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Technical Annex

The Current Round of Agricultural Trade Negotiations: Should We Bother About Domestic Support?

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This document is the technical annex to the full paper "The Current Round of Agricultural Trade Negotiations: Should We Bother About Domestic Support?" which is available separately.

Simulation Methodology and Data

The GTAP applied general equilibrium model (Hertel, 1997) was used to quantify some interactions between reforms in trade policies and those relating to domestic support. This is a multi-region model built on a complete set of economic accounts and detailed inter-industry linkages for each of the economies represented. The GTAP production system distinguishes sectors by their intensities in five primary production factors: land (agricultural sectors only), natural resources (extractive sectors only), capital, and skilled and unskilled labour. In trade, products are differentiated by country of origin, allowing bilateral trade to be modelled, and bilateral international transport margins are incorporated and supplied by a global transport sector. The model is solved using GEMPACK (Harrison and Pearson, 1996). Data were from the

version 5 GTAP database, which is benchmarked to 1997, and were aggregated up to the level of 11 regions and 15 sectors (tables A1 and A2).

Table A1 Regional Aggregation

Acronym	Regions
AUS	Australia
NZL	New Zealand
JPN	Japan
KOR	South Korea
ASIA	China/Hong Kong/Taiwan, South Asia, Southeast Asia
CAN	Canada
US	US
C&STH_AM	Central & South America
EU	European Union 15
EFTA	European Free Trade Area (Iceland, Norway, Switzerland)
ROW	Rest of World

Table A2 Sectoral Aggregation

Acronym	Sectors
Farm sectors	
Rice	Paddy rice
Wheat	Wheat
Other grain	Other cereal grains
Oilseeds	Oil seeds
Other crops	Vegetables, fruits, nuts, sugar cane/beet, crop fibres, other crops
Cattle	Ruminant livestock
Other livestock	Non-ruminant livestock & meats, wool, other animal products
Milk	Raw milk
Other sectors	
Natural resources	Forestry, fishing, coal, oil, gas, other minerals
Beef	Meat of bovine cattle, sheep & goats
Other processed food	Rice, sugar, veg. oils/fats, beverages, tobacco, other food products
Dairy	Processed dairy products
Textiles	Textiles, clothing & leather
Manufactures	All other manufactured products
Services	Services

The incorporation and disaggregation of domestic support data have been considerably enhanced in the version 5 GTAP database, compared with earlier versions (Jensen, 2002). Using the OECD PSE tables (1999 edition), the domestic support payments and value of production, by commodity, were aggregated to map with the GTAP agricultural commodities. The various OECD categories of domestic support payments (excluding market price support) were next grouped within each GTAP commodity into the four categories of output subsidies, intermediate input subsidies, land-based payments and capital-based payments (table A3). Again using the OECD data, the share of the total value of domestic support payments in the total value of production was calculated.[1] The power of support was then applied to the value of output at market prices as recorded in the GTAP database to determine the GTAP value of domestic support payments. Such total payments were finally

allocated across the four categories of table A3 according to each category's share of total support payments as recorded in the OECD data.

Table A3 GTAP Categorisation of OECD Domestic Support Payments Classification

GTAP Category	OECD Classification
Output subsidies	Payments based on limited/unlimited output; misc. payments
Intermediate input subsidies	Payments based on input use – variable inputs & on-farm services
Land-based payments	Payments based on limited/unlimited area planted; Crop payments based on input constraints; Payments based on historical entitlements and on overall farming income
Capital-based payments	Payments based on limited/unlimited animal numbers; Animal payments based on fixed input constraints; Payments based on use of fixed inputs

Source: OECD (2000), p. 143.

Tables A4 and A5 summarise some of these data. Total domestic support payments were around 6 percent, 12 percent and 20 percent of the value of farm output in Japan, the United States and the EU respectively. Those payments also contributed 9 percent, 50 percent and 37 percent of the total policy transfers to farmers (the PSE) in Japan, the United States and the EU respectively. Hence market price support (as indicated by the gap between market prices and border prices, which is a component of the PSE not included in the above domestic support payments) is an important component of total assistance to farmers in these countries, particularly in Japan. Domestic support is a major contributor to total assistance to grain farmers in the United States and the EU, and to EU beef and sheep producers. From table A5 it is apparent that land-based payments make up the bulk of this support for wheat and coarse grains (historical entitlements in the case of the United States, and area-based payments in the EU). Capital-based payments, being the various payments and premia based on livestock numbers, dominate the domestic support to beef/sheep farmers in the EU. For beef/sheep farmers in the United States, it is intermediate input subsidies that contribute most of the payments made.

Table A4 Power of Domestic Support Payments – Selected Regions and
Commodities

Region	Total agricultural support		Domestic support as % value of production		
	Domestic support as % of value of production	Domestic support as % of total PSE	Wheat	Coarse grains	Beef & sheep
Japan	5.8	9	11.8	14.1	3.6
US	12.1	50	61.2	35.4	3.4
EU15	19.9	37	86.7	92.5	32.6

Source: Jensen (2002)

Table A5 Use of Domestic Support Payment Categories – Selected Regions and
Commodities

Categories of domestic support	Contributions to domestic support (%)		
	Wheat	Coarse grains	Beef & sheep
US			
-output subsidies	12.7	19.3	19.5
-intermediate input subsidies	3.9	6.6	61.4
-land-based payments	82.6	72.8	13.5
-capital-based payments	0.7	1.3	5.7
EU			
-output subsidies	0.5	0.2	0.9
-intermediate input subsidies	9.3	10.7	6.1
-land-based payments	73.4	69.4	0.9
-capital-based payments	16.8	19.6	92.1
Japan			
-output subsidies	0.0	0.0	14.7
-intermediate input subsidies	45.0	40.7	62.7
-land-based payments	41.0	48.2	0.0
-capital-based payments	14.0	11.1	22.7

Source: Jensen (2002)

Endnote

1. Calculated by dividing the total value of domestic support payments by the value of production.