrastructure developments in 70 Taiwanese industrial parks and EPZs have permitted development of manufacturing industries. Hsinchu Science Park has extended this concept to reversing a brain drain to California's Silicon Valley.

[a] As the definition of measures are arbitrary there is some overlap
Source: IC (1992).

In the absence of arbitrage or with preexisting distortions, the government of country A only needs to subsidise the units sold on the world market. Therefore, the area P_a'ACP$_w$' is the subsidy expenditure required by the government of country A to expand exports to Q**.

The effects of an importing country imposing an export subsidy are shown in Figure 6. When country B (importer) imposes an export subsidy equal to P_b'P$_w$', the excess demand curve shifts downwards by the amount of the subsidy to ED'. The world price falls to P_w' leading country A, originally the exporter, to export a negative quantity or in other words to import the amount Q**. In country B, the domestic price rises to P_b' because of the contraction in the quantity sold on the domestic market. Once again the higher domestic price will only be supported in the absence of arbitrage or by some preexisting distortion. At P_b' country B exports Q**.

Figure 6: **The export subsidy imposed by an importing country**

Country A (exporter)   World Market   Country B (importer)
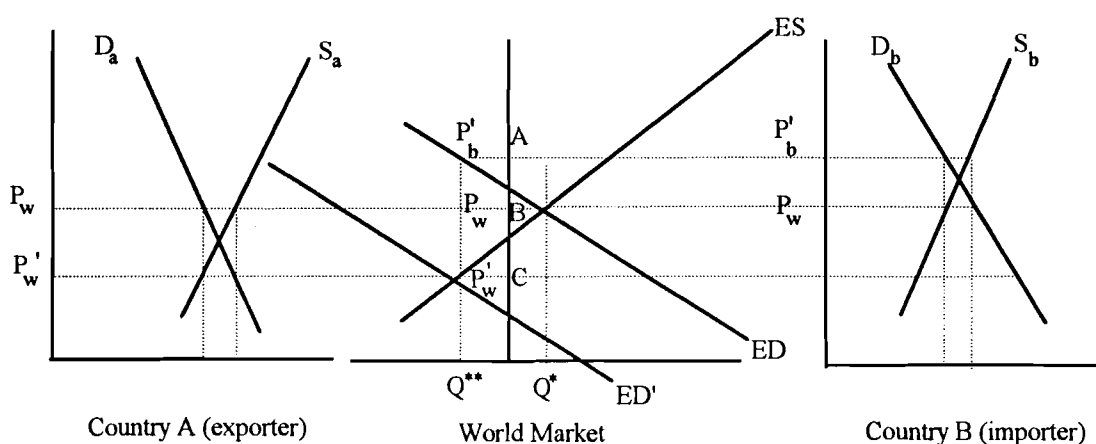
In the absence of arbitrage or with preexisting distortions, the government of country B only needs to subsidise the units sold on the world market. Thus the area P_b'ACP$_w$' is the subsidy expenditure required by the government of country B to generate exports equal to Q**.

Production subsidies

Production subsidies are transfers by the government to producers for which the government receives no goods or services in return. Production subsidies are classified as non-market price policies. The two main types of production subsidies include income transfers and subsidies on inputs. Income transfers are financial outlays or cash transfers made by the government to producers for the

purpose of maintaining income. Examples include *deficiency payments, disaster relief payments* and *diversion payments*. Subsidies on inputs include programs that reduce the cost of purchased inputs. Examples include feed subsidies, agricultural credit subsidies and irrigation water subsidies.

Figure 7 illustrates the effects of a production subsidy in the domestic market of a small importing country. A small country is one too small for its actions to affect the world price. In absence of a producer subsidy, the price received by the producer is PP_1 which is equal to the world price. Domestic production at this price is Q_1. A production subsidy lowers the unit cost of production and shifts the domestic supply curve downwards to S_d'. At the given world price production expands from Q_1 to Q_1'. At this point, PP_0 is a hypothetical price that would prevail in the absence of non-price support and expenditure on the production subsidy is given by PP_0ABPP_1.

Figure 7: **The effect of a production subsidy in the domestic market**
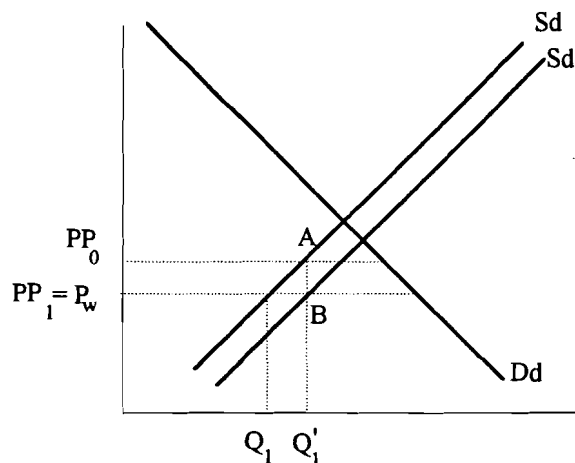
Consumer subsidies

Consumer subsidies are transfers by the government to consumers or users that reduce the cost of commodities and for which the government receives no goods or services in return. Examples include the school lunch scheme in Japan where rice is sold to schools at below cost.

Figure 8 illustrates the effects of a consumer subsidy in a small importing country when a market price support already exists. In absence of any market price support consumers would pay the world price PW and consume Q_0. When a market price support is given to domestic producers the price paid by consumers increases and the quantity consumed fall. Suppose PP-PW is the implicit tax on consumers resulting from producer price support. When a

consumer subsidy is granted the price paid by consumers is reduced from PP to PC while the quantity consumed increases from Q_1 to Q_2. As shown in Figure 8 the net effect of the consumer subsidy and the producer price support is a consumption tax on the consumer equivalent to PC-PW. It is also possible for a consumer subsidy to fully offset the producer price support or to result in a net consumer subsidy. Finally, a consumer subsidy may be applied for reasons other than to offset a market price support.

Figure 8: **The implicit tax from producer market price support and the allocation of a consumer subsidy**
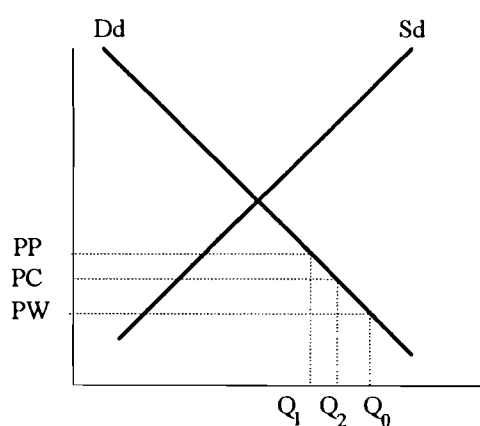
3 ESTIMATING INDUSTRY ASSISTANCE

SALTER commodities and industries can be divided into five types, namely agriculture, resources, food, non-food manufacturing and services. Box 3 lists the commodities included in each sector.

Box 3: Industry and commodity groupings

Agriculture
1 Paddy Rice
2 Wheat
3 Other grains
4 Non-grain crops
5 Wool
6 Other livestock products

Resources
7 Forestry
8 Fishing
9 Coal
10 Oil
11 Gas
12 Other minerals

Food
13 Processed rice
14 Meat products
15 Milk products
16 Other food products

Non-food manufacturing
17 Beverages and tobacco
18 Textiles
19 Wearing apparel
20 Leather products
21 Lumber products
22 Pulp, paper and printing
23 Petroleum and coal products
24 Chemical, rubber and plastic products
25 Non-metallic minerals
26 Primary iron and steel
27 Non-ferrous metal products
28 Fabricated metal products
29 Transport equipment
30 Other machinery and equipment
31 Other manufacturing

Services
32 Electricity, gas and water
33 Construction
34 Trade and transport
35 Other services (private)
36 Other services (government)
37 Other services (ownership of dwellings)

Four main approaches are used to produce assistance estimates for the SALTER database. In the agriculture and food sectors, assistance is estimated from *producer and consumer subsidy equivalents* and price comparisons. In the non-food manufacturing sector protection is based on tariff schedules and estimates of the ad valorem equivalents of NTBs. For all resource industries except coal in the EC and Japan, protection is also based on tariff schedules. Producer subsidy equivalents are used to estimate assistance to coal.

The SALTER policy instruments used to capture the assistance arrangements in each sector are:

- ad valorem duties on imports ;

- ad valorem export taxes on exports;

- ad valorem production taxes on production; and

- ad valorem taxes on domestic usage, differentiated by end user.

Duties are used to model a variety of barriers to imports including producer price supports. Export taxes are used to model VERs. They are also used to model export subsidies or, in the case of agriculture and food, the subsidies needed to dispose of surpluses generated by price support policies. Negative user taxes are used to model subsidies for the purchase of domestic and imported goods for various domestic end uses, namely, for household or government consumption, investment or intermediate usage. All taxes and subsidies are expressed as ad valorem equivalents in the SALTER framework. Subsidies are modelled as negative taxes.

Thus assistance arrangements are reflected in the SALTER database by ensuring that the database meets certain target tax rates for some or all of the tax instruments in each sector. The choice of tax instruments varies according to the type of assistance being modelled.

However, the final SALTER database also contains tax rates that are generally non-zero for those tax instruments and sectors that have not been explicitly targeted to reflect known assistance arrangements. These remaining taxes come from existing input-output information (Hambley forthcoming). In some cases these 'non-protective' taxes may represent assistance arrangements for which no reliable external information has been found. In other cases the taxes may reflect those imposed for revenue-raising rather than for protective reasons. It is left to the model user to decide how to treat these non-targeted tax rates in any trade policy simulation. The remainder of this document focuses only on those tax rates in those sectors that are explicitly targeted to reflect protection. Information on the 'non-protective' taxes can be found in Watts (forthcoming).

Agriculture and food

Producer subsidy equivalent (PSE) and consumer subsidy equivalent (CSE) data are used to create a set of taxes and subsidies for agricultural and food commodities (see OECD 1990, USDA 1988) for all SALTER regions except the Philippines and China. The method used broadly follows Lienert (1989). Where PSE and CSE data are not available price comparisons are used (Saxon,

Anderson and Tyers 1986). This source provides all the estimates for the Philippines and some of the estimates for Indonesia and Thailand. Assistance to agriculture and food in China is estimated separately (see Appendix A).

PSEs and CSEs estimate the value of transfers from the government to producers and consumers of a given commodity. These transfers create a wedge between the price paid by the consumer and the price received by the producer. PSEs and CSEs comprise two elements — the price support element and non-price support element.

The price support element of a PSE reflects price intervention by government. Price intervention creates a wedge between the domestic producer price and the world price of a commodity. The price support element measures the net effect of all price intervention policies because it is difficult to separate the effect of one policy from the others. Types of price intervention included in the PSE estimates are tariffs, NTBs and producer price supports. It is evident from the data sources that in the agriculture and food sectors producer price supports are the predominant form of price intervention (see Appendix B). Not only do these measures protect domestic producers from import competition, they have frequently been used to encourage production to the point where export subsidies are required to dispose of surpluses on world markets. In the agriculture and food sectors the price support element of a PSE is therefore used to calculate duties and corresponding export subsidies for the agriculture and food sectors in the SALTER model.

The non-price element of PSEs includes *direct payments* such as deficiency payments and *indirect payments*, for example, input subsidies. The non-price support element is used to calculate production subsidies for the agriculture and food sectors in the SALTER model.

For CSEs the price support element includes the implicit tax consumers pay as a result of market price support benefiting producers. The non-price support element of the CSE includes direct payments such as discounted rice and indirect payments such as income support. The CSEs are calculated as a composite of price and non-price support elements. The CSE is used to calculate user subsidies for the agriculture and food sectors in the SALTER model.

The methods used to estimate taxes and subsidies for agriculture and food in the SALTER framework are described next. The data sources used for agriculture and food are listed in a separate section.

Import duties

To measure the transfers to producers arising from price support policies, the price support element of the PSE is used. The price support is defined as the difference between the domestic producer price (PP) and the world price (PW) of a commodity multiplied by the quantity produced (QP) and is positive when the producer price is above the world price. It is indicated by the positive area ABEF in Figure 9.

Figure 9: **The relationship between PSE estimates and SALTER taxes**
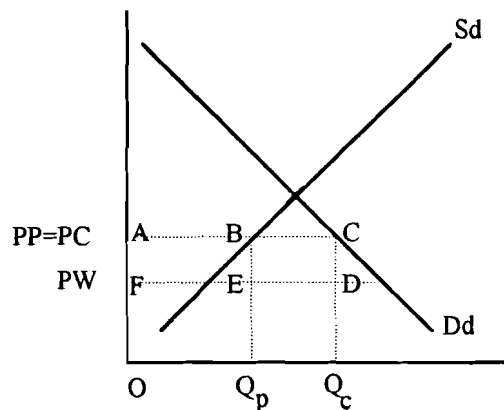
For SALTER an import duty equivalent of the PSE is calculated and is represented on the diagram by the ratio of the distances AF to OF. This ratio should also be positive (a tax) when the producer price PP is greater than the world price PW. The import tax equivalent of the price support component of the PSE can be calculated as follows. The price support is defined as:

$$PSEp = (PP-PW)*QP \qquad (1)$$

The world price can therefore be calculated as the domestic producer price less the price support per unit of output:

$$PW = PP-(PSEp/QP) \qquad (2)$$

The ad valorem duty equivalent (DT) of the producer price support policies can be calculated as:

$$DT = [(PP/PW)-1] * 100 = [(PSEp/QP)/PW] * 100 \qquad (3)$$

The world price is the appropriate base for the ad valorem equivalent duty.

Export taxes

In most cases producer price support is provided for import competing industries. However, when the price support is large enough, it will encourage producers to supply more output than the domestic market can absorb. This is the case for some protected food and agricultural commodities. An equivalent export subsidy would be needed to sell the excess supply on the world market.

The ad valorem export tax equivalent (XT) of export subsidies required to offset the producer price support can be calculated as:

$$XT = [(PW-PP)/PP]*100 \tag{4}$$

This is negative when the producer price is above the world price, as required. The domestic producer price is the appropriate base for the ad valorem equivalent export subsidy because of the way export taxes are defined in the SALTER model. Thus the offsetting export subsidy is smaller in percentage terms than the corresponding tariff equivalent of producer price support.

Production taxes

The ad valorem equivalent of the non-price support element of the PSE is modelled as a production subsidy, ie a negative production tax. The non-price support component (PSE_n) is calculated by adding the *direct* (D) and *indirect* *payments* (I) made to the producer of a particular commodity and is positive when the payments are positive:

$$PSE_n = (I+D) \tag{5}$$

Therefore,

$$PSE_n/Q=PP_0-PP_1 \tag{6}$$

where PP_0 is the price that would exist in absence of non-price support and is higher than PP_1 in the presence of positive non-price support (see Figure 7).

The ad valorem production tax (PT) equivalent of producer non-price support is given by:

$$PT = 100*(PP_1-PP_0)/PP_0= -(PSE_n/Q)/[(PP_1)+(PSE_n/Q)]*100 \tag{7}$$

A negative tax implies a production subsidy. To be consistent with the way production taxes are defined in the SALTER model, PP_0 must be used as the base for this calculation. To find PP_0, the observed producer price, PP_1, is added to the unit non-market price support.

User taxes

The SALTER model contains variables representing taxes on domestic usage, broken down firstly by source and secondly by particular domestic end user — intermediate, investment, household consumption and government. For the assistance database the consumption subsidies referred to in the OECD and the USDA publications are assumed to affect all units demanded, not just those demanded by households. Therefore consumption subsidies are calculated and applied to all domestic uses of both domestic and imported commodities.

The price support element of the CSE (CSE_p) comprises two components. The first component is the implicit tax consumers pay as a result of the market price support benefiting producers. The second component covers taxes other than implicit taxes born by the consumer and/or explicit subsidies that partially compensate the consumer for the higher price paid as a result of the market price support provided to producers.

Since the SALTER model pricing equations ensure that an explicit producer price support is automatically passed through in the form of higher prices to domestic users, the implicit tax components of the CSE estimates do not need be introduced into the model separately. Only the explicit tax/subsidy component is introduced via SALTER's user tax variables.

When the CSE_p component only includes the implicit tax, as shown in Figure 9 where PC=PP, the unit consumer price support and the unit producer price support are of the same magnitude but of opposite signs. The CSE_p is negative reflecting a tax to the consumer while the PSE_p is positive reflecting the price support to producers.

In cases where the unit consumer price support and the unit producer price support estimates are not equal in magnitude, then explicit consumer taxes or subsidies exist. Therefore to eliminate the implicit tax from the CSE_p component, the unit consumer price support and the unit producer price support are added to together to obtain an estimate of the deviation of the consumer price from the producer price. This deviation will be positive if consumers are explicitly subsidised rather than taxed, so that the consumer price is below the producer price. The explicit consumer taxes/subsidies are then added to the non-price support element of the CSE (CSE_n) to find the ad valorem consumer tax equivalent.

The ad valorem consumer tax equivalent (CT) can therefore be calculated as:

$$CT = (-(PSE_p/QP+CSE_p/QC)-CSE_n/QC)/PP*100 \qquad (8)$$

20

The producer price is the appropriate base for the ad valorem equivalent consumption tax, following the way user taxes are defined in the SALTER model. A negative tax implies a consumption subsidy.

Non-food manufacturing

The procedure used to obtain a set of taxes and subsidies for non-food manufacturing commodities differs from the procedure used for agriculture and food for several reasons. Firstly, PSE and CSE estimates are not available on a comparable basis for non-food manufacturing. Alternative sources are used instead. Secondly, the only interventions for which external data are readily available, tariffs, NTBs and VERs, are border interventions.

Import duties

The SINTIA (Software of Industrial, Trade and Incentives Analysis) program is used to provide rates of tariff protection for non-food manufacturing commodities (Tormey 1993). The program is used to summarise customs tariff data from tariff schedules for Canada, the United States, Japan, Korea, EC, Indonesia, Malaysia, Philippines, Singapore, Thailand and Taiwan. Tariffs for Australia, New Zealand and China are calculated using different procedures while Hong Kong is assumed to be free of non-food manufacturing protection.

The customs tariff data are highly disaggregated and classified according to the Harmonised System (HS) of product classification. The data are aggregated by taking weighted averages of the HS tariff rates to obtain estimates for individual SALTER commodities. The tariffs are weighted by either the value of imports or the value of domestic production of each HS item. Whenever possible, production weighted average rates are used. The advantage of using production weights is that import tariffs on goods that have no domestic competition are not included in the average tariff rate. Therefore production weighted averages give a better picture of the protective effect that tariffs have on domestic industry.

Australian *nominal rates of assistance* to non-food manufacturing are provided by the Assistance Evaluation Branch (AEB) of the Industry Commission. The assistance data provided at the HS level are aggregated to the individual SALTER commodity level using value of domestic production weights. Note that these assistance estimates incorporate both tariff and non-tariff protection.

Similarly, estimates of New Zealand nominal rates of assistance are provided by Syntec Economic Services (1988) and are aggregated to the individual SALTER commodity level using ISIC production data.

The tariff estimates for China are adapted from Yang (1992). Estimation of all assistance for China is outlined in Appendix A.

Estimates for non-food manufacturing NTBs for all SALTER regions except for Australia, New Zealand and China are adapted from Deardorff and Stern (1989).

NTB estimates are added to corresponding tariff estimates to obtain a set of duties for non-food manufacturing goods.

Export taxes

Export taxes are the SALTER instruments used to model VERs. The following VER agreements are covered:

- bilateral agreements restricting Japanese export volumes of transport equipment; and

- the Multifibre Arrangement (MFA) which limits the volume of textiles and wearing apparel exports from developing to developed countries.

VERs are modelled as export taxes because of the general belief that the exporting regions retain the quota rents (see Deardorff and Stern 1989).

Generally VERs do not apply to all products within a SALTER commodity aggregate. To incorporate available estimates of the export tax equivalents of VERs into the database, the export tax must be weighted by a product coverage ratio. Coverage ratios are calculated by finding the value of restricted exports as a percentage of total exports within a SALTER commodity category.

According to the GATT (1989) Japan has bilateral agreements to restrict exports of selected categories of transport equipment to the United States, the European Community and Canada. The effects of VERs are estimated for Japan's exports of transport equipment to these three regions. Estimates of the export tax equivalent of VERs and corresponding product coverage ratios on Japanese transport equipment are found in Deardorff and Stern (1989).

Export tax equivalents of VERs applying to exports of Japanese transport equipment to the EC and the associated coverage ratios are available for each EC member country. Therefore to obtain a single estimate for the EC as a whole the coverage adjusted export taxes are weighted together using each member country's imports of transport equipment.

The export taxes representing the effects of the MFA are estimated for the following SALTER regions based on information provided by Yang (1992) and Saad (forthcoming). The countries imposing the VERs are the EC, the United

States and Canada. Each of these countries is recognised as having a bilateral agreement with the following exporters — Indonesia, Malaysia, Philippines, Singapore, Thailand, Korea, Hong Kong, Taiwan and China.

Estimates of the export tax equivalents of the MFA come from two sources. The first source, Yang (1992) provides estimates of tariff equivalents for textiles and clothing separately. However, these tariff equivalents are available for only three broad exporting regions — New Industrialised Economies (Korea, Hong Kong, Taiwan), China, Other MFA exporting countries, exporting to three importing regions — United States, EC, Other MFA importing regions. The second source, Saad (forthcoming) provides more detailed information on export tax equivalents for the MFA exporting regions — Indonesia, Other ASEAN countries, New Industrialised Economies, China, Thailand, Other MFA exporting regions, exporting to three importing regions — United States, EC, Other MFA importing regions. However, Saad's estimates are only provided for a textiles and clothing aggregate.

The raw export tax equivalents provided by Yang are adjusted by his product coverage ratios to produce export tax equivalents for textiles and clothing separately. This procedure is repeated to provide coverage adjusted export tax equivalents for the textile and clothing aggregate from Saad's raw tax equivalents and coverage ratios. Then the following formulae are used to provide estimates of textiles and clothing export taxes for each SALTER exporting region involved in the MFA.

The average export tax for clothing and textiles exports (T_D) is equivalent to the share weighted sum of the clothing export tax (T_C) and the textiles export tax (T_T), where S_C and S_T are the values of clothing and textiles exports as a share of the value of total clothing and textile exports, respectively.

$$T_D = S_T T_T + S_C T_C \tag{9}$$

Product coverage adjusted estimates of T_D for individual exporting countries are provided in Saad (forthcoming). These can be split into separate estimates for T_T and T_C by assuming that the ratio of T_C/T_T available by broad exporting region from Yang also applies to each of the individual exporting countries in that region.

From Yang's estimates of export taxes for clothing (T_{YC}) and textiles (T_{YT}), the ratio of the clothing export tax to the textiles export tax is calculated for each broad region

$$\Phi = T_{YC}/T_{YT} \tag{10}$$

The export tax on textiles (T_T) for each individual country is found by substituting (10) into (9) and solving for T_T, using Saad's individual country estimates of T_D and values for S_T and S_C from Hambley (forthcoming).

$$T_T = T_D/(S_T + S_C \Phi) \tag{11}$$

The corresponding export tax on clothing is found by multiplying the tax on textiles by the ratio calculated from Yang's estimates (Φ).

Resources

Import duties

Tariff estimates for all resource commodities, with the exception of all tariffs for Australia, China and tariffs levied on coal in the EC and Japan, are obtained from tariff schedules and are weighted by production using the SINTIA program (see Tormey 1993).

Australian nominal rates of assistance to resources are provided by the Assistance Evaluation Branch (AEB) of the Industry Commission. The assistance data provided at the HS level are aggregated to the individual SALTER commodity level using value of domestic production weights. Note that these assistance estimates incorporate both tariff and non-tariff protection.

Appendix A describes how taxes for resource commodities in China are estimated.

Assistance to coal for the EC and Japan

The main industrialised regions in the world which provide high levels of assistance to their domestic coal mining industries are the EC and Japan. The arguments used by the governments of these countries for maintaining assistance include energy security, high short term social costs of closing down regionally concentrated mining operations, and a need for adjustment and restructuring programs to make local coal more competitive with imported coal (Jolly et al 1990). The assistance is usually in a form akin to producer price support. The method used to calculate assistance to coal in Japan and the EC is therefore the same as the procedure used to calculate agriculture and food assistance from PSEs. As a result, the SALTER model includes target values for import duties, export taxes and production taxes on coal in Japan and the EC.

Services

There are no good estimates of assistance to services available from external sources. The original input-output tables for some regions report duties and export taxes on services, but because the regional coverage is patchy these are deemed to provide an unreliable guide to global service protection. For these reasons, import duties and export taxes on services have been set to zero.

Treatment of intra - European Community Trade

Since 1968 border protection on intra-EC trade has been negligible due to European integration (Weiss et al 1988). Therefore in areas where duties and export taxes have been targeted to reflect industry assistance arrangements, the corresponding duties and export taxes on intra-EC trade have been set to zero.

Treatment of assistance in China

Internal inconsistencies between China's tariff policy and its internal price regime has required separate treatment of industry assistance in China. To reflect these inconsistencies positive import duties are imposed on imports in China while user subsidies are imposed on the domestic usage of domestically produced commodities. For more detail on industry assistance in China refer to Appendix A.

Treatment of assistance in 'rest of world'

The SALTER model includes a 'rest of world' (ROW) aggregate. Import duties are the only form of industry assistance calculated for ROW. The value of the import duty is found by determining the simple average percentage import duty by commodity for all SALTER regions other than ROW and multiplying this by the value of ROW imports net of duty. For more information on industry assistance for ROW refer to Tormey (forthcoming).

4 DATA SOURCES

Agriculture and food

Policy instruments embedded in the SALTER database include import taxes, export taxes, production taxes and user taxes (where consumer taxes from the partial equilibrium framework are applied to all domestic users in the SALTER model). The main sources available to estimate these policy instruments include the data used by the US Department of Agriculture (1988, 1990) and the OECD (1990) to calculate PSEs and CSEs. These sources give both PSE and CSE estimates and price and quantity information needed to implement the formulae shown in Chapter 3. Table 1 lists the source and year of the PSE and CSE data used for the SALTER regions. Where data are not available from these sources, either the producer (consumer) to border price ratios and quantity information given in Saxon, Tyers and Anderson (1986) are used to calculate taxes and subsidies, or estimates are taken from Tormey (1993).

Table 1: The source and year used to calculate agriculture and food estimates for SALTER regions

SALTER Region	Source	Year
Australia	OECD (1990)	1988
New Zealand	OECD (1990)	1988
Canada	OECD (1990)	1988
United States	OECD (1990)	1988
Japan	OECD (1990)	1988
Korea	USDA (1988,1990)	1986, 1987
EC (twelve)	OECD (1990)	1988
Indonesia	USDA (1990), STA[a](1986)	1988, 1980-82
Malaysia	Tormey (1993)	1988
Philippines	STA (1986)	1980-82
Singapore	Tormey (1993)	1988
Thailand	USDA (1990), STA (1986)	1988, 1980-82
Taiwan	USDA (1990)	1987

[a] Saxon, Tyers and Anderson

The OECD groups the policy instruments incorporated in PSEs into six categories. Table 2 gives examples of the different policy instruments. The OECD provides some level of disaggregation of market price support and direct payments. The data provided by OECD includes data for 1987-88 for all SALTER regions except for ASEAN countries, South Korea, China, Hong

Kong and Taiwan. Table B1 in Appendix B lists the various policy instruments estimated by the OECD for each commodity and gives the concordance with SALTER policy instruments.

Table 2: **Examples of different categories of policy instruments**

Category	Example
PSE	
Market price support	Tariffs, quotas, voluntary export restraints
Direct payments	Deficiency payments
Reduction of input costs	Fuel subsidies
General services	Infrastructure programs
Sub national	Provincial programs
Other	Marketing/promotion
CSE	
Market transfers	Fluid milk premium
Other transfers	School lunch scheme

Data provided by the USDA are more disaggregated than the data provided by the OECD. Table B2 in Appendix B lists the various policy instruments estimated by the USDA and gives the concordance with SALTER policy instruments. The data provided by the USDA are used to calculate all the estimates for Korea and Taiwan. For Indonesia, USDA data are used to calculate the import taxes on paddy rice and processed rice, and the production tax on paddy rice. For Thailand, USDA data are used to calculate the production tax on paddy rice and consumption tax on processed rice.

Where data are not available from USDA and OECD sources, producer (consumer) to border price ratios for 1980-82 calculated by Saxon, Tyers and Anderson (1986) are used to calculate the remaining taxes. These price ratios are used to calculate all import taxes, export subsidies and production subsidies for the Philippines and the remaining import taxes, export subsidies and production subsidies for Indonesia and Thailand. Only producer price to world price and consumer price to world price ratios are available. These ratios are available for wheat, rice, coarse grains, dairy, ruminant, non-ruminant meats and sugar. The concordance for food and agricultural commodities is shown in Appendix C.

Import taxes for Malaysia and Singapore are calculated by the SINTIA program (Tormey 1993).

In China the tariff estimates are taken from Yang (1992). User taxes are derived from Lin (1991). See Appendix A for more details.

Appendix D includes a list of spreadsheets used to calculate ad valorem tax equivalents for agriculture and food.

Non-food manufacturing

Import duties

The data required to calculate tariff estimates come from a number of sources which are described in more detail in Tormey (1993). Tariff schedules for relevant SALTER regions are obtained from the Export Intelligence unit of AUSTRADE. Production values used to weight the tariffs are obtained from either the International Economic Data Bank (IEDB) at the Australian National University or from United Nations sources. The IEDB provides 4 digit ISIC data for OECD countries. These estimates are used for Canada, USA, Japan and the EC. The United Nations provides ISIC production data for Korea, Malaysia, Indonesia, Philippines and Singapore. Production data for Thailand could not be obtained so tariffs are weighted by import values provided in the tariff database (Tormey 1993).

Estimates of Australian nominal rates of assistance are provided by the Assistance Evaluation Branch of the Industry Commission.

Estimates of New Zealand nominal rates of assistance are provided by Syntec Economic Services (1988, Table A2.1).

Estimates for non-food manufacturing NTBs for all SALTER regions except Australia, New Zealand and China are adapted from Deardorff and Stern (1989, Table 4).

The tariff estimates for China are taken from Yang (1992).

Voluntary export restraints

Deardorff and Stern (1989) provides estimates of the raw tax equivalents of VERs on Japanese exports of transport equipment in Table B.5, corresponding coverage ratios in Table B.3 and import data to weight EC countries into an overall EC average in Table D.4.

The export tax equivalents of VERs under the MFA are calculated using three sources. The first source, Saad (forthcoming), provides textiles and clothing export tax equivalents on exports from six exporting regions to three importing regions. To calculate corresponding coverage ratios, Saad provides estimates of total clothing and textile exports and restricted clothing and textile exports.

The second source Yang (1992, Table 7.1) provides raw export tax equivalents of the MFA for an aggregate representing textiles and clothing. To calculate corresponding coverage ratios, Yang (1992) provides estimates of total and restricted clothing exports (Tables C.1 and C.3) and estimates of total and restricted textile exports (Tables C.2 and C.4).

The third source Hambley (forthcoming) provided estimates for textiles and clothing export shares by destination.

Production taxes

The production taxes for China from Hambley (forthcoming) are retained as target rates of assistance.

User taxes

User taxes on non-food manufacturing for China are derived from Lin (1991). See Appendix A for more details.

Resources

Import taxes for all resource commodities levied by all regions, with the exception of taxes in Australia, China and the import taxes on coal in the EC and Japan, are calculated by SINTIA using data from tariff schedules provided by the Export Intelligence unit of AUSTRADE. ISIC production data provided by the United Nations are used to weight import taxes for Korea, Malaysia, Indonesia, Philippines and Singapore while IEDB 4 digit ISIC production data are used to weight import taxes for all OECD countries.

Estimates of Australian nominal rates of assistance are provided by the Assistance Evaluation Branch of the Industry Commission. Appendix A outlines the data used to estimate taxes for China.

Producer subsidy equivalent data for assistance to EC coal are provided by International Energy Agency (1988, Table 1). Data used to calculate assistance to Japanese coal are provided by Jolly *et al* (1990, Tables 2 and 41). Appendix D includes the name of the spreadsheet used to calculate ad valorem tax equivalents for coal in Japan and EC.

The production taxes on resources in China found in Hambley (forthcoming) are retained as target rates of assistance. User taxes on resources in China are derived from Lin (1991). See Appendix A for more details.

Services

Duties and export taxes

All import taxes and export taxes have been set to zero. The production taxes on services in China found in Hambley (forthcoming) are retained as target rates of assistance. User taxes on services in China are derived from Lin (1991).

5 RESULTS

This section provides a number of tables showing industry assistance estimates for the SALTER model. The SALTER model provides a picture of the world economy in 1988. While some of the estimates calculated are not based on 1988 data these estimates are assumed to be broadly representative of 1988.

Table 3 shows taxes and subsidies for agriculture and food sectors.

Table 4 shows the estimated ad valorem equivalents of tariffs and non-tariff barriers for non-food manufacturing.

Tables 5 to 7 show the export taxes used to model VERs. Table 5 shows the export taxes used to model VERs restricting exports of Japanese transport equipment. Tables 6 and 7 show the export taxes used to model VERs on textiles and clothing, respectively, under the Multifibre Arrangement. Table 8 shows production and user taxes on non-food manufactures in China.

Table 9 shows ad valorem taxes and subsidies for the coal industry. Table 10 shows estimated ad valorem tariffs and non-tariff barriers for resources included in the SALTER database. Table 11 shows production and user taxes on resources in China.

Tables 12 and 13 show ad valorem duties and export taxes for industries in the services sector. Table 14 shows production and user taxes on services in China.

Agriculture and food estimates

Table 3: Support provided to the agricultural and food sectors of the modelled regions through taxes and subsidies[a] in the SALTER model

	Export tax %	Import tax %	Production tax %	User tax %	Export tax %	Import tax %	Production tax %	User tax %
	Australia[b]				New Zealand[b]			
Paddy Rice	-7.60	8.22	-16.63	0.00	0.00	0.00	0.00	0.00
Wheat	0.00	0.00	-11.95	0.00	0.00	0.00	-13.38	0.00
Other grains	0.00	0.00	-8.02	0.00	0.00	0.00	-6.23	0.00
Non-grain crops	-0.27	0.28	-0.98	0.00	0.00	0.00	0.00	0.00
Wool	0.00	0.00	-3.89	0.00	0.00	0.00	-5.85	0.00
Other livestock	0.00	0.00	-1.61	0.00	0.00	0.00	-0.09	-0.09
Processed Rice	-7.60	8.22	0.00	69.36	0.00	0.00	0.00	0.00
Meat	0.00	0.00	-5.85	0.00	-2.56	4.42	-7.28	0.15
Dairy	-24.52	32.49	-5.72	0.02	0.00	0.00	-5.57	4.32
Other food	-0.14	0.15	-0.21	0.66	0.00	0.00	0.00	0.00
	Canada[b]				United States[b]			
Paddy Rice	0.00	0.00	0.00	0.00	0.00	0.00	-54.46	0.00
Wheat	-14.35	16.76	-33.91	0.06	-9.75	10.80	-26.92	-1.24
Other grains	-17.75	21.59	-24.06	-2.58	0.00	0.00	-33.74	-0.08
Non-grain crops	-1.40	1.32	-3.91	0.00	-0.33	3.10	-4.44	0.01
Wool	0.00	0.00	0.00	0.00	-3.91	4.07	-39.91	-0.88
Other livestock	-0.00	0.00	-0.53	0.00	0.00	0.00	-0.36	-0.01
Processed Rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-10.00
Meat	-16.44	22.10	-15.30	0.00	-20.10	27.84	-7.84	-0.66
Dairy	-57.53	135.47	-16.81	-0.01	-49.15	96.66	-11.67	-6.58
Other food	0.00	0.00	-0.01	-0.10	-0.67	1.74	-0.09	0.00
	Japan[b]				Korea[c]			
Paddy Rice	-79.51	388.12	-15.07	0.00	-76.55	326.36	-6.90	0.00
Wheat	-83.78	516.63	-18.31	-58.27	-59.43	146.50	-1.33	-58.66
Other grains	-86.20	624.78	-20.35	-84.66	-26.54	132.69	-1.18	-1.74
Non-grain crops	-1.30	3.74	-0.5	0.00	-1.90	7.56	-0.09	3.49
Wool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other livestock	0.00	0.00	-0.28	-0.02	-0.00	0.00	-0.32	2.98
Processed Rice	-79.51	388.12	0.00	7.57	-76.55	326.36	0.00	2.11
Meat	-44.69	94.14	-3.92	-0.05	-9.32	33.43	-4.89	61.74
Dairy	-79.80	395.09	-12.61	-21.28	-53.74	116.11	-5.56	121.09
Other food	-0.42	1.27	-0.07	0.14	-0.20	0.66	0.00	0.00

[a] A negative tax is interpreted as a subsidy

[b] Source: OECD (1990)

[c] Source: USDA (1988, 1990)

[d] Source: Saxon, Anderson & Tyers (1986)

[e] Source: Tormey (1993)

	Export tax %	Import tax %	Production tax %	User tax %	Export tax %	Import tax %	Production tax %	User tax %
	European Community[b]				Indonesia[d]			
Paddy Rice	-35.46	54.95	-5.86	0.00	1.11	-1.10[c]	-8.46[c]	0.00
Wheat	-30.98	44.88	-4.84	-0.50	0.00	0.00	0.00	0.00
Other grains	-1.52	47.36	-1.39	26.63	-23.08	30.00	0.00	0.00
Non-grain crops	0.00	0.00	-0.86	0.00	0.00	0.00	0.00	0.00
Wool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other livestock	0.00	0.00	-0.22	0.00	0.00	0.00	0.00	0.00
Processed Rice	-35.46	54.95	0.00	-0.66	1.11	-1.10[c]	0.00	0.00
Meat	-46.60	78.52	-9.68	0.00	-47.76	91.93	0.00	0.00
Dairy	-61.21	157.78	-5.63	-5.50	-37.50	60.00	0.00	0.00
Other food	-1.52	10.35	0.12	1.19	0.00	0.00	0.00	0.00
	Malaysia[e]				Philippines[d]			
Paddy Rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other grains	0.00	0.20	0.00	0.00	-13.04	15.00	0.00	0.00
Non-grain crops	0.00	7.70	0.00	0.00	0.00	0.00	0.00	0.00
Wool	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Other livestock	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00
Processed Rice	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Meat	0.00	5.60	0.00	0.00	-30.23	43.73	0.00	0.00
Dairy	0.00	13.80	0.00	0.00	-41.18	70.00	0.00	0.00
Other food	0.00	8.20	0.00	0.00	0.00	0.00	0.00	0.00
	Singapore[e]				Thailand[d]			
Paddy rice	0.00	0.00	0.00	0.00	11.11	-10.00	-4.77[c]	0.00
Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other grains	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-grain crops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Livestock	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00
Processed rice	0.00	0.00	0.00	0.00	11.11	-10.00	0.00	0.98
Meat products	0.00	0.00	0.00	0.00	9.36	-8.50	0.00	0.00
Milk products	0.00	0.00	0.00	0.00	-37.50	60.00	0.00	0.00
Other food	0.00	4.70	0.00	0.00	0.00	0.00	0.00	0.00

[a] A negative tax is interpreted as a subsidy

[b] Source: OECD (1990)

[c] Source: USDA (1988, 1990)

[d] Source: Saxon, Anderson & Tyers (1986)

[e] Source: Tormey (1993)

Table 3: Support provided to the agricultural and food sectors of the modelled regions through taxes and subsidies[a] in the SALTER model representative of 1988 (continued)

	Export tax %	Import tax %	Production tax %	User tax %	Export tax %	Import tax %	Production tax %	User tax %
	Hong Kong				Taiwan[c]			
Paddy Rice	0.00	0.00	0.00	0.00	-43.15	75.90	-2.62	0.00
Wheat	0.00	0.00	0.00	0.00	-73.00	270.37	-1.96	-65.75
Other grains	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
non-grain crops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other livestock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Processed Rice	0.00	0.00	0.00	0.00	-43.15	75.90	0.00	5.71
Meat	0.00	0.00	0.00	0.00	-43.15	46.91	-2.65	24.95
Dairy	0.00	0.00	0.00	0.00	-42.83	74.90	-6.52	-23.31
Other food	0.00	0.00	0.00	0.00	-1.15	1.58	-0.05	0.80
	China[fg]				ROW[h]			
Paddy Rice	0.00	58.00	0.00	-15.97	0.00	55.08	0.00	0.00
Wheat	0.00	58.00	0.00	19.05	0.00	68.36	0.00	0.00
Other grains	0.00	58.00	0.00	28.21	0.00	59.47	0.00	0.00
non-grain crops	0.00	58.00	0.00	14.94	0.00	5.45	0.00	0.00
Wool	0.00	58.00	0.00	-6.54	0.00	4.27	0.00	0.00
Other livestock	0.00	58.00	0.00	-25.37	0.00	4.05	0.00	0.00
Processed Rice	0.00	58.00	0.00	-15.97	0.00	57.50	0.00	0.00
Meat	0.00	58.00	0.00	-62.69	0.00	29.07	0.00	0.00
Dairy	0.00	58.00	0.00	-20.64	0.00	74.95	0.00	0.00
Other food	0.00	58.00	0.00	-20.64	0.00	5.22	0.00	0.80

[a] A negative tax is interpreted as a subsidy

[b] *Source:* OECD (1990)

[c] *Source:* USDA (1988, 1990)

[d] *Source:* Saxon, Anderson & Tyers (1986)

[e] *Source:* Tormey (1993)

[f] *Sources:* Hambley (forthcoming), Lin (1991), Yang (1992)

[g]: Note: User taxes are applied to domestically produced commodities only

[h]: *Source:* Tormey (forthcoming)

Non-food manufacturing estimates

Table 4: Estimated ad valorem tariff equivalents in non-food manufacturing sector applied in the SALTER model

	Australia[a]	New Zealand[b]	Canada[c]	USA[c]	Japan[c]	Korea[c]	European Community[c]	Indonesia[c]
Beverages and tobacco	10.52	28.00	13.50	5.80	29.10	37.10	34.00	49.50
Textiles	30.57	20.00	17.20	11.30	8.80	14.90	9.70	41.90
Wearing apparel	47.25	54.00	21.80	12.80	12.70	19.60	12.3	56.10
Leather and fur products	22.77	18.70	18.46 (3.00)	16.96 (2.50)	26.36 (3.00)	13.30	8.97 (0.90)	53.10
Lumber and wood products	14.29	12.80	7.60	4.40	4.10	13.60	5.70	26.30
Pulp, paper and printing	10.11	12.00	5.70	13.38 (11.30)	2.10	10.90	8.52 (1.20)	21.40
Petroleum and coal products	17.50	7.50	5.20	1.40	24.20 (1.30)	10.70	15.36 (12.9)	0.00
Chemicals, rubber and plastic	13.88	16.40	8.80	5.40	5.41 (0.05)	14.60	7.84	24.90
Non-metallic mineral products	3.14	11.00	7.30	5.20	4.20 (1.10)	13.30	6.08	29.60
Primary iron and steel	26.07	6.00	7.60	16.30	4.10	8.80	18.93 (14.0)	16.70
Non-ferrous metals	0.53	6.00	6.10	3.50	12.00	10.40	4.50	0.00
Fabricated metal products	16.64	23.00	9.10	4.90	3.30	15.30	6.44 (0.08)	27.20
Transport equipment	24.17	31.00	7.80	2.90	1.00	17.40	7.80	68.10
Other machinery	19.65	22.00	7.00 (0.70)	4.10 (0.01)	1.60	15.40	6.23 (1.30)	18.10
Other manufacturing	20.72	24.00	7.72 (0.50)	5.69 (0.01)	3.40	14.70	5.85 (1.20)	35.90

Note: Figures in parentheses are the non-tariff barrier component of the aggregate tariff equivalent.

[a] *Source*: The aggregate import duty equivalents are provided by the Assistance Evaluation Branch of the Industry Commission and comprise both the tariff and non-tariff barrier component. No separate estimate of the non-tariff component is provided.

[b] *Source*: The aggregate import duty equivalents are provided by Syntec (1988) and comprise both the tariff and non-tariff barrier component. No separate estimate of the non-tariff component is provided.

[c] *Source*: Tormey (1993), Deardorff and Stern (1989).

Table 4: Estimated ad valorem tariff equivalents in non-food manufacturing sector applied in the SALTER model (continued)

	Malaysia[c]	Philippines[c]	Singapore[c]	Thailand[c]	Taiwan[c]	China[d]	Hong Kong	ROW[e]
Beverages and tobacco	30.30	42.50	5.30	36.50	28.60	58.00	0.00	25.47
Textiles	26.40	39.90	0.50	48.40	18.20	91.00	0.00	24.83
Wearing apparel	27.30	0.00	0.50	10.60	15.10	115.00	0.00	26.73
Leather and fur products	28.50	41.50	0.50	34.20	34.30	115.00	0.00	28.54
Lumber and wood products	21.10	36.70	0.50	3.10	34.80	40.00	0.00	14.81
Pulp, paper and printing	16.00	33.00	0.00	17.30	19.30	80.00	0.00	16.38
Petroleum and coal products	6.60	0.00	1.10	13.50	6.60	5.00	0.00	7.08
Chemicals, rubber and plastic	20.20	25.10	0.30	27.60	26.45	38.00	0.00	15.29
Non-metallic mineral products	19.40	27.30	0.00	29.70	28.90	40.00	0.00	14.69
Primary iron and steel	16.50	0.00	0.00	9.50	8.30	60.00	0.00	12.34
Non-ferrous metals	6.20	0.00	0.00	12.50	19.40	60.00	0.00	9.26
Fabricated metal products	19.50	28.70	0.50	28.10	20.50	30.00	0.00	15.30
Transport equipment	21.60	30.20	2.80	25.90	8.70	30.00	0.00	18.27
Other machinery	20.80	30.30	0.50	30.90	8.50	30.00	0.00	14.11
Other manufacturing	13.90	35.90	0.50	26.60	18.10	70.00	0.00	18.70

Note: Figures in parentheses are the non-tariff barrier component of the aggregate tariff equivalent.

[a] *Source:* The aggregate import duty equivalents are provided by the Assistance Evaluation Branch of the Industry Commission and comprise both the tariff and non-tariff barrier component. No separate estimate of the non-tariff component is provided.

[b] *Source:* The aggregate import duty equivalents are provided by Syntec (1988) and comprise both the tariff and non-tariff barrier component. No separate estimate of the non-tariff component is provided.

[c] *Source:* Tormey (1993), Deardorff and Stern (1989).

[d] *Source* Yang (1992)

[e] *Source:* Tormey (forthcoming)

Table 5: Export tax equivalents used to model voluntary export restraints on Japanese transport equipment

Destination	Source Japan %
US	3.90
EC	5.05
Canada	3.90

Source: Deardorff and Stern (1989)

Table 6: Export tax equivalents used to model voluntary export restraints on textiles under the Multifibre arrangement

Source	Destination US %	EC %	Canada %
Indonesia	11.95	17.46	17.50
Malaysia	9.50	11.70	15.17
Philippines	8.57	10.03	11.52
Singapore	7.93	10.10	11.89
Thailand	9.07	12.85	13.71
Korea	14.77	15.13	14.44
Hong Kong	11.51	12.15	11.44
Taiwan	12.24	17.46	14.15
China	18.41	27.35	23.21

Sources: Saad (forthcoming), Yang(1992), Hambley (forthcoming)

Table 7: Export tax equivalents used to model voluntary export restraints on clothing under the Multifibre arrangement

Source	Destination US %	EC %	Canada %
Indonesia	46.74	48.37	41.13
Malaysia	37.14	32.40	35.66
Philippines	33.52	27.79	27.08
Singapore	31.01	27.98	27.94
Thailand	35.46	35.58	32.23
Korea	35.00	29.05	29.31
Hong Kong	27.29	23.32	23.23
Taiwan	29.02	33.53	28.72
China	40.32	36.11	42.00

Sources: Saad (forthcoming), Yang(1992), Hambley (forthcoming)

Table 8: Ad valorem production taxes and user taxes for non-food manufacturing industries for China applied in the SALTER model

	Production taxes %	User taxes[a] %
Beverages and tobacco	30.96	16.28
Textiles	8.50	-20.00
Wearing apparel	8.35	-20.00
Leather, fur & products	7.60	-20.00
Lumber & wood products	8.68	-60.32
Pulp, paper & printing	11.38	-26.47
Petroleum and coal products	26.45	-66.10
Chemicals, rubber & plastic	12.79	5.26
Non-metallic mineral products	11.77	-57.98
Primary iron & steel	14.88	-52.61
Primary non-ferrous metals	9.65	-39.02
Fabricated metal products	10.66	-54.13
Transport industries	10.02	5.26
Other machinery and equipment	11.42	5.26
Other manufacturing	9.50	0.00

[a] User taxes apply to domestically produced commodities only.

Sources: Lin (1991), Hambley (forthcoming)

Resource estimates

Table 9: Ad valorem taxes and subsidies for the coal industry applied in the SALTER model

	Japan[a] %	European Community[b] %
Import tax	157.99	4.29
Export tax	-61.24	-4.10
Production tax	-9.54	-18.81

[a] Source: Jolly et al (1990)
[b] Source: International Energy Agency (1988)

Table 10: Ad valorem tariff equivalents for the resources sector applied in the SALTER model

	Australia[a]	New Zealand[b]	Canada[b]	USA[b]	Japan[b]	Korea[b]	European Community[b]	Indonesia[b]
Forestry	0.00	0.00	0.00	0.30	0.00	2.00	0.00	13.50
Fishing	0.00	3.30	0.30	0.10	7.40	13.80	6.80	9.20
Coal	0.00	0.00	0.00	0.00	157.99	1.00	4.29	5.00
Oil	0.00	0.00	0.00	0.60	20.10	5.00	0.00	0.00
Gas	0.00	9.70	2.70	0.00	0.00	5.00	0.01	0.00
Other minerals	0.00	1.80	0.30	0.30	0.00	2.20	0.00	3.60

	Malaysia[b]	Philippines[b]	Singapore[b]	Thailand[b]	China[c]	Hong Kong	Taiwan[b]	ROW[d]
Forestry	17.30	10.10	0.00	0.50	0.00	0.00	0.00	2.91
Fishing	3.50	11.20	0.00	20.40	0.00	0.00	0.00	4.88
Coal	4.50	10.20	0.00	14.70	35.00	0.00	0.00	15.45
Oil	0.10	10.00	0.00	0.00	0.00	0.00	0.00	2.39
Gas	0.40	0.00	0.00	0.00	0.00	0.00	0.00	1.19
Other minerals	3.30	27.20	0.00	9.70	0.00	0.00	0.00	3.22

[a] Source: Assistance Evaluation Branch of the Industry Commission
[b] Source: Tormey (1993)
[c] Source: Yang (1992)
[d] Source: Tormey (forthcoming)

Table 11: **Ad valorem production taxes and user taxes for the resources sector in China applied in the SALTER model**

SALTER industries	Production Taxes	UserTaxes[a]
	%	%
Forestry	10.34	0.00
Fishing	4.71	0.00
Coal	1.47	-64.66
Oil	12.94	-71.99
Gas	6.71	-71.99
Other minerals	16.56	0.00

[a] User taxes apply to domestically produced commodities only.

Sources: Lin (1991), Hambley (forthcoming)

Services estimates

Table 12: Ad valorem import duty equivalents for the services sector applied in the SALTER model

	Australia	New Zealand	Canada	USA	Japan	Korea	European Community	Indonesia	Malaysia	Philippines	Singapore	Thailand	Taiwan	China[a]	ROW[b]
Electricity, Water and Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trade and transport	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Private services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Government services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ownership of Dwellings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: See text for all taxes not superscripted with a or b.
[a] *Source:* Yang (1992)
[b] *Source:* Tormey (forthcoming)

Table 13: Ad valorem export tax equivalents for the services sector applied in the SALTER model

	Australia	New Zealand	Canada	USA	Japan	Korea	European Community	Indonesia	Malaysia	Philippines	Singapore	Thailand	Taiwan	China[a]	ROW[b]
Electricity, Water and Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trade and transport	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Private services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Government services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ownership of Dwellings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: See text for all taxes not superscripted with a or b.
[a] *Source:* Yang (1992)
[b] *Source:* Tormey (forthcoming)

Table 14: **Ad valorem production tax and user tax equivalents for the services sector in China applied in the SALTER model**

SALTER Industries	Production Taxes %	User Taxes[a] %
Electricity,Water and Gas	28.65	-30.56
Construction	2.51	-31.04
Trade and transport	6.67	-14.53
Private services	31.74	33.33
Government services	0.00	33.33
Ownership of Dwellings	0.00	33.33

[a] User taxes apply to domestically produced commodities only.

Sources: Lin (1991), Hambley (forthcoming)

6 INDUSTRY ASSISTANCE IN SALTER

Incorporating assistance into databases

Figure 10 illustrates how taxes and subsidies fit into the overall SALTER database framework.

Taxes and subsidies appear in the database in revenue terms, ie as the total tax revenue (subsidy expenditure, if negative) from a particular commodity and not as the percentage rate applied to that commodity. For example, the database contains the level of duty revenue rather than the import duty rate, although an implicit duty rate can be calculated from the duty revenue and other elements in the database. Table 15 lists and describes the relevant values in the SALTER database.

Table 15: **Tax revenues included in the SALTER database**

Header Array	Coefficient Name	Description
AI12	TSR(I,Z)	Production taxes applied to industry I in region Z.
AI27	DR(I,Z,S)	Duties applied by region Z to imported commodities I from region S.
AI24	TER(I,Z)	Export taxes applied by region S to commodities I, exported to region Z.
AI16	TRD(I,J,Z)	Commodity taxes applied by region Z on the use of domestically produced commodities I by industry J.
AI17	TRI(I,J,Z)	Commodity tax applied by region Z on the use of imported commodities I by industry J.
AI20	TIRD(I,Z)	Commodity tax applied by region Z on the use of domestically produced commodities I for investment.
AI21	TIRI(I,Z)	Commodity tax applied by region Z on the use of imported commodities I for investment.
AI18	TCRD(I,Z)	Commodity taxes applied by region Z on the use of domestically produced commodities I for private consumption.
AI19	TCRI(I,Z)	Commodity taxes applied by region Z on the use of imported commodities I for private consumption.
AI22	TGRD(I,Z)	Commodity taxes applied by region Z on the use of domestically produced commodities I for government consumption.
AI23	TGRI(I,Z)	Commodity taxes applied by region Z on the use of imported commodities I for government consumption.

Figure 10: **The structure of the SALTER database**
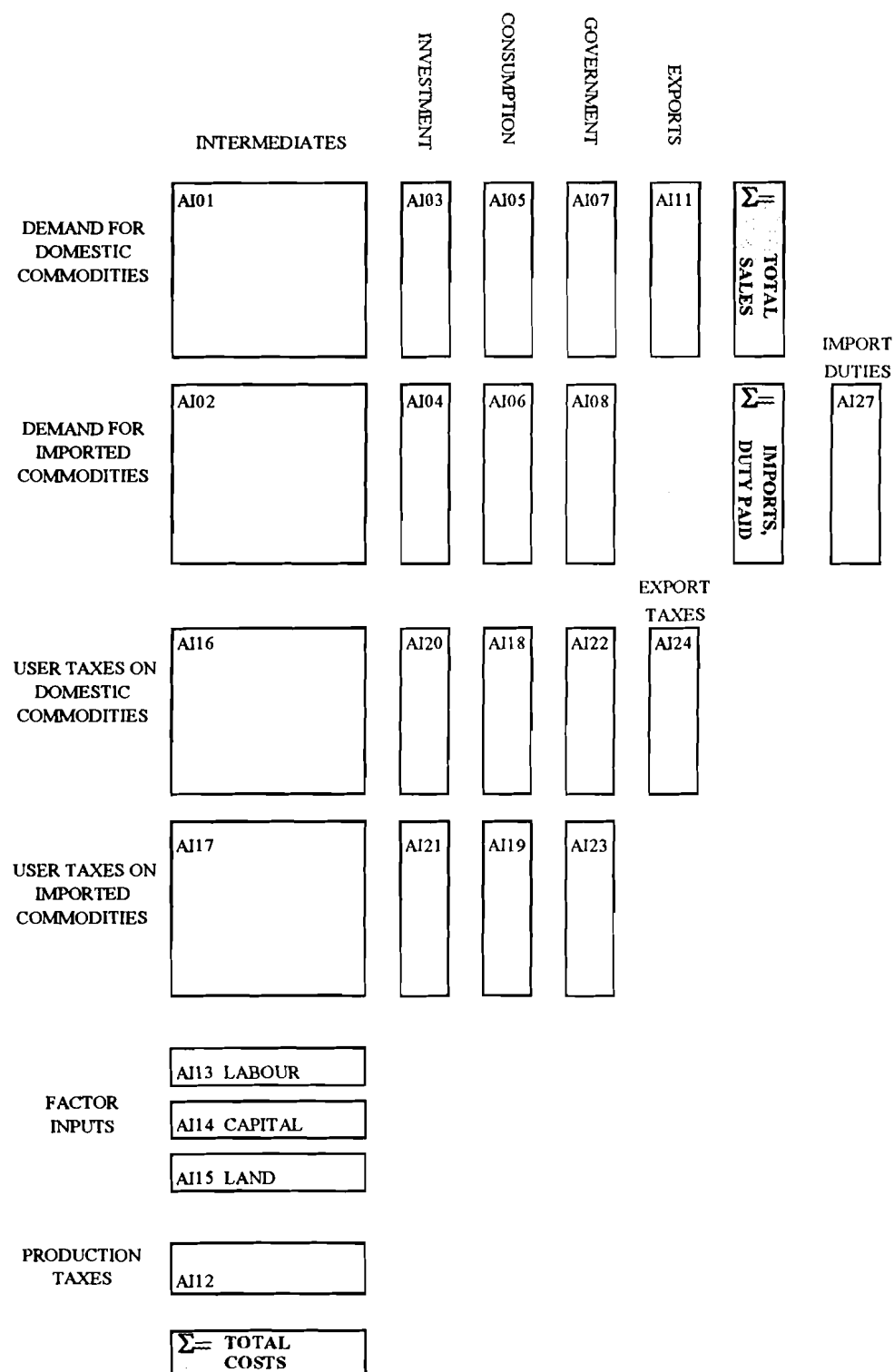
The structure of the SALTER model provides policy instruments through which changes in tax revenue and subsidy expenditure can be made. Table 16 lists and describes the policy variables through which assistance policy changes are modelled.

Table 16: **Policy variables included in the SALTER model**

Variable Name	Description
SQ(I,J)	Power of the production tax applied to industry J.
D(I,Z,S)	Power of the duty applied by region Z to imports of commodity I from region S.
TE(I,Z,S)	Power of export tax applied by region S to exports of commodity I to region Z.
TINTD(I,J,Z)	Power of the tax applied by region Z on the use of domestically produced commodity I by industry J.
TINTI(I,J,Z)	Power of the tax applied by region Z on the use of imported commodity I by industry J.
TINVD(I,Z)	Power of the tax applied by region Z on the use of domestically produced commodities I for investment.
TINVI(IZ)	Power of the tax applied by region Z on the use of imported commodities I for investment.
TCOND(I,Z)	Power of the tax applied by region Z on the use of domestically produced commodities I for private consumption.
TCONI(I,Z)	Power of the tax applied by region Z on the use of imported commodities I for private consumption.
TGOVD(I,Z)	Power of the tax applied by region Z on the use of domestically produced commodities I for government consumption.
TGOVI(I,Z)	Power of the tax applied by region Z on the use of imported commodities I for government consumption.

Since a desired set of tax and subsidy rates have been calculated in this paper, each of the original regional databases described in Hambley (forthcoming) and Brown *et al* (forthcoming) must be adjusted to reflect the desired targets. The assistance database estimates are incorporated into the input-output tables superseding the original data. The FIT procedure (James and McDougall forthcoming) which matches the regional input-output databases to detailed international trade data is also used to incorporate the new assistance estimates into the SALTER database. To update the assistance database, shocks are calculated and applied to the powers of the relevant taxes in a single-country model *simulation*. A provision in the solution software allows the implied post-shock database to be recovered, hence the usefulness of this procedure for updating the database.

Trade policy simulations

Industry assistance is incorporated into SALTER's multi-country database so that experiments can be undertaken to show the effects of policy changes. For example, a simulation may be undertaken to show the effects of trade liberalisation on an individual economy or group of economies. The simulation compares the equilibrium attained after the policy changes have worked their way through the system with that which would exist without the changes.

To implement policy changes, shocks to policy variables are calculated using the updated multicountry database listed in Watts (forthcoming). Appendix E illustrates the methods by which shocks for a trade policy simulation are calculated.

In the SALTER model, the assistance structure for agriculture and food has been developed assuming that export subsidies are required to dispose of the excess supply generated by the market price supports benefiting these groups. By contrast, import protection on non-food manufacturing is not assumed to be accompanied by compensating export subsidies. In circumstances where export subsidies and import taxes are used jointly to model the impact of a single policy instrument such as a market price support, the reduction or elimination of that policy instrument must be modelled as a joint reduction in the export subsidy and import duty.

APPENDIX A: INDUSTRY ASSISTANCE IN CHINA

Evidence generally suggests that prices for many commodities in China are lower than world prices. One reason is that planned prices are often below world prices.

With China's internal pricing regime, producers can receive three different prices for their output - planned prices, negotiated prices and market prices. Planned prices are received for output meeting government quotas, negotiated prices are received for output sold to the government in excess of required quotas and market prices are received for output sold on private markets (Sicular 1988).

On the other hand, tariffs are collected on imports in China and the imports are then generally sold internally at market prices (Yang 1992). This suggests there can be major differences between the prices of domestically produced and imported commodities within China, with imports being above and domestically produced goods often being below the world price benchmark. It also demonstrates the internal inconsistencies between China's tariff policy and its internal pricing regime, in terms of the true assistance afforded industries in China (Yang 1992).

To broadly capture these stylised facts within the SALTER database, positive import duties are imposed on imports into China, while estimates of world to domestic price ratios are used to calculate user subsidies that are imposed on the domestic use of *domestically produced* commodities. Note that this treatment differs from the imposition of user taxes/subsidies elsewhere, since these were applied to the domestic usage of both domestically produced and imported commodities.

Tariff estimates for China taken from Yang (1992) are listed in Table A1.

Table A1: Import duties for China applied to the SALTER database

Commodities in Yang	SALTER Commodities	Import duties (%)
Agricultural products	Paddy Rice	58
Agricultural products	Wheat	58
Agricultural products	Other grains	58
Agricultural products	Non-grain crops	58
Agricultural products	Wool	58
Agricultural products	Livestock	58
na[a]	Forestry	0
na	Fishing	0
Coal	Coal	35
na	Oil	0
na	Gas	0
na	Other minerals	0
Agricultural products	Processed Rice	58
Agricultural products	Meat products	58
Agricultural products	Milk products	58
Agricultural products	Other food products	58
Agricultural products	Beverages and tobacco	58
Textiles	Textiles	91
Clothing	Wearing apparel	115
Clothing	Leather and fur products	115
Wood products	Lumber and wood products	40
Paper	Pulp, paper and printing	80
Petroleum products	Petroleum and coal products	5
Chemicals	Chemicals, rubber and plastic	38
Building materials	Non-metallic mineral products	40
Metallurgy	Primary iron and steel	60
Metallurgy	Non-ferrous metals	60
Machinery	Fabricated metal products	30
Machinery	Transport equipment	30
Machinery	Other machinery	30
Misc. manufactures	Other manufacturing	70

a Not available

Source: Yang (1992)

Lin (1991) provides estimates of world to domestic price ratios. The domestic prices are calculated as a weighted average of market, negotiated and procurement prices. In Lin (1991), Appendix Table A3.1 includes a detailed list of price ratios while Table 3.4 provides ratios for commodity aggregates. Yang (1992) also provides domestic to world price ratios for selected commodity aggregates (Table 3.8). Estimates of world to domestic price ratios provided by Lin (1991) are used here to calculate user subsidies. Price ratios from Lin are preferred to those from Yang because Lin's data is more disaggregated.

Table A2: User taxes calculated from price ratios

SALTER commodity	[1] Output[b] 10000 Yuan	[2] Exports[b] 10000 Yuan	[3] PW/PD [c]	[4]={1/[3]}-1 (PD-WP)/WP	[5]={[1]-[2]}*[4] User taxes 10000 Yuan
Rice	6649968	0	1.19	-0.16	-1,061,760
Wheat	3239728	1809	0.84	0.19	616,747
Other Grains	7161504	65438	0.78	0.28	2,001,455
Non-grain Crops	14579600	546831	0.87	0.15	2,096,851
Wool	0	0	1.07	-0.07	0
Livestock	10753047	320346	1.34	-0.25	-2,647,103
Forestry	3188622	18284	na[a]	na	0
Fishing	2248600	278037	na	na	0
Coal	3108756	79036	2.83	-0.65	-1,959,148
Oil	2482715	731818	3.57	-0.72	-1,260,450
Gas	169436	647	3.57	-0.72	-121,509
Other Minerals	1790806	173770	na	na	0
Processed Rice	0	0	1.19	-0.16	0
Meat Products	1959828	75905	2.68	-0.63	-1,180,966
Milk Products	222242	14152	1.26	-0.21	-42,939
Other Food Products	10134259	424356	1.26	-0.21	-2,003,631
Beverages & Tobacco	6058188	61380	0.86	0.16	976,225
Textiles	16620690	1445197	1.25	-0.20	-3,035,099
Wearing Apparel	3103710	1140911	1.25	-0.20	-392,560
Leather	1553941	392153	1.25	-0.20	-232,358
Lumber Products	2155721	110057	2.52	-0.60	-1,233,892
Pulp,Paper & Printing	6641103	91647	1.36	-0.26	-1,733,680
Petroleum & coal products	3869363	209063	2.95	-0.66	-2,419,520
Chemical products	18161241	921083	0.95	0.05	907,377
Non-Metallic Mineral Products	8002524	109903	2.38	-0.58	-4,576,394
Primary Ferrous Metals	7910826	357538	2.11	-0.53	-3,973,530
Primary Non-ferrous Metals	2953953	182050	1.64	-0.39	-1,081,718
Fabricated Metal Products	4840832	228961	2.18	-0.54	-2,496,334
Transport Equipment	4011614	194041	0.95	0.05	200,925
Other Machinery & Equipment	26031635	1998945	0.95	0.05	1,264,878
Other Manufacturing	1047474	618551	1	0.00	0

[a] Not available

[b] Source:Hambley (forthcoming)

[c] Source: Lin (1991)

Table A2: User taxes calculated from price ratios (continued)

	[1] Output[b] 10000 Yuan	[2] Exports[b] 10000 Yuan	[3] PW/PD [c]	[4]={1/[3]}-1 (PD-WP)/WP	[5]={[1]-[2]}*[4] User taxes 10000 Yuan
Electricity,Gas & Water	4235120	0	1.44	-0.31	-1,294,064
Construction	24305600	0	1.45	-0.31	-7,543,117
Trade & Transport	21493491	0	1.17	-0.15	-3,122,986
Services (private)	11219574	122805	0.75	0.33	3,698,923
Services (government)	12572845	458	0.75	0.33	4,190,796
Services (ownership of dwellings)	2149787	0	0.75	0.33	716,596

[a] Not available
[b] Source:Hambley (forthcoming)
[c] Source: Lin (1991)

Price ratios are converted into ad valorem user tax rates (subsidy rates if negative) that represent wedges between the world (PW) and domestic prices (PD). A user tax rate is calculated as:

$$t=((PD/PW)-1)*100 \qquad (A1)$$

This measures the percentage difference between the domestic price and the world price, using the world price as a base.

User taxes (subsidies) raise (lower) the price of domestically produced commodities to the users. In most cases the user is charged a price lower than the world price implying a transfer from the government to the users. In this situation, prices are unlikely to reflect relative scarcities or production costs in the economy.

Subsidies of this kind are financed in part by production taxes which are particularly heavy in the industrial sector. Estimates of the production tax rates (as a percentage of the value of output) are available from the Chinese input-output data (Hambley forthcoming) and are shown in Table A3. These production tax rates are retained as target rates in the final database, except for the agricultural and food manufacturing sectors where the production tax rates are subsequently set to zero.

Table A3: **Production taxes for China**

SALTER Industries	Production Taxes %	SALTER Industries	Production Taxes %
Paddy rice	1.08	Wearing apparel	8.35
Wheat	1.08	Leather, fur & products	7.60
Other grains	1.08	Lumber & wood products	8.68
Non-grain crops	0.95	Pulp, paper & printing	11.38
Wool	0.78	Petroleum and coal products	26.45
Other livestock products	0.78	Chemicals, rubber & plastic	12.79
Forestry	10.34	Non-metallic mineral products	11.77
Fishing	4.71	Primary iron & steel	14.88
Coal	1.47	Primary non-ferrous metals	9.65
Oil	12.94	Fabricated metal products	10.66
Gas	6.71	Transport industries	10.02
Other minerals	16.56	Other machinery and equipment	11.42
Processed rice	4.07	Other manufacturing	9.50
Meat products	2.52	Electricity, gas and water	28.65
Milk products	7.95	Construction	2.51
Other food products	4.07	Trade and transport	6.67
Beverages and tobacco	30.96	Other services (private)	31.74
Textiles	8.50	Other services (Government)	0.00
		Ownership of dwellings	0.00

Source: Derived from Hambley (forthcoming).

In policy experiments designed to capture the effects of trade reform within China it would be appropriate to reduce or eliminate tariffs on imports. Only in experiments designed to capture the effects of more fundamental domestic pricing reforms would it be appropriate to reduce or eliminate domestic user subsidies and production taxes.

APPENDIX B: POLICY INSTRUMENT CONCORDANCE

Policy instruments reported in the data sources used to calculate taxes and subsidies for agriculture and food commodities differ from SALTER policy instruments. To overcome this problem concordances listed in Table B1 and Table B2 are used. Table B1 provides a concordance of OECD policy instruments with SALTER policy instruments. Table B2 provides a concordance of USDA instruments with SALTER policy instruments.

Table B1: **Concordance of OECD policy instruments with SALTER policy instruments**

SALTER Policy instruments	OECD Policy instruments
Duties	Market price support
Export subsidies	Market price support
Production subsidies	Reduction of input costs
	General services
	Sub national
	Other
	Direct payments
Consumer subsidies	Market Transfers
	Other Transfers

Source: OECD (1990)

Table B2: Concordance of US Department of Agriculture policy instruments with SALTER policy instruments

SALTER region	SALTER Policy instruments	USDA Policy instruments
South Korea	Duties Production subsidies	State control (NTBs) Food production Agricultural mechanization Irrigation development Agricultural infrastructure Marketing improvement Agricultural development Rural Income development Current expenditure
Indonesia	Duties Production subsidies	State control Input assistance Irrigation subsidy
Thailand	Export taxes Production subsidies	Export tax Production subsidy Fertiliser subsidy Irrigation subsidy Rediscount facility
Taiwan	Duties	Levy for dairy fund State control (NTB) Tariff
	Production subsidies	Farm management Marketing improvements Production improvements Infrastructure expenditure Production improvements Research and extension

Source: USDA (1988)

APPENDIX C: AGRICULTURE AND FOOD COMMODITY CONCORDANCE

Ad valorem tax and subsidy equivalents for ten SALTER commodities representing agricultural and food commodities are calculated using PSE and CSE estimates and price comparisons. Table C1 lists the SALTER commodities and the corresponding commodities in the external sources from which PSE and CSE data are obtained.

Table C1: A concordance between SALTER agriculture and food commodities and USDA/OECD/STA[a] commodities

SALTER commodities	USDA/OECD commodities	STA commodities
Paddy Rice	Rice	Rice
Non-grain crops	Rapeseed, Soybeans, Oilseeds, Sugar cane, Sugar beet	
Wheat	Wheat	Wheat
Other grains	Coarse grains	Coarse grains
Wool	Wool	
Other livestock products	Eggs	
Meat products	Beef & veal, poultry, pigmeat, sheepmeat	Ruminant meats, non-ruminant meats
Dairy products	Milk	Dairy
Processed rice	Rice	Rice
Other food products	Refined Sugar	Sugar

[a] Saxon Tyres and Anderson

The PSE/CSE data provided on rice are used to calculate a set of taxes and subsidies. The resulting import and export taxes are assigned to both paddy rice and processed rice. As consumers predominantly purchase processed rice, the resulting consumption tax is assigned to processed rice. Paddy rice producers rather than rice processors generally receive the resulting production subsidy so the production subsidy is assigned to paddy rice.

Individual taxes are calculated from PSE/CSE data for the commodities, rapeseed, soybeans, oilseeds, sugar beet and sugar cane, which constitute a part of the SALTER commodity non-grain crops. To find the tax estimate for non-grain crops the individual taxes are weighted by the share of the production value of the respective commodities in the SALTER production value of non-grain crops and then the weighted taxes are added together. The production values of commodities constituting part of the commodity, non-grain crops, are

provided from USDA/OECD sources while the production value of the SALTER commodity non-grain crops is obtained from Hambley (forthcoming).

Similarly, eggs are but one component of other livestock products so production and consumption tax estimates are weighted using the share of the production value of eggs in the SALTER production value of other livestock. The production values of eggs are provided from USDA/OECD sources while the production values of the SALTER commodity other livestock are obtained from Hambley (forthcoming). The export and import of eggs are assumed to be zero so that import and export taxes are set to zero.

Taxes for the SALTER commodity, meat products, are calculated by combining taxes calculated for beef and veal, poultry, pigmeat and sheepmeat. These taxes are weighted by the share of the production value of the respective commodities in the SALTER production value of meat products. The weighted taxes are then added together to obtain an aggregate tax for meat products. The production values of commodities constituting part of the commodity, meat products, are provided from USDA/OECD sources while the production value of the SALTER commodity meat products is obtained from Hambley (forthcoming).

Taxes and subsidies for dairy products are set equal to those calculated for milk.

Assistance estimates for other food products are calculated by scaling the taxes and subsidies for refined sugar. The taxes for other food are scaled by the share of the production value of refined sugar in ISIC production values for other foods, for Australia, Canada, USA, Japan and EC. For the remaining SALTER regions taxes for other food are scaled by the share of the production value of the commodity constituting a component of other foods in SALTER production value of other foods. The production values of commodities constituting part of the commodity, other foods, are provided from USDA/OECD sources while the production value of the SALTER commodity other foods is obtained from Hambley (forthcoming).

APPENDIX D: SPREADSHEETS CONTAINING CALCULATIONS OF AD VALOREM TAX EQUIVALENTS

This appendix includes a table which lists the spreadsheets and their contents which are used for estimating ad valorem tax equivalents for the assistance database.

Table D1: Spreadsheets containing the calculations used for estimating ad valorem tax equivalents

Name of Spreadsheet	Contents of Spreadsheet
ASPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Australia.
NZPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for New Zealand.
CNPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Canada.
USPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for United States.
JPPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Japan.
KRPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Korea.
ECPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for European Community.
INPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Indonesia.
THPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Thailand.
CHPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for China.
TWPSE.XLS	The calculation of taxes for agriculture and food commodities from PSE/CSE estimates for Taiwan.
PCOM.XLS	The calculations of taxes for agriculture and food from price comparisons for Indonesia, Philippines, Thailand, China, Korea and Taiwan.
CLPSE.XLS	The calculations for coal taxes from PSE estimates for Japan and EC.

APPENDIX E: CALCULATING SHOCKS AND THE DUNKEL PROPOSAL

The policy instrument through which the changes in taxes and subsidies are simulated is the *power of the tax*. The power of the tax is defined as (1+T) where T is the tax rate.

Most policy experiments require the existing tax rate (T) to be changed by a known proportion. In this case the proportionate change in the tax rate (CH) is known but the new tax rate is not. The formula for calculating the appropriate shock to be applied to the power of the tax is given below:

$$S1=\{(1+[T(1+CH)])-(1+T)]/(1+T)\}*100 \qquad (E1)$$

Simplifying the above equation,

$$S1= [(CH*T)/(1+T)]*100 \qquad (E2)$$

More generally, the shock required to change a tax from an initial rate to a new rate T^n is given by:

$$S2= \{[(1+T^n)-(1+T^o)]/(1+T^o)\}*100 \qquad (E3)$$

In the special case where the initial rate is zero, the formula simplifies to

$$S2=T^n*100 \qquad (E4)$$

The Uruguay Round of GATT (General Agreement on Tariffs and Trade) has focused on the distortions created by assistance and the need to move towards free world trade. The Director-General of GATT, Arthur Dunkel, put together a package of measures, the Dunkel Proposal, designed to bring agreement on the liberalisation of trade. The main thrust of his proposal was to reduce assistance to agriculture and to improve international market access to trade in manufactured goods.

Using the SALTER model, policy changes broadly comparable to those listed in the Dunkel Proposal are implemented as follows:

- 1/3 reduction in import duty on agricultural, food, resource and manufacturing commodities for all SALTER regions;

- 1/3 reduction in export subsidies on agricultural and food commodities for all SALTER regions except China;

- 1/3 reduction in production subsidies on agricultural and food commodities for all SALTER regions except China;

- 1/3 reduction in user taxes on agricultural and food commodities for all SALTER regions except China;

- 1/3 reduction in export subsidies on coal produced in the EC and Japan;

- 1/3 reduction in production subsidies on coal produced in the EC and Japan;

- an end to the Multifibre arrangement (MFA) between MFA exporting countries and MFA importing countries; and

- elimination of the VER on exports of Japanese transport equipment to EC, US, Canada.

To implement these policy changes shocks must be calculated and applied to the relevant variables. The following file, a TABLO input deck (see Calder 1992), calculates the shocks for the Dunkel proposal by applying the required changes in tax rates to the relevant tax rates calculated from data in the existing SALTER database. This file includes comments which describe each stage of the program.

```
!*******************************************************
*******************************************************
*******************************************************
**    MAXU16: A PROGRAM USED TO CALCUL          **
**    SHOCKS FOR THE DUNKEL PROPOSAL             **
**                                               **
!*******************************************************
*******************************************************
*******************************************************
```

!This file contains the TABLO source code for calculating shocks used to simulate the Dunkel proposal. This code was originally written by James Tormey for the Industry Commission in November 1992, and revised for publication by Michelle Gotch in January 1993.

The code was written for use with GEMPACK version 4.3.

Contents:
1. Files
2. Sets
3. Coefficient declaration
4. Coefficient read statements
5. Coefficients used to calculate shocks
6. Write Statements

```
!*******************************************************
```

1.Files

```
!*******************************************************!
```

FILE   DATIO
FILE CONTAINING THE DATABASE# ;

FILE (NEW)   OUT1 "prodsh.har"
FILE CONTAINING PRODUCTION SUBSIDY SHOCKS# ;

FILE (NEW)   OUT2 "expsh.har"
FILE CONTAINING EXPORT SUBSIDY SHOCKS# ;

FILE (NEW)   OUT3 "dutysh.har"
FILE CONTAINING DUTY SHOCKS# ;

FILE (NEW)   OUT4 "iconsh.har"
FILE CONTAINING IMPORTED CONSUMPTION TAX SHOCKS# ;
FILE (NEW)   OUT5 "dconsh.har"

FILE CONTAINING DOMESTIC CONSUMPTION TAX SHOCKS# ;

FILE (NEW)   OUT6 "igovsh.har"
FILE CONTAINING IMPORTED GOVERNMENT CONSUMPTION TAX
SHOCKS# ;

FILE (NEW)   OUT7 "dgovsh.har"
FILE CONTAINING DOMESTIC GOVERNMENT CONSUMPTION TAX
SHOCKS# ;

FILE (NEW)   OUT8 "iinvsh.har"
FILE CONTAINING IMPORTED INVESTMENT TAX SHOCKS# ;

FILE (NEW)   OUT9 "dinvsh.har"
FILE CONTAINING DOMESTIC INVESTMENT TAX SHOCKS# ;

FILE (NEW)   OUT10 "iintsh.har"
FILE CONTAINING IMPORTED INTERMEDIATE INPUTS TAX
SHOCKS# ;

FILE (NEW)   OUT11 "dintsh.har"
FILE CONTAINING DOMESTIC INTERMEDIATE INPUTS TAX
SHOCKS# ;

!***

2. Sets

***!

SET IND(IND1-IND37)
SET CONTAINING ALL INDUSTRIES# ;

set SERVICES(ind32-ind37)
SET CONTAINING SERVICE INDUSTRIES# ;
subset services is subset of ind
SET CONTAINING SERVICE INDUSTRIES IS SUBSET OF SET
CONTAINING ALL INDUSTRIES# ;

set NOT_AGR_FOOD(ind7-ind12, ind17-ind37)
SET CONTAINING NON-AGRICULTURAL AND NON-FOOD
INDUSTRIES# ;

subset not_agr_food is subset of ind
SET CONTAINING NON-AGRICULTURAL AND NON-FOOD
INDUSTRIES IS SUBSET OF SET CONTAINING ALL INDUSTRIES# ;

set COAL(ind9)
SET CONTAINING THE COAL INDUSTRY#;

subset coal is subset of ind
#SET CONTAINING THE COAL INDUSTRY IS SUBSET OF SET
CONTAINING ALL INDUSTRIES # ;

set AGRFOOD(ind1-ind6,ind13-ind16)
SET CONTAINING AGRICULTURE AND FOOD INDUSTRIES# ;

subset agrfood is subset of ind;
SET CONTAINING AGRICULTURE AND FOOD INDUSTRIES IS
SUBSET OF SET CONTAINING ALL INDUSTRIES# ;

set TRANS_EQUIP(ind29)
SET CONTAINING THE TRANSPORT EQUIPMENT INDUSTRY# ;

subset trans_equip is subset of ind
SET CONTAINING THE TRANSPORT EQUIPMENT INDUSTRY IS
SUBSET OF SET CONTAINING ALL INDUSTRIES# ;

set TEX_WAPP(ind18,ind19)
SET CONTAINING TEXTILE AND WEARING APPAREL INDUSTRIES#;

subset tex_wapp is subset of ind;
SET CONTAINING TEXTILE AND WEARING APPAREL INDUSTRIES
IS SUBSET OF SET CONTAINING ALL INDUSTRIES# ;

SET SEC (AUSTRALIA,
NZ,
CANADA,
USA,
JAPAN,
KOREA,
EC,
in,
ms,
ph,
sn,
th,
ch,
hk,

tw,
ROFW)
#SET CONTAINING ALL SALTER REGIONS# ;

set JAP_EC(japan,ec)
#SET CONTAINING JAPAN AND THE EUROPEAN COMMUNITY# ;
subset jap_ec is subset of sec
#SET CONTAINING JAPAN AND THE EUROPEAN COMMUNITY
IS A SUBSET OF SET CONTAINING ALL SALTER REGIONS# ;

set CAN_EC_USA(canada,
ec,
usa)
SET CONTAINING CANADA, EUROPEAN COMMUNITY AND USA# ;
subset can_ec_usa is subset of sec;
#SET CONTAINING CANADA, EUROPEAN COMMUNITY AND USA IS
A SUBSET OF SET CONTAINING ALL SALTER REGIONS# ;

set MFA(in,
ms,
ph,
sn,
th,
korea,
hk,
tw,
ch);
#SET CONTAINING ALL EXPORTING REGIONS INVOLVED IN THE
MULTIFIBRE ARRANGEMENT#;

subset mfa is subset of sec
#SET CONTAINING ALL EXPORTING REGIONS INVOLVED IN THE
MULTIFIBRE ARRANGEMENT IS A SUBSET OF SET CONTAINING ALL
SALTER REGIONS# ;

!***

3. Coefficient declaration

***!

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)   DR(I,Z,S)

DUTIES ON IMPORTS OF COMMODITY I BY SECTOR Z FROM
SECTOR S# ;

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)(ALL,S,SEC)
IINTS(I,J,Z,S)
# INTERMEDIATE USAGE OF IMPORTED COMMODITY I BY
INDUSTRY J BY IMPORTING SECTOR Z FROM SECTOR S # ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)   IINVS(I,Z,S)
INVESTMENT USAGE OF IMPORTED COMMODITY I BY IMPORTING
SECTOR Z FROM SECTOR S# ;

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)   DINT(I,J,Z)
#INTERMEDIATE USAGE OF DOMESTIC ICOMMODITY I BY
IMPORTING SECTOR Z FROM SECTOR S(DOMESTIC) # ;

COEFFICIENT (ALL,J,IND)(ALL,Z,SEC)   LAB(J,Z)
EMPLOYMENT OF LABOUR BY INDUSTRY J IN SECTOR Z # ;

COEFFICIENT (ALL,J,IND)(ALL,Z,SEC)   CAP(J,Z)
EMPLOYMENT OF CAPITAL BY INDUSTRY J IN SECTOR Z# ;

COEFFICIENT (ALL,J,IND)(ALL,Z,SEC)   LAND(J,Z)
EMPLOYMENT OF LAND BY INDUSTRYIN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)   ICONS(I,Z,S)
HOUSEHOLD CONSUMPTION OF IMPORTED COMMODITY I BY
IMPORTING SECTOR Z FROM SECTOR S# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TSR(I,Z)
PRODUCTION TAX ON INDUSTRY I BY SECTOR Z # ;

COEFFICIENT (ALL,I,IND)(ALL,S,SEC)(ALL,Z,SEC)   TER(I,S,Z)
COMMODITY TAXES ON EXPORTS OF COMMODITY I TO SECTOR Z
BY SECTOR S#;

COEFFICIENT (ALL,I,IND)(ALL,S,SEC)(ALL,Z,SEC)   EXPS(I,S,Z)
EXPORTS OF COMMODITY I FROM SECTOR S TO SECTOR Z # ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   DCON(I,Z)
HOUSEHOLD CONSUMPTION OF DOMESTIC COMMODITY I BY
SECTOR Z # ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TCRI(I,Z)
COMMODITY TAXES ON IMPORTS OF COMMODITY I SOLD AS
CONSUMPTION IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TCRD(I,Z)
COMMODITY TAXES ON DOMESTIC COMMODITY I SOLD AS
CONSUMPTION IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)   TRD(I,J,Z)
#COMMODITY TAXES ON INTERMEDIATE USAGE OF DOMESTIC
COMMODITY I BY INDUSTRY J IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)   TRI(I,J,Z)
#COMMODITY TAXES ON INTERMEDIATE USAGE OF IMPORTED
COMMODITY I BY INDUSTRY J IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TIRD(I,Z)
COMMODITY TAXES ON DOMESTIC COMMODITY I USED AS
INVESTMENT IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TIRI(I,Z)
COMMODITY TAXES ON IMPORTED COMMODITY I USED AS
INVESTMENT BY SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TGRD(I,Z)
COMMODITY TAXES ON DOMESTIC COMMODITY I SOLD TO
GOVERNMENT IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   TGRI(I,Z)
COMMODITY TAXES ON IMPORTED COMMODITY I SOLD TO
GOVERNMENT IN SECTOR Z# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)   IGOVS(I,Z,S)
#GOVERNMENT USAGE OF IMPORTED COMMODITY I BY SECTOR Z
FROM SECTOR S# ;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   DGOV(I,Z)
#GOVERNMENT USAGE OF DOMESTIC COMMODITY I BY SECTOR Z
FROM SECTOR S#;

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)   DINV(I,Z)

#INVESTMENT USAGE OF DOMESTIC COMMODITY I BY SECTOR Z# ;

!***

4. Coefficient read statements

***!

READ (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)
    DINT(I,J,Z)
        FROM FILE DATIO HEADER "DI01"
READ INTERMEDIATE USAGE OF DOMESTIC COMMODITY I BY
INDUSTRY J IN SECTOR Z #;

    (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)(ALL,S,SEC)
    IINTS(I,J,Z,S)
        FROM FILE DATIO HEADER "DI02"
#READ INTERMEDIATE USAGE OF IMPORTED COMMODITY I BY
INDUSTRY J IN SECTOR Z#;

    (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)
    IINVS(I,Z,S)
        FROM FILE DATIO HEADER "DI04"
READ INVESTMENT USAGE OF IMPORTED COMMODITY I BY
IMPORTING SECTOR Z FROM SECTOR S#;

    (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)
    ICONS(I,Z,S)
        FROM FILE DATIO HEADER "DI06"
READ HOUSEHOLD CONSUMPTION OF IMPORTED COMMODITY I
BY IMPORTING SECTOR Z FROM SECTOR S#;

    (ALL,I,IND)(ALL,Z,SEC)
    DCON(I,Z)
        FROM FILE DATIO HEADER "DI05"
READ HOUSEHOLD CONSUMPTION OF DOMESTIC COMMODITY I
BY SECTOR Z #;

    (ALL,I,IND)(ALL,Z,SEC)
    TCRD(I,Z)

```
                    FROM FILE  DATIO  HEADER  "DI18"
#READ COMMODITY TAXES ON DOMESTIC COMMODITY I SOLD AS
CONSUMPTION IN SECTOR Z# ;


    (ALL,I,IND)(ALL,Z,SEC)
    TCRI(I,Z)
           FROM FILE  DATIO  HEADER  "DI19"
#READ COMMODITY TAXES ON IMPORTS OF COMMODITY I SOLD
AS CONSUMPTION IN SECTOR Z# ;


    (ALL,I,IND)(ALL,S,SEC)(ALL,Z,SEC)
    EXPS(I,S,Z)
           FROM FILE  DATIO  HEADER  "DI11"
#READ EXPORTS OF COMMODITY I FROM SECTOR S TO SECTOR Z#;


    (ALL,I,IND)(ALL,Z,SEC)
    TSR(I,Z)
           FROM FILE  DATIO  HEADER  "DI12"
#READ PRODUCTION TAX ON INDUSTRY I BY SECTOR Z # ;


    (ALL,I,IND)(ALL,Z,SEC)
    LAB(I,Z)
           FROM FILE  DATIO  HEADER  "DI13"
#READ EMPLOYMENT OF LABOUR BY INDUSTRY J IN SECTOR Z # ;


    (ALL,I,IND)(ALL,Z,SEC)
    CAP(I,Z)
           FROM FILE  DATIO  HEADER  "DI14"
#READ EMPLOYMENT OF CAPITAL BY INDUSTRY J IN SECTOR Z # ;


    (ALL,I,IND)(ALL,Z,SEC)
    LAND(I,Z)
           FROM FILE  DATIO  HEADER  "DI15" ;
#READ EMPLOYMENT OF LAND BY INDUSTRY J IN SECTOR Z # ;


    (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)
    TRD(I,J,Z)
           FROM FILE  DATIO  HEADER  "DI16"
```

#READ COMMODITY TAXES ON INTERMEDIATE USAGE OF
DOMESTIC COMMODITY I BY INDUSTRY J IN SECTOR Z# ;

   (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)
   TRI(I,J,Z)
       FROM FILE DATIO HEADER "DI17"
#READ COMMODITY TAXES ON INTERMEDIATE USAGE OF
IMPORTED COMMODITY I BY INDUSTRY J IN SECTOR Z# ;

   (ALL,I,IND)(ALL,S,SEC)(ALL,Z,SEC)
   TER(I,S,Z)
       FROM FILE DATIO HEADER "DI24"
#READ COMMODITY TAXES ON EXPORTS OF COMMODITY I TO
SECTOR Z BY SECTOR S#;

   (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)
   DR(I,Z,S)
       FROM FILE DATIO HEADER "DI27"
#READ DUTIES ON IMPORTS OF COMMODITY I BY SECTOR Z FROM
SECTOR S# ;

   (ALL,I,IND)(ALL,Z,SEC)
   TGRI(I,Z)
       FROM FILE DATIO HEADER "DI23"
#READ COMMODITY TAXES ON IMPORTED COMMODITY I SOLD TO
GOVERNMENT IN SECTOR Z# ;

   (ALL,I,IND)(ALL,Z,SEC)
   TGRD(I,Z)
       FROM FILE DATIO HEADER "DI22"
#READ COMMODITY TAXES ON DOMESTIC COMMODITY I SOLD TO
GOVERNMENT IN SECTOR Z# ;

   (ALL,I,IND)(ALL,Z,SEC)
   TIRD(I,Z)
       FROM FILE DATIO HEADER "DI20"
#READ COMMODITY TAXES ON DOMESTIC COMMODITY I USED AS
INVESTMENT IN SECTOR Z# ;

```
     (ALL,I,IND)(ALL,Z,SEC)
      TIRI(I,Z)
           FROM FILE  DATIO  HEADER  "DI21" ;
#READ COMMODITY TAXES ON IMPORTED COMMODITY I USED AS
INVESTMENT IN SECTOR Z# ;


     (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)
      IGOVS(I,Z,S)
           FROM FILE  DATIO  HEADER  "DI08"
#READ GOVERNMENT USAGE OF IMPORTED COMMODITY I BY
SECTOR Z FROM SECTOR S# ;


     (ALL,I,IND)(ALL,Z,SEC)
      DGOV(I,Z)
           FROM FILE  DATIO  HEADER  "DI07"
#READ GOVERNMENT USAGE OF DOMESTIC COMMODITY I BY
SECTOR Z FROM SECTOR S# ;


     (ALL,I,IND)(ALL,Z,SEC)
      DINV(I,Z)
           FROM FILE  DATIO  HEADER  "DI03" ;
#READ INVESTMENT USAGE  OF DOMESTIC COMMODITY I BY
SECTOR Z# ;


!************************************************************

              5. Coefficients used to calculate shocks

************************************************************!
```

Contents:
5.1 Shocks applied to import duties
5.2 Shocks applied to production taxes
5.3 Shocks applied to export taxes
5.4 Shocks to user taxes

```
!=====================================================

              5.1 Shocks applied to import duties

=====================================================!
```

!Calculating shocks for a 1/3 fall in the import duties for Agriculture, Resources, Food and Manufacturing for imports to all countries!

COEFFICIENT (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)
VALIMP(I,Z,S)
# TOTAL VALUE OF IMPORTED COMMODITY I INCLUDING DUTY BY SECTOR Z FROM SECTORS# ;
FORMULA (ALL,I,IND)(ALL,Z,SEC)(ALL,S,SEC)
   VALIMP(I,Z,S) = SUM(J,IND,IINTS(I,J,Z,S)) + ICONS(I,Z,S)
         + IINVS(I,Z,S) + IGOVS(I,Z,S) ;

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC) (ALL,S,SEC)   DTY(I,Z,S)
DUTY RATE ON COMMODITY I IMPORTED BY SECTOR Z FROM SECTOR S #;
 FORMULA (ALL,I,IND) (ALL,Z,SEC) (ALL,S,SEC)
 DTY(I,Z,S) = DR(I,Z,S)/
         (VALIMP(I,Z,S)-DR(I,Z,S)) ;

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC) (ALL,S,SEC)   DTYSH(I,Z,S)
SHOCK TO THE POWER OF THE DUTY TO COMMODITY I BY SECTOR Z FROM SECTOR S#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC) (ALL,S,SEC)
 DTYSH(I,Z,S) = -(1/3)*DTY(I,Z,S)/(1+ DTY(I,Z,S))*100;
zero out unwanted shocks
formula (all,i,SERVICES)(all,z,sec)(all,s,sec)
DTYSH(I,Z,S) = 0;

!===

5.2 Shocks applied to production taxes

==!

! Shocks calculated for a 1/3 fall in the industry (production) tax on Agriculture and Food in all countries except china and 1/3 fall on coal in Japan and EC!

COEFFICIENT (ALL,J,IND)(ALL,Z,SEC)   COSTINP(J,Z)
TOTAL COSTS OF INPUTS TO INDUSTRY J EXCLUDING INDIRECT TAXES IN SECTOR Z#   ;
  FORMULA (ALL,J,IND)(ALL,Z,SEC)
  COSTINP(J,Z) = SUM(I,IND,DINT(I,J,Z)) +

```
     SUM(I,IND,SUM(S,SEC,IINTS(I,J,Z,S)))
  + SUM(I,IND,TRD(I,J,Z)) + SUM(I,IND,TRI(I,J,Z))
  + LAB(J,Z) + CAP(J,Z) + LAND(J,Z) ;
```

COEFFICIENT (ALL,J,IND) (ALL,Z,SEC)   PROTAX(J,Z)
#PRODUCTION TAX IN PERCENTAGE TERMS ON INDUSTRY J BY
SECTOR Z#;
FORMULA (ALL,J,IND) (ALL,Z,SEC)
PROTAX(J,Z)=TSR(J,Z)/COSTINP(J,Z);

COEFFICIENT (ALL,J,IND) (ALL,Z,SEC)   PROSH(J,Z)
SHOCK TO THE POWER OF THE PRODUCTION TAX ON INDUSTRY J
BY SECTOR Z#;
 FORMULA (ALL,J,IND) (ALL,Z,SEC)
 PROSH(J,Z) = -(1/3)*PROTAX(J,Z)/(1+ PROTAX(J,Z))*100;
zero out unwanted shocks
formula (all,j,NOT_AGR_FOOD)(all,z,sec)
PROSH(J,Z) = 0;
#no changes in china#
formula (all,j,ind)
PROSH(J,"ch") = 0;
#shock coal production in Japan and EC#
FORMULA (ALL,J,COAL) (ALL,Z,JAP_EC)
PROSH(J,Z) = -(1/3)*PROTAX(J,Z)/(1+ PROTAX(J,Z))*100;

! ==

5.3 Shocks applied to export taxes

== !

! Shocks calculated for:
a 1/3 fall in the export tax on agriculture and food commodities in all countries
except China; a 1/3 fall in the export tax on coal in EC and China; elimination
of the VER (export tax) on transport equip from Japan to Canada, EC and USA
and elimination of the VER (export tax) on textiles & wearing apparel from
MFA exporters to US, Canada, EC!

COEFFICIENT (ALL,I,IND) (ALL,S,SEC)(ALL,Z,SEC)   EXTAX(I,S,Z)
EXPORT TAX REVENUE AS A FRACTION OF TOTAL EXPORTS BY
COMMODITY I FROM SECTOR S TO SECTOR Z #;
FORMULA (ALL,I,IND) (ALL,S,SEC)(ALL,Z,SEC)
EXTAX(I,S,Z)=TER(I,S,Z) / EXPS(I,S,Z);

COEFFICIENT (ALL,I,IND) (ALL,S,SEC) (ALL,Z,SEC) VERSH(I,S,Z)
#initialize with zeros#;
formula (all,i,ind)(all,s,sec)(all,z,sec)
VERSH(I,S,Z) = 0;
SHOCK TO THE POWER OF THE EXPORT TAX ON FOOD AND
AGRICULTURE IN ALL COUNTRIES EXCEPT CHINA BY
COMMODITY I FROM SECTOR S TO SECTOR Z#
 FORMULA (ALL,I,AGRFOOD) (ALL,S,SEC) (ALL,Z,SEC)
 VERSH(I,S,Z) = -(1/3)*EXTAX(I,S,Z)
        /(1+ EXTAX(I,S,Z))*100;
formula (all,i,ind)(all,z,sec)
versh(i,"ch",z) = 0;
# 1/3 fall in export tax on coal in jap and ec#
formula (all,i,COAL)(all,s,JAP_EC)(all,z,sec)
 VERSH(I,S,Z) = -(1/3)*EXTAX(I,S,Z)
        /(1+ EXTAX(I,S,Z))*100;
#eliminate the Jap VER on transport equip#
formula (all,i,TRANS_EQUIP)(all,z,CAN_EC_USA)
VERSH(i,"JAPAN",z) = -(1)*EXTAX(i,"JAPAN",Z)
        /(1+ EXTAX(i,"JAPAN",Z))*100;
#eliminate the VER on textiles and wearing apparel exported from indonesia,
malaysia, philippines, singapore, thailand, korea, Hong Kong, Taiwan, China to
destinations EC, USA, Canada#
formula (all,i,TEX_WAPP)(all,s,MFA)(all,z,CAN_EC_USA)
VERSH(i,s,z) = -(1)*EXTAX(i,s,z)
        /(1+ EXTAX(i,s,z))*100;

! ==

5.4 Shocks applied to user taxes

==!

! Shocks calculated for a1/3 fall in the user taxes on domestic and imported
agriculture and food commodities in all countries except china!

COEFFICIENT (ALL,I,IND) (ALL,S,SEC)   CONIT(I,S)
IMPORTED CONSUMPTION TAX REVENUE AS A FRACTION OF
TOTAL IMPORTED CONSUMPTION COMMODITIES BY COMMODITY
I, SECTOR S#;
 FORMULA (ALL,I,IND) (ALL,S,SEC)
 CONIT(I,S)=TCRI(I,S)/

SUM(Z,SEC,ICONS(I,S,Z)));

COEFFICIENT (ALL,I,IND) (ALL,S,SEC)   CONDT(I,S)
DOMESTIC CONSUMPTION TAX REVENUE AS A FRACTION OF
TOTAL DOMESTIC CONSUMPTION COMMODITIES BY COMODITY I
SECTOR S#;
 FORMULA (ALL,I,IND) (ALL,S,SEC)
CONDT(I,S)=TCRD(I,S)/DCON(I,S);

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC)   CISH(I,Z)
SHOCK TO THE POWER OF THE TAX ON IMPORTED
CONSUMPTION BY COMMODITY I FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC)
CISH(I,Z) = -(1/3)*CONIT(I,Z)/(1+ CONIT(I,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD) (ALL,Z,SEC)
 ciSH(I,Z) = 0;
formula (all,i,ind)
cish(i,"ch")=0;

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC)   CDSH(I,Z)
SHOCK TO THE POWER OF THE TAX ON DOMESTIC
CONSUMPTION OF COMMODITY I FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC)
CDSH(I,Z) = -(1/3)*CONDT(I,Z)/(1+ CONDT(I,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD) (ALL,Z,SEC)
 cdSH(I,Z) = 0;
formula (all,i,ind)
cdsh(i,"ch")=0;

!COEFFICIENT (ALL,I,IND) (ALL,S,SEC)   GOVIT(I,S)
#IMPORTED GOVERNMENT.CONSUMPTION TAX AS A FRACTION OF
TOTAL IMPORTED GOVERNMENT.CONSUMPTION OF COMMODITY I
FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,S,SEC)
GOVIT(I,S)=TGRI(I,S)/
   SUM(Z,SEC,IGOVS(I,S,Z));

COEFFICIENT (ALL,I,IND) (ALL,S,SEC)   GOVDT(I,S)

#DOMESTIC GOVERNMENT.CONSUMPTION TAX AS A FRACTION OF
TOTAL DOMESTIC GOVERNMENT.CONSUMPTION OF COMMODITY I
FROM SECTOR S TO SECTOR Z#;
 FORMULA   (ALL,I,IND) (ALL,S,SEC)
 GOVDT(I,S)=TGRD(I,S)/DGOV(I,S);

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC)   GISH(I,Z)
SHOCK TO THE POWER OF THE TAX ON IMPORTED GOVERNMENT
CONSUMPTION OF COMMODITY I FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC)
 GISH(I,Z) = -(1/3)*GOVIT(I,Z)/(1+ GOVIT(I,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD) (ALL,Z,SEC)
 GiSH(I,Z) = 0;
formula (all,i,ind)
gish(i,"ch")=0;

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC)   GDSH(I,Z)
SHOCK TO THE POWER OF THE TAX ON DOMESTIC GOVERNMENT
CONSUMPTION OF COMMODITY I FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC)
 GDSH(I,Z) = -(1/3)*GOVDT(I,Z)/(1+ GOVDT(I,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD) (ALL,Z,SEC)
 GdSH(I,Z) = 0;
formula (all,i,ind)
gdsh(i,"ch")=0;

COEFFICIENT (ALL,Z,SEC)(ALL,I,IND)   GdshT(Z,I);
FORMULA(ALL,Z,SEC)(ALL,I,IND)
Gdsht(Z,I) = GdSH(I,Z);

COEFFICIENT (ALL,I,IND) (ALL,S,SEC)   INVIT(I,S)
#IMPORTED INVESTMENT TAX REVENUE AS A FRACTION OF TOTAL
IMPORTED INVESTMENT OF COMMODITY I FROM SECTOR S TO
SECTOR Z#
 FORMULA   (ALL,I,IND) (ALL,S,SEC)
 INVIT(I,S)=TIRI(I,S)/
    SUM(Z,SEC,IINVS(I,S,Z));

COEFFICIENT (ALL,I,IND) (ALL,S,SEC)   INVDT(I,S)

#DOMESTIC INVESTMENT TAX REVENUE AS A FRACTION OF TOTAL
DOMESTIC INVESTMENT OF COMMODITY I FROM SECTOR S TO
SECTOR Z#;
 FORMULA   (ALL,I,IND) (ALL,S,SEC)
 INVDT(I,S)=TIRD(I,S)/DINV(I,S);

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC)   IVISH(I,Z)
SHOCK TO THE POWER OF THE TAX ON IMPORTED INVESTMENT
OF COMMODITY I FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC)
 IVISH(I,Z) = -(1/3)*INVIT(I,Z)/(1+ INVIT(I,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD) (ALL,Z,SEC)
 IViSH(I,Z) = 0;
 formula (all,i,ind)
 ivish(i,"ch")=0;

COEFFICIENT (ALL,I,IND) (ALL,Z,SEC)   IVDSH(I,Z)
SHOCK TO THE POWER OF THE TAX ON DOMESTIC INVESTMENT
OF COMMODITY I FROM SECTOR S TO SECTOR Z#;
 FORMULA (ALL,I,IND) (ALL,Z,SEC)
 IVDSH(I,Z) = -(1/3)*INVDT(I,Z)/(1+ INVDT(I,Z))*100;
! zero out unwanted shocks !
FORMULA (ALL,I,NOT_AGR_FOOD) (ALL,Z,SEC)
 IVdSH(I,Z) = 0;
 formula (all,i,ind)
 ivdsh(i,"ch")=0;

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,S,SEC)   INTIT(I,J,S)
IMPORTED INTERMEDIATE INPUTS TAX AS A FRACTION OF TOTAL
IMPORTED INTERMEDIATE INPUTS OF COMMODITY I FROM SECTOR
S TO SECTOR Z#;
 FORMULA   (ALL,I,IND)(ALL,J,IND)(ALL,S,SEC)
 INTIT(I,J,S)=TRI(I,J,S)/
     SUM(Z,SEC,IINTS(I,J,S,Z));

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,S,SEC)
INTDT(I,J,S)
# DOMESTIC INTERMEDIATE INPUTS TAX AS A FRACTION OF
TOTAL DOMESTIC INTERMEDIATE INPUTS OF COMMODITY I FROM
SECTOR S TO SECTOR Z#;

FORMULA   (ALL,I,IND)(ALL,J,IND)(ALL,S,SEC)
INTDT(I,J,S)=TRD(I,J,S)/DINT(I,J,S);

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)   INISH(I,J,Z)
SHOCK TO THE POWER OF THE TAX ON IMPORTED
INTERMEDIATE INPUTS OF COMMODITY I FROM SECTOR S TO
SECTOR Z#;
 FORMULA (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)
 INISH(I,J,Z) = -(1/3)*INTIT(I,J,Z)/(1+ INTIT(I,J,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD)(ALL,J,IND)(ALL,Z,SEC)
 INiSH(I,J,Z) = 0;
formula (all,i,ind)(all,j,ind)
inish(i,j,"ch")=0;

COEFFICIENT (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)
INDSH(I,J,Z)
# SHOCK TO THE POWER OF THE TAX ON DOMESTIC
INTERMEDIATE INPUTS OF COMMODITY I FROM SECTOR S TO
SECTOR Z#;
 FORMULA (ALL,I,IND)(ALL,J,IND)(ALL,Z,SEC)
 INDSH(I,J,Z) = -(1/3)*INTDT(I,J,Z)/(1+ INTDT(I,J,Z))*100;
zero out unwanted shocks
FORMULA (ALL,I,NOT_AGR_FOOD)(ALL,J,IND)(ALL,Z,SEC)
 INdSH(I,J,Z) = 0;
formula (all,i,ind)(all,j,ind)
indsh(i,j,"ch")=0;

!***

6. Write statements

***!

WRITE   PROSHt TO FILE OUT1 HEADER "SQ";

                VERSHt TO FILE OUT2 HEADER "TEr";

                DTYSHt TO FILE OUT3 HEADER "Dr";

                extax TO FILE OUT6 HEADER "extx";

                CISHt TO FILE OUT4 HEADER "TCI";

CDSHt TO FILE OUT5 HEADER "TCD";

GISHt TO FILE OUT6 HEADER "TGI";

GDSHt TO FILE OUT7 HEADER "TGD";

IVISHt TO FILE OUT8 HEADER "TIVI";

IVDSHt TO FILE OUT9 HEADER "TIVD";

INISHt TO FILE OUT10 HEADER "TINI";

INDSHt TO FILE OUT11 HEADER "TIND";
!***

END OF TABLO INPUT

***!

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