Chapter 11
Protection and Support

A Agricultural Domestic Support

Pattawee Puangchit, Angel Aguiar and Erwin Corong

A.1 Background

This section describes how agricultural domestic support is drawn from the OECD Producer Support Estimates (PSE) database and incorporated into the GTAP Data Base. The PSE measures the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers at the farm gate that arise from policy measures, regardless of their form, objectives, or effects on production or income (OECD 2016).

Government policies affect domestic commodity prices through several channels. Border measures, such as tariffs, import quotas, and export subsidies, alter the wedge between domestic and world prices. Domestic measures, including administered prices, input subsidies, and public stockholding, can reinforce or offset those effects. Three principles define the PSE. First, transfers are attributed to agricultural producers regardless of policy intent or economic effect. Second, transfers are measured in gross terms, without deducting compliance costs. Third, transfers are measured at the farm gate, where support accrues to producers. These principles support comparability across diverse policy instruments.

The latest available PSE release is retrieved from the 2025 OECD reports. This release contains quantities and values for 72 products, which are mapped to 13 GTAP sectors. For single-commodity payments, the same principles as in GTAP 6 are followed, with payments allocated by factor to specific commodities. From GTAP 7 onward, the main implication of the revised OECD classification concerns group-transfer payments, which are allocated equi-proportionally across sectors depending on whether they apply to all commodities or to groups of commodities.

A.2 Allocation of PSE in the GTAP Data Base

The OECD PSE series cover 1986 to the present and distinguish between Market Price Support (MPS, category A1) and budgetary transfers (categories A2 through G). MPS captures indirect transfers generated by domestic price support and border measures, including tariffs. Since tariffs are already represented explicitly in the GTAP Data Base, MPS is excluded to avoid double counting. The retained components consist of budgetary outlays and revenue foregone at all levels of government. Administrative expenditures are excluded. When agricultural, fiscal, and calendar years differ, payments are assigned to the calendar year of production.

The retained budgetary transfers are classified by the basis on which support is provided:

— A2. Payments based on output;

— B. Payments based on input use;

— C. Payments based on current area, animal numbers, receipts, or income, with production required;

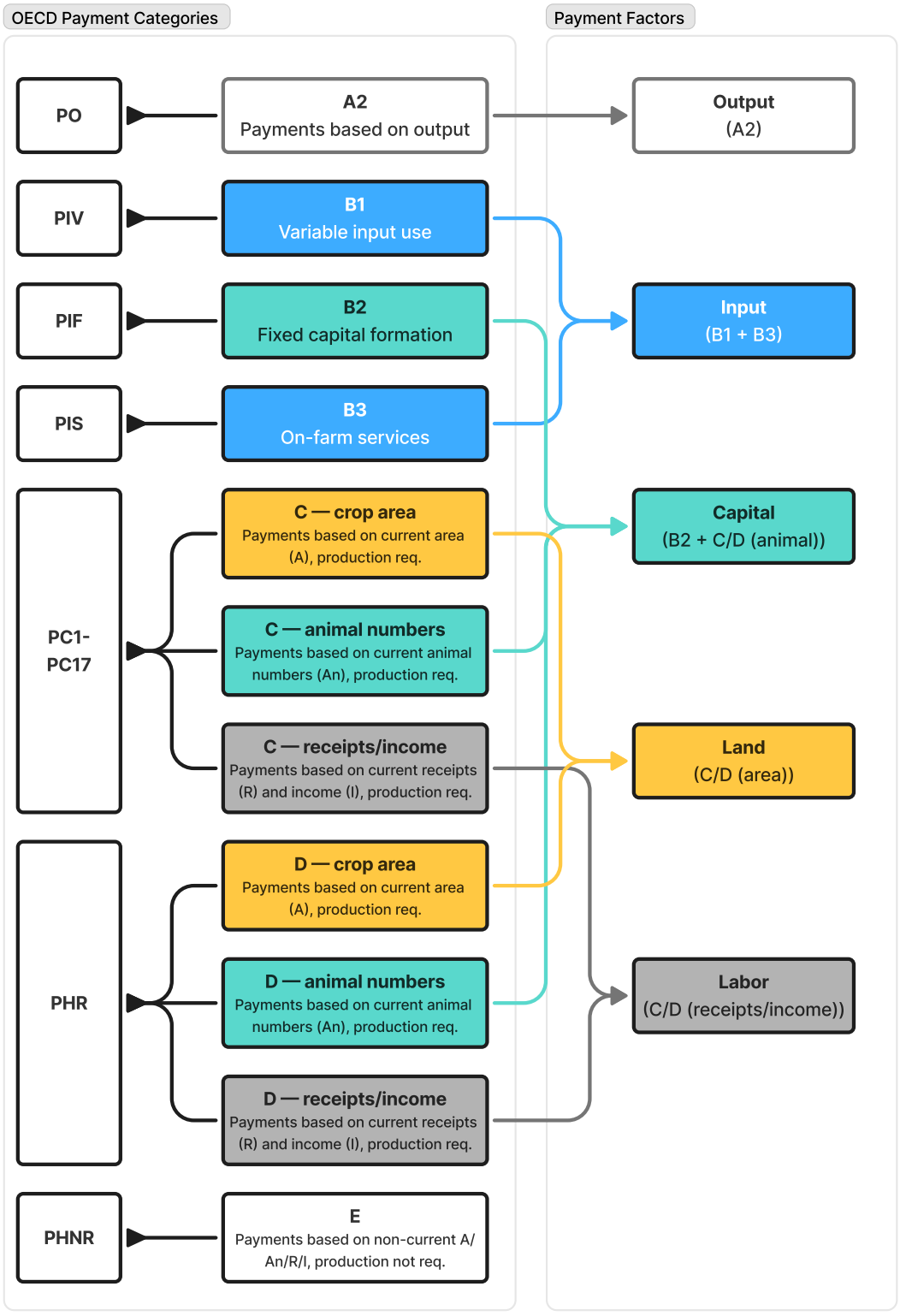
— D. Payments based on non-current area, animal numbers, receipts, or income, with production required;

— E. Payments based on non-current area, animal numbers, receipts, or income, with production not required;

In the GTAP Data Base, this classification is interpreted by the basis of support rather than by policy objectives or estimated effects. Figure 11.1 summarizes the mapping of OECD payment categories to GTAP support categories. Payments linked to cultivated area in categories C and D are treated as land subsidies; payments linked to animal numbers in categories C and D, and to fixed capital formation in category B, are treated as capital subsidies; and payments linked to farm receipts or income in categories C and D are treated as labor subsidies.

OECD values are reported in country-specific local currency units. Table 11.1 reports the countries, currency units, and exchange rates used in this GTAP Data Base release for the two new base years, 2019 and 2023. Year-specific exchange rates are used to convert local-currency values into millions of current USD. In the OECD PSE, the European Union has been reported as a single entity since 2007 OECD 2016, and the GTAP Data Base follows this reporting structure.

Figure 11.1: OECD PSE to GTAP database workflow



Notes: The OECD payment categories and variable abbreviations are based on the OECD database retrieved in 2025.

Table 11.1: Exchange rates for 27 countries in 2019 and 2023 (local currency per U.S. dollar)

ISO3	Country	Local currency	2019	2023
ARG	Argentina	Argentinian peso	48.23	296.11
AUS	Australia	Australian dollar	1.44	1.51
BRA	Brazil	Brazilian real	3.94	5.00
CAN	Canada	Canadian dollar	1.33	1.35
CHE	Switzerland	Swiss franc	0.99	0.90
CHL	Chile	Chilian peso	703.31	840.16
CHN	China	Renminbi-yuan	6.91	7.08
COL	Colombia	Colombian peso	3,281.07	4,326.69
CRI	Costa Rica	Costa Rica Colon	587.02	541.61
EUR	European Union	Euro	0.89	0.92
IDN	Indonesia	Indonesia Rupiah	14,150.28	15,236.99
IND	India	Indian Rupee	70.90	82.77
ISL	Iceland	Islandic krona	122.64	137.95
ISR	Israel	Israeli shekel	3.56	3.69
JPN	Japan	Japanese Yen	109.05	140.51
KAZ	Kazakhstan	Kazakhstani tenge	382.87	456.24
KOR	Republic of Korea	Korean Won	1,165.29	1,306.01
MEX	Mexico	Mexican peso	19.22	17.69
NOR	Norway	Norwegian krone	8.80	10.56
NZL	New Zealand	New Zealand dollar	1.52	1.63
PHL	Philippines	Philippine Peso	51.80	55.64
RUS	Russian Federation	Russian rouble	64.71	85.54
TUR	Turkey	New Turkish lira	5.68	23.79
UKR	Ukraine	Ukrainian hryvnia	25.85	36.57
USA	United States of America	US dollar	1.00	1.00
VNM	Viet Nam	Viet Namese Dong	23,226.28	23,837.11
ZAF	South Africa	South African rand	14.45	18.45

Notes: All data are from OECD.Stat. For the Indian rupee, Kazakhstani tenge, and Ukrainian hryvnia, OECD.Stat reports values from national sources.

Following the OECD classification revision adopted in 2007, country PSE totals are no longer reported by individual commodity OECD 2016. Instead, they are reported by commodity specificity as Single Commodity Transfers (SCT), Group Commodity Transfers (GCT), All Commodity Transfers (ACT), and Other Transfer Payments (OT). These commodity-specificity groups determine the commodity scope of the transfer, while the payment-basis classification determines the corresponding GTAP support category.

PSE payments are allocated to the GTAP Data Base using the OECD payment classification and the OECD–GTAP commodity concordance. SCT payments are assigned directly to the corresponding GTAP sector (Table 11.2). GCT payments are allocated across GTAP sectors within the relevant commodity group using payment-type-specific shares from the previous GTAP version. ACT payments are allocated across all GTAP agricultural sectors also using payment-

type-specific shares from the previous GTAP version. Finally, OT payments in category E are allocated across all GTAP agricultural sectors and factor types using the proportions from the previous GTAP version as well.

Table 11.2: Single Commodities Quantities and Value in 2019 and 2023

SC	Description	GSEC	2019		2023	
			Q (kt)	V (mn USD)	Q (kt)	V (mn USD)
AF	Alfalfa	OCR	50,350.58	9,934.86	45,149.69	11,198.02
AP	Apples	V_F	48,741.95	25,272.94	52,174.50	30,248.59
AV	Avocado	V_F	358.66	670.44	351.15	764.92
BA	Barley	GRO	131,092.90	23,248.84	111,682.80	23,152.78
BF	Beef and veal	CTL	56,657.57	235,051.55	57,815.88	299,229.60
BL	Blueberries	V_F	169.53	488.52	151.47	412.45
BN	Beans	V_F	1,196.20	840.10	1,062.96	1,097.10
BS	Bananas	V_F	53,033.62	16,976.45	62,286.08	21,524.03
CC	Chinese cabbage	V_F	3,331.70	1,598.57	3,671.68	1,427.49
CF	Coffee	OCR	7,562.99	13,033.79	7,498.84	17,081.34
CH	Cherries	V_F	256.35	1,199.24	433.48	1,736.68
CN	Coconut	V_F	14,765.00	1,955.45	14,892.63	2,193.57
CO	Cocoa beans	OCR	735.00	1,062.07	641.00	1,051.72
CP	Chick pea	V_F	11,080.00	7,062.87	11,039.00	7,812.76
CS	Cashew nuts	V_F	849.90	832.85	1,092.00	1,093.30
CT	Cotton	PFB	21,921.67	36,664.07	21,486.13	42,778.74
CU	Cucumber	V_F	548.10	1,216.00	530.20	1,005.65
CV	Cassava	V_F	16,350.00	3,464.17	16,760.00	6,431.44
CW	Common wheat	WHT	147,860.09	30,849.95	125,867.20	33,436.25
DW	Durum wheat	WHT	7,635.20	1,952.52	7,642.06	3,101.13
EG	Eggs	OAP	74,521.08	92,823.12	79,677.05	131,955.36
FL	Plants and flowers	OCR	261.29	23,120.80	362.97	24,415.52
FV	Fruits and vegetables	V_F	-	2,152.83	-	11,669.79
FX	Flaxseed	OSD	486.10	189.72	272.70	117.50
GA	Garlic	V_F	387.67	801.45	318.22	836.63
GN	Groundnuts	OSD	19,313.51	25,058.40	20,921.42	27,186.51
GP	Grapefruit	V_F	157.80	150.79	156.57	90.59
GR	Grapes	V_F	5,775.53	4,839.70	4,950.95	4,902.17
IF	Fruit and vegetables imported	V_F	-	67,548.12	-	93,327.50
LN	Lentils	V_F	2,382.00	870.62	1,801.10	1,334.80
MA	Maize	GRO	1,009,234.51	182,208.72	1,111,808.00	310,948.53
MG	Mango	V_F	21,182.39	12,631.47	24,613.48	11,627.32
MK	Milk	RMK	700,242.99	283,876.27	735,283.50	347,422.33
MN	Mandarin	V_F	746.70	1,431.51	681.60	1,233.40
OA	Oats	GRO	18,494.04	3,284.96	13,522.21	2,843.79
OG	Other grains	GRO	-	-	-	-
ON	Onion	V_F	26,737.93	3,009.96	29,273.23	1,818.96
OP	Other pulses	V_F	-	9,269.10	-	8,498.54
OR	Orange	V_F	1,849.30	1,009.32	1,904.02	708.68
PA	Pineapple	V_F	5,550.57	2,259.77	5,890.47	2,656.24
PB	Pepper	V_F	438.50	705.08	370.42	893.80
PC	Peaches	V_F	110.84	82.52	90.69	69.43
PE	Dry peas	V_F	4,236.50	846.05	2,608.80	889.36
PI	Plantain	V_F	4,085.76	1,172.80	4,197.53	1,968.43

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SC	Description	GSEC	2019		2023	
			Q (kt)	V (mn USD)	Q (kt)	V (mn USD)
PK	Pig meat	OAP	102,144.74	283,867.02	116,880.30	375,159.45
PL	Palm Oil	OSD	48,898.02	18,014.99	49,146.64	35,259.62
PO	Potatoes	V_F	165,414.67	41,608.10	159,457.40	30,676.40
PP	Red pepper	V_F	78.44	928.04	61.66	774.91
PR	Pears	V_F	209.70	618.09	183.40	509.59
PT	Poultry meat	OAP	109,671.85	217,286.44	114,437.40	263,335.33
RB	Rubber	OCR	4,486.20	3,716.38	3,510.30	2,678.28
RI	Rice	PDR	408,540.55	190,361.60	440,770.40	227,944.86
RP	Rapeseed	OSD	61,929.85	29,503.52	73,574.77	46,367.46
RS	Refined sugar	C_B	813,183.42	51,921.87	849,390.20	85,906.72
RY	Rye	GRO	1,763.10	233.58	1,940.60	174.04
SB	Soybeans	OSD	310,933.23	95,335.72	361,517.70	203,384.89
SF	Sunflower	OSD	48,072.16	15,701.19	48,049.80	20,194.94
SH	Sheep meat	CTL	10,272.40	66,762.86	11,299.50	73,466.48
SO	Sorghum	GRO	13,412.82	1,954.31	15,108.61	3,657.81
SP	Spinaches	V_F	217.80	784.99	206.80	560.83
SW	Strawberries	V_F	165.20	1,677.28	161.80	1,462.57
TB	Tobacco	OCR	68.22	258.35	85.51	325.56
TE	Tea	OCR	1,017.60	374.98	1,125.10	446.07
TM	Tomatoes	V_F	53,566.90	25,279.79	55,358.54	33,831.05
WI	Wine	V_F	18,913.90	25,400.47	15,895.33	27,774.18
WL	Wool	WOL	470.54	2,530.93	546.03	2,151.77
WM	Water melon	V_F	-	-	-	-
WO	Welsh Onion	V_F	465.30	1,218.75	416.30	1,069.70
WT	Wheat	WHT	507,498.83	117,418.09	537,755.20	157,145.93
XE	Non MPS commodities	V_F	-	947,692.32	-	943,573.18
XEFV	XEFV	OT	-	-	-	-
XF	Fruit and vegetables exported	V_F	-	425,428.62	-	587,791.17

Notes: SC refers to the single-commodity OECD code; GSEC denotes the GTAP sector; Q denotes quantity; and V denotes value.

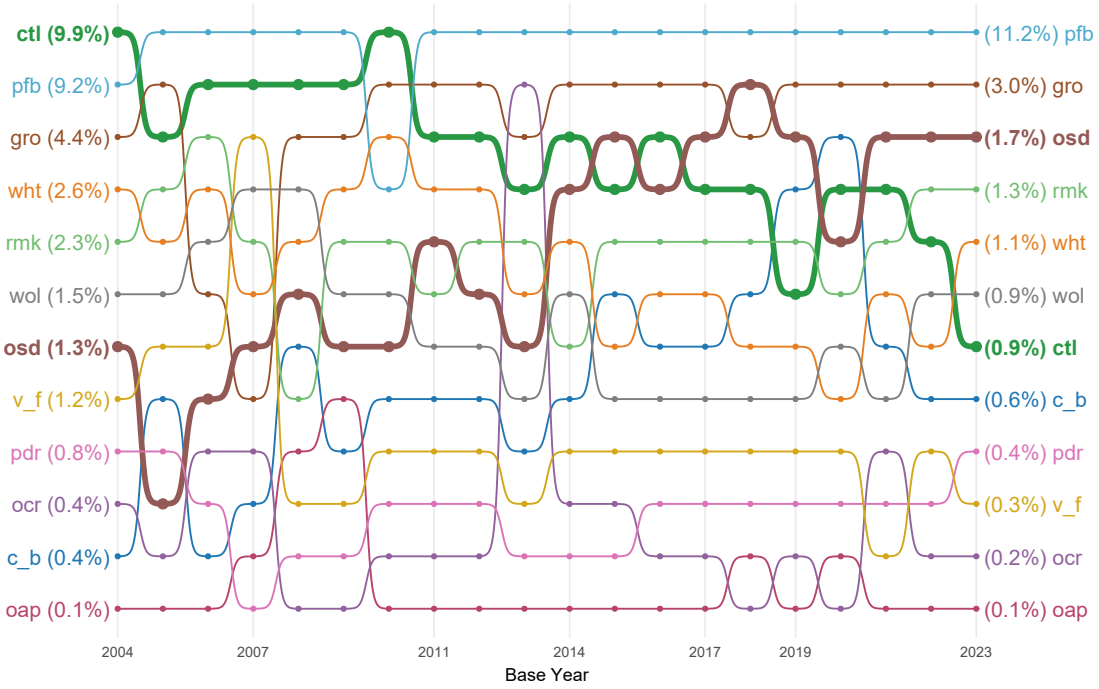
Figure 11.2 ranks GTAP agricultural sectors by the SCTG support-to-output ratio. This ratio measures support relative to each sector's production base.[1] The ranking shows a shift away from cattle (ctl), which falls from 9.9 percent in 2004 to 0.9 percent in 2023. Fibre crops (pfb) move in the opposite direction, rising from 9.2 percent to 11.2 percent and becoming the highest-ranked sector by 2023. Other grains (gro) remain among the higher-ranked sectors, while oil seeds (osd) increase from 1.3 percent to 1.7 percent. Wheat (wht), raw milk (rmk), and raw wool (wol) decline, and other animal products (oap), other crops (ocr), rice (pdr), and cane and beet (c_b) remain low-ranked throughout the period.

At the commodity-group level, GCTG payment intensity shows less broad sectoral turnover. Figure 11.3 shows that raw wool (wol) dominates the series, rising from 58.8 percent in 2004 to 152.8 percent in 2023. Fibre crops (pfb) also increase, from 6.3 percent to 15.1 percent, and become the second-highest-ranked sector by 2023. Cane and beet (c_b) and rice (pdr) also rise, while other crops (ocr), oil seeds (osd), other grains (gro), and wheat (wht) decline. Cattle (ctl), raw milk

[1]The ratio is computed as SCTG payments allocated to a sector divided by that sector's production value, rather than as the sector's share of total SCTG payments.

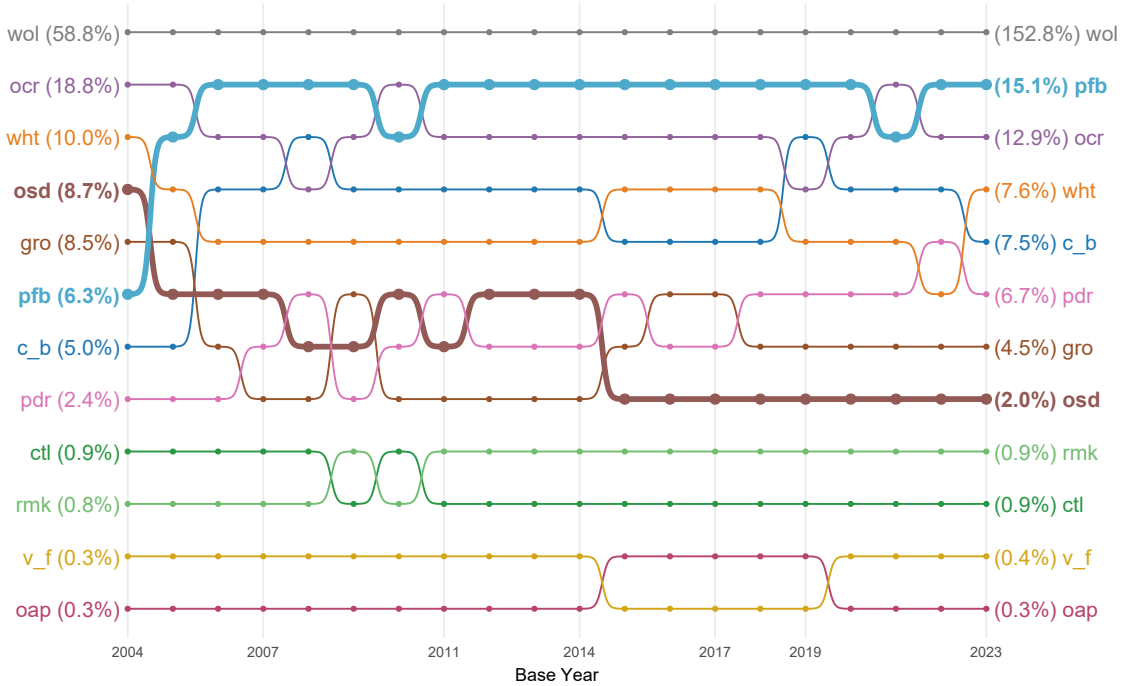
(rmk), vegetable, fruit and nuts (v_f), and other animal products (oap) remain low-ranked.

Figure 11.2: Ranking of SCT payments by GTAP agricultural sector



Notes: Sector names follow GTAP commodity codes. Percentages report payments as a share of the corresponding sector's production value in each base year.

Figure 11.3: Ranking of GCT payments by GTAP agricultural sector



Notes: Sector names follow GTAP commodity codes. Percentages report payments as a share of the corresponding sector's production value in each base year.

A.3 Data Processing Using an R Routine

Country-level PSE data are extracted from the OECD database.[2] For each country, we use the latest available OECD report, which contains the full time series. Later releases may introduce minor revisions to earlier values, but the series remains broadly consistent. Each report follows a consistent internal structure, comprising an aggregate table reporting support totals by policy category, a group commodity table, and separate commodity-specific tables.

OECD payment values are converted from local currency to millions of current USD. Exchange rates are matched by country and year; when values are missing, the closest available year is used. Production quantities, measured in thousand tonnes, and production values, measured in millions of local currency, are retrieved from the commodity-level data. Production values are then converted to millions of current USD using annual OECD exchange rates for consistency. Transfer payments are extracted by category for each reference year and written to separate GEMPACK-format text files. Separate outputs are prepared for OT, GCT, ACT, and SCT.

GCT payments are defined over commodity groups rather than individual commodities. GCT1–GCT9 have a common sector composition across countries (Table 11.3), whereas GCT10 and above have country-specific compositions (Table 11.4). GCT is converted to GCTG by matching each country-GCT pair to the corresponding GTAP sectors and allocating payments across

[2]OECD PSE country reports are provided in `.XLS` format; see the OECD Agricultural Policy Monitoring and Evaluation country data portal.

those sectors using payment-type-specific shares from the previous GTAP version. SCT is converted to SCTG by aggregating OECD products mapped to the same GTAP sector, as shown in Table 11.2.

A validation process is applied to check mappings and missing values by flagging any OECD product code or country-group commodity combination in the raw data that lacks a corresponding GTAP sector mapping. This ensures that updates to the OECD classification are identified immediately rather than silently producing zero values in the output.

Table 11.3: Common Group Commodity Composition

GCT	Description	GTAP Sector
GCT1	All crops	pdr, wht, gro, v_f, osd, c_b, pfb, ocr
GCT2	All arable crops	pdr, wht, gro, osd, c_b, pfb
GCT3	Grains	pdr, wht, gro
GCT4	Oilseeds	osd
GCT5	Other crops	v_f, ocr
GCT6	All fruits and vegetables	v_f
GCT7	All livestock	ctl, oap, rmk, wol
GCT8	Ruminants	ctl, rmk, wol
GCT9	Non-ruminants	oap

Table 11.4: Specific Group Commodity Composition by country

ISO3	GCT10	GCT11	GCT12	GCT13	GCT14	GCT15	GCT16	GCT17
ARG	ctl, rmk	–	–	–	–	–	–	–
AUS	oap	–	–	–	–	–	–	–
CAN	pdr, wht, gro, v_f, osd, c_b, pfb, ocr	oap	v_f	–	–	–	–	–
CHE	pdr, wht, gro, osd	pdr, wht, gro, v_f, osd, c_b, pfb, ocr	pdr, wht, gro, v_f, osd, c_b, pfb, ocr, ctl	v_f	–	–	–	–
CHN	osd, wht, gro	wht, pdr, gro, osd, pfb	–	–	–	–	–	–
EUR	ocr	wht, gro, osd, ocr	ctl, rmk	–	–	–	–	–
IDN	pdr, gro, osd	–	–	–	–	–	–	–
IND	v_f	–	–	–	–	–	–	–
ISL	ctl, wol	rmk, ctl	–	–	–	–	–	–
ISR	v_f	v_f	v_f	ctl	–	–	–	–

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ISO3	GCT10	GCT11	GCT12	GCT13	GCT14	GCT15	GCT16	GCT17
JPN	wht, gro, osd	–	–	–	–	–	–	–
KAZ	ctl, rmk	ocr	v_f	–	–	–	–	–
KOR	ctl, rmk	ctl, oap	–	–	–	–	–	–
MEX	gro, v_f	gro, osd	ocr	v_f	v_f	v_f, ocr	gro, v_f, pdr	ctl, oap
NOR	–	v_f	ocr	–	–	–	–	–
NZL	ctl, wol, rmk	–	–	–	–	–	–	–
RUS	v_f	oap	–	–	–	–	–	–
TUR	–	wht, c_b, pfb, osd	ocr	–	–	–	–	–
UKR	pdr, wht, gro, v_f, osd, c_b, pfb, ocr, wol	gro, osd	–	–	–	–	–	–
USA	v_f	v_f	pdr, wht, gro, c_b, pfb	–	–	–	–	–
ZAF	ctl	ocr	–	–	–	–	–	–

Notes: "–" indicates that the country does not have the corresponding GCT.

References

OECD (Mar. 2016). *OECD's Producer Support Estimate and Related Indicators of Agricultural Support: Concepts, Calculations, Interpretation and Use (The PSE Manual)*. OECD Trade and Agriculture Directorate. URL: https://www.oecd.org/content/dam/oecd/en/topics/policy-issues/agricultural-policy-monitoring/producer-support-estimates-manual.pdf.