T United Kingdome of Great Britain and Northern Ireland

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T.1 Introduction

The UK input-output (I-O) table in the GTAP 12 Data Base was constructed from key input output tables supplied by the Office for National Statistics (ONS). The data provided covers the calendar year 2019, with comparison to the previous I-O tables released in 2018. The data were cleaned and transformed to meet GTAP's requirements. Finally, the data tables were reclassified to provide the matrices required by GTAP. This paper describes the construction of the British input-output table for the GTAP 12 Data Base. The provision of the data for the UK was undertaken as part of the Department for Business and Trade's commitment as a member of the GTAP consortium.

In line with GTAP requirements, as outlined in Huff et al. 2000, the data for the UK were provided in four matrices:

— the supply and use of the 65 GTAP products and three primary factors of production (land, labour and capital) without product taxes (GTAP matrix UF);

— the supply and use of the 65 GTAP products and three primary factors with product taxes (GTAP matrix UP);

— output of the 65 GTAP products (GTAP vector OP); and

— imports of the 65 GTAP products (GTAP vector MF).

Data definitions and classifications of I-O information available to undertake the update do not match precisely with the requirements of GTAP; therefore, a 'building block' approach has been adopted. Under this approach, available information was first adjusted or reclassified according to GTAP requirements. When this processing was complete, the individual building blocks so derived were assembled according to the structure of the GTAP Data Base as defined by the tables UF, UP, OP and MF.

Section 1. describes the key data sources used, while section 2. outlines the processing of source data into a form corresponding to GTAP requirements. Section 3. describes how these data were brought together into the GTAP format. Section 4. notes key conceptual differences and sensitivities between this latest version and the UK I-O table in the GTAP 11 Data Base. Finally, section 5 notes key diagnostics tests applied to the data base before its distribution.

T.2 Source Data

The primary data source used to construct the UK I-O table for GTAP were versions of the 2019 I-O tables made publicly available by the UK Office for National Statistics for the calendar year of

2019.[38] The ONS tables contain detailed data on the supply and use of 105 products in the UK and the associated product tax payments (see appendix table 11.B.1 for a list of tables of supply, use and derived tables provided in electronic format for the 105- sector UK I-O product classification).

Two versions of the ONS I-O Table were compared, one from 2018 and one from 2019. They differed only in the year to which they referred as changes to collection methods were applied retrospectively by the ONS. Since the last data submission in 2013, the ONS has updated the Blue Book that governs the way UK National Accounts are compiled. Several changes have been made, including improved estimation of the value of pension contributions and tax treatment of other insurance products.[39] Improvements have also been made to data collection for data relating to travel statistics and trade. Taxes on labour and capital are not explicitly included in the data but analysis of aggregate level ONS releases suggests that tax rates have remained fairly stable in the period since the last data submission.[40]

Strengths

— ONS data are in general regarded as highly reliable and comprehensive.

— Product by product data were available and were balanced with no negative values for intermediates.

— Commodity and production taxes were separated.

— Separate import and domestic use matrices were available at basic prices.

— Mixed income data are available by sector so it can be apportioned into labour and capital income

Weaknesses

— Taxes on labour and capital are not included in the data.

— Detailed tariff data or information on taxes on imported products are not collected.

— A small number of services experience changes in inventories.

— There are no separate values for capital and land rentals. They are grouped in only one vector of operating surplus and mixed income.

[38]The ONS defines margin activities to be the difference between the price received by producers (basic prices) and the price paid by the purchaser of a good or service (producers' prices). Margin activities fall into two broad groups — mark-ups and taxes. Mark-ups primarily increase the value of goods without otherwise transforming them and include wholesale and retail trade margins and transport margins. Tax margins are taxes or subsidies levied on products and include sales taxes, VAT, excise taxes, customs duties (tariffs).

[39]For full details, follow the link to the ONS website.

[40]See ONS link to National Accounts.

T.3 Data processing

The ONS data, although similar to the format of the GTAP data requirements, did not fully satisfy all aspects of the GTAP requirements as set out in Huff et al. 2000. The main adjustments applied to the ONS data were:

- reconciliation of basic price and producer price flows
- amalgamating export flows into a single vector rather than separating into EU/non-EU.
- re-classification of the ONS primary factor inputs to GTAP input categories
- aggregation of the ONS investment categories to the single GTAP investment category
- Bifurcation of any ONS sectors that overlap multiple GTAP sectors.[41]
- re-classification of flows classified by ONS industry categories to GTAP categories.[42]

The process for creating the UK I-O tables for the GTAP 12 Data Base is described below.

1. Adjusted 2019 ONS Input-Output Tables – product by product (SNA2008). (105 commodities – 105 products)
2. Split one ONS sector to give the 104x104 product by product table.
3. Check balances.
4. Process taxes from vector form to its own matrix and apply this to the basic price matrix.
5. Convert from ONS-104 to GTAP 65, via a GTAP 49 table.[43]

T.4 Reconciling Basic Price and Producer Price Flows

GTAP requires that data on usage of products be reported at basic prices (matrix UF) and at producers' prices (matrix UP) with the difference between the two matrices being taxes on products. The ONS provided data at basic prices together with a vector of commodity taxes by commodity. Commodity taxes include sales taxes, VAT, and excise duties on products. As the various commodity taxes were aggregated and provided in a vector, the amount of tax to be assigned to each element needed to be estimated. In order to develop the producers' price matrix, an estimate of the proportion of commodity tax to be assigned to each element in the I-O table in basic prices must be added to each element in the basic price table. This imputation of the commodity tax was done

[41] This was necessary with services auxiliary to financial service and insurance services.
[42] Labour income was left unadjusted from ONS data in this submission.
[43] The submission aggregated several GTAP 65 sectors, which GTAP will disaggregate. See tables for more details.

on an ad valorem basis, with every commodity and use assumed to face the same tax rate. This assumption relates only to the spread of imputed taxes within each commodity, acknowledging that it is the final sales of the product that faces the taxes and not the inputs. Hence, an intermediate commodity that makes up X% of the total will be assigned X% of that final commodity's taxes. In this way, the balance of the I-O table was preserved while creating the purchasers' price index.

T.5 Reallocation of one commodity sector

The ONS sector named 'Services auxiliary to financial services and insurance services' overlaps two GTAP 65 sectors: other financial intermediation, and insurance. A simple assumption was made to split this sector out into the other ONS sectors that map one-to-one onto GTAP 65 sectors: each element of 'Services auxiliary. . . ' was allocated into the corresponding element of the financial services or insurance sector according to their respective size. In this way, over 70% of the sector was allocated to the ONS financial services sector, with the remainder being allocated into the ONS insurance sector.

T.6 Reclassification of Primary Factors of Production

The use table supplied by the ABS (ABS I-O table 2) provided data on the inputs of two primary factors of production — Compensation of employees (row P1) and Gross operating surplus & mixed income (row P2) — by each industry. These categories overlap with the three primary input categories — land, labour and capital — specified in the GTAP Data Base. To complete the I-O table for GTAP, these ONS categories were left unaltered but for the addition of returns to land, for which each element was recorded as zero.

T.7 Aggregation of Exports & Changes in Stocks

The ONS provided data on commodity sales to each category of final demand —final consumption expenditure disaggregated to private and government; gross fixed capital formation aggregated; changes in inventories; acquisitions less disposal of valuables, and exports disaggregated into services, exports to the EU, and exports to the rest of the world (table 11.B.3). The categorisation is similar to that applied in GTAP, with the exception that the ONS categories of Export of goods to the EU; Export of goods to the Rest of the World; and Exports of Services provide a more detailed breakdown than required for GTAP. To complete the I-O table for GTAP, these categories were aggregated to form the GTAP final demand category, Exports.

Similarly, the ONS categorisation is more detailed than the requirements of GTAP insofar as the ONS breaks it down into changes in inventories, and acquisitions less disposal of valuables. As buying and selling of valuables simply represents a transfer of value rather than production, it is included in the GTAP sector called changes in stocks, although acquisitions less disposal of valuables is subtracted from changes in inventories.

Table 8.36: Final Demand Concordance

ONS Final Demand Category	Concordant GTAP Sector
Final consumption expenditure (FCE)	None (it's a total).
FCE by government	Government
FCE by households	Consumption
FCE by non-profit organisations serving households (NPISH)	Consumption
Gross fixed capital formation	Investment
Changes in inventories	Changes in stocks
Acquisitions less disposals of valuables	Changes in stocks (negative)
Exports of goods to EU	Exports
Exports of Services	Exports

T.8 Treatment of Other Taxes Less Subsidies on Production

The ONS definition of total sectoral usage other taxes less subsidies on production' whereas the GTAP definition of total usage does not (matrices UF and UP). This causes no issues throughout the process.

T.9 Mapping ONS Products to GTAP Counterparts

The UK I-O tables have 105 sectors (these are listed in appendix table 1) compared to the 65 in the GTAP 12 Data Base. To complete the I-O on a 65-sector basis, a concordance was established between the two classifications (appendix tables 2 & 3) and used to map the I-O data from the 105 ONS sectors to the 65 GTAP sectors. The concordance shows that 94 ONS sectors can be linked directly to one of the GTAP sectors without adjustment. However, it also shows that 10 ONS sectors were linked to more than one GTAP sector. For example, the ONS sector Extraction Of Crude Petroleum And Natural Gas & Mining Of Metal Ores is linked to the GTAP sectors oil, gas, and other mining extraction. Hence, the 105 ONS sectors map to 49 submitted sectors, which can then be disaggregated back to GTAP 65.

T.10 I-O Table Supplied to GTAP

In order to convert our data to conform with the data base structure outlined in Huff et al. 2000, we adopted the fragmented approach to create many arrays. Assembly of the final tables involved converting these arrays by doing the following:

— for the matrix UF, merging the domestic usage of domestic production, imported supplies and primary inputs by sector and category of final demand, evaluated at basic prices into a single array.

— for the matrix UP, aggregating estimated product taxes (net) by sector and category of use with estimates of usage at basic prices (matrix UF) to provide estimates of usage of domestic production and imported supplies at producer prices.

— for the vector OP, transferring estimated output by sector from the building block tables to a single array. The value of output is estimated at producers' prices and, as such, is inclusive of all domestically produced and imported inputs, and product and commodity taxes on those inputs (matrix UP) plus other taxes and subsidies on production not included in matrix UF or UP).

— for the vector MF, transferring the total value of imports by sector (single product industry basis) from the input tables to a single array.

T.11 Comparability with Previous UK I-O Tables

The starting point for the UK I-O table in the GTAP 11 Data Base was the UK submission to GTAP of 2013, based on ONS data from the same year. That data base was benchmarked to ONS input-output tables for that year. The starting point for the UK I-O table in the GTAP 12 Data Base was the publicly released I-O table from the ONS for the reference year 2019. Since 2013, the ONS has enacted minor methodological changes to classifications and data collection in a number of areas including insurance; and labour income, which has decreased mixed income growth. A point of difference between the two latest submissions is that mixed income was aggregated with labour income in the previous submission but apportioned into labour and capital in the latest version. The approach taken applies method five[44] from the ONS' approach to splitting mixed income into labour and capital and applies it to each sector individually. This apportionment therefore follows the existing split of labour and capital within each sector. All the data used for the latest submission were publicly available aside from the mixed income data, which were procured separately.

T.12 Diagnostics

The UK I-O table for the GTAP Data Base was checked to ensure that:

— there were no negative values

— the pre and post-disaggregation value of costs and sales balanced

— total sales equalled total costs in total and by sector

— tax rates were positive and sensible for commodity taxes.

— the values for GDP, GDP(I) and GDP(E) were correct

— the components of GDP(I) and GDP(E) were correct, and

[44] Trends in the UK labour share - Office for National Statistics

— the GTAP entropy input-output cost shares appeared[45] correct when comparing the 2018 I-O table and the table previously submitted and then between the 2018 and 2019 I-O tables.

T.13 Entropy Comparisons

Two comparisons were possible thanks to the three I-O tables available for comparison (the 2013 table previously submitted, and the 2018 and 2019 ONS data processed in this endeavour). The inclusion of the 2018 data was purely for the purposes of quality assurance. When comparing the 2013 table with 2018, there are some significant changes as measured by 'entropy.'[46] There are markedly higher self-usages in GTAP sectors construction, gas distribution, and iron and steel. Motor vehicles also no longer supplied inputs to other transport equipment. Aside from those sectors, most other changes were fairly modest. Factors of production shares differed less than intermediate shares, with the most notable changes being a greater use of capital in forestry, and a greater share of labour in the manufacture of computer and electronic products. Overall, the share of value added in final output generally rose slightly.

In order to check that the process was reproducible, it was necessary to then compare the 2018 data with the final 2019 data to be submitted to GTAP. This exercise resulted in minimal changes to the intermediate shares and similarly small changes to valued-added shares. In fact, the only notable changes were further increases of the capital share in forestry and the labour share in manufacture of computer and electronic products.

References

Huff, Karen et al. (2000). *Contributing Input-Output Tables to the GTAP Data Base*. GTAP Technical Paper 01. Department of Agricultural Economics, Purdue University, West Lafayette, IN: Global Trade Analysis Project (GTAP). URL: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=304.

Walmsley, Terrie and Robert McDougall (2007). *Using Entropy to Compare IO tables*. GTAP Research Memorandum 09. Department of Agricultural Economics, Purdue University, West Lafayette, IN: Global Trade Analysis Project (GTAP). URL: https://doi.org/10.21642/GTAP.RM09.

[45] Any significant changes to sector shares needed to be traced back to the original I-O table or to other ONS data to confirm that the data had changed rather than being a mapping issue.

[46] Following the procedure in Walmsley and McDougall 2007.

Appendix

Table 8.37: Mapping from UK-CGE commodities to the aggregated GSEC3 commodities in the submitted IO table.

Commodity number	ONS industry code	Industry description	Mapping to sectors of submitted IO table	Component GSEC3 commodities
1.	1	Products of agriculture, hunting and related services	AgricHunting	pdr wht gro v_f osd c_b pfb ocr ctl oap rmk wol
2.	2	Products of forestry, logging and related services	frs	frs
3.	3	Fish and other fishing products; aquaculture products; support services to fishing	Fsh	fsh
4.	5	Coal and lignite	Coa	coa
5.	06&07	Extraction Of Crude Petroleum And Natural Gas & Mining Of Metal Ores	oil_gas_omn	oil gas omn
6.	8	Other mining and quarrying products	oil_gas_omn	omn
7.	9	Mining support services	oil_gas_omn	omn
8.	10.1	Preserved meat and meat products	cmt_omt	cmt omt
9.	10.2-3	Processed and preserved fish, crustaceans, molluscs, fruit and vegetables	Ofd_pcr_sgr	ofd
10.	10.4	Vegetable and animal oils and fats	Vol	vol
11.	10.5	Dairy products	Mil	mil
12.	10.6	Grain mill products, starches and starch products	ofd_pcr_sgr	pcr ofd
13.	10.7	Bakery and farinaceous products	ofd_pcr_sgr	ofd
14.	10.8	Other food products	ofd_pcr_sgr	ofd sgr
15.	10.9	Prepared animal feeds	ofd_pcr_sgr	ofd
16.	11.01-6 and 12	Alcoholic beverages & Tobacco products	b_t	b_t
17.	11.07	Soft drinks	b_t	b_t
18.	13	Textiles	tex	tex
19.	14	Wearing apparel	wap	wap
20.	15	Leather and related products	lea	lea
21.	16	Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials	lum	lum
22.	17	Paper and paper products	ppp	ppp
23.	18	Printing and recording services	ppp	ppp
24.	19	Coke and refined petroleum products	p_c	p_c
25.	20.3	Paints, varnishes and similar coatings, printing ink and mastics	chm	chm
26.	20.4	Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	chm	chm
27.	20.5	Other chemical products	chm	chm
28.	20A	Industrial gases, inorganics and fertilisers (all inorganic chemicals) - 20.11/13/15	chm	chm
29.	20B	Petrochemicals - 20.14/16/17/60	chm	chm
30.	20C	Dyestuffs, agro-chemicals - 20.12/20	chm	chm

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Commodity number	ONS industry code	Industry description	Mapping to sectors of submitted IO table	Component GSEC3 commodities
31.	21	Basic pharmaceutical products and pharmaceutical preparations	bph	bph
32.	22	Rubber and plastic products	rpp	rpp
33.	23OTHER	Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9	nmm	nmm
34.	23.5-6	Cement, lime, plaster and articles of concrete, cement and plaster	nmm	nmm
35.	24.1-3	Basic iron and steel	i_s	i_s
36.	25OTHER	Fabricated metal products, excl. machinery and equipment and weapons & ammunition - 25.1-3/25.5-9	fmp	fmp
37.	24.4-5	Other basic metals and casting	nfm	nfm
38.	25.4	Weapons and ammunition	fmp	fmp
39.	26	Computer, electronic and optical products	ele	ele
40.	27	Electrical equipment	eeq	eeq
41.	28	Machinery and equipment n.e.c.	ome	ome
42.	29	Motor vehicles, trailers and semi-trailers	mvh	mvh
43.	30.1	Ships and boats	otn	otn
44.	30.3	Air and spacecraft and related machinery	otn	otn
45.	30OTHER	Other transport equipment - 30.2/4/9	otn	otn
46.	31	Furniture	omf	omf
47.	32	Other manufactured goods	omf	omf
48.	33.15	Repair and maintenance of ships and boats	omf	omf
49.	33.16	Repair and maintenance of aircraft and spacecraft	omf	omf
50.	33OTHER	Rest of repair; Installation - 33.11-14/17/19/20	omf	omf
51.	35.1	Electricity, transmission and distribution	ely	ely
52.	35.2-3	Gas; distribution of gaseous fuels through mains; steam and air conditioning supply	gdt	gdt
53.	36	Natural water; water treatment and supply services	wtr	wtr
54.	37	Sewerage services; sewage sludge	wtr	wtr
55.	38	Waste collection, treatment and disposal services; materials recovery services	wtr	wtr
56.	39	Remediation services and other waste management services	wtr	wtr
57.	41-43	Construction	cns	cns
58.	45	Wholesale and retail trade and repair services of motor vehicles and motorcycles	trd	trd
59.	46	Wholesale trade services, except of motor vehicles and motorcycles	trd	trd
60.	47	Retail trade services, except of motor vehicles and motorcycles	trd	trd
61.	49.1-2	Rail transport services	otp	otp
62.	49.3-5	Land transport services and transport services via pipelines, excluding rail transport	otp	otp
63.	50	Water transport services	wtp	wtp

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Commodity number	ONS industry code	Industry description	Mapping to sectors of submitted IO table	Component GSEC3 commodities
64.	51	Air transport services	atp	atp
65.	52	Warehousing and support services for transportation	whs	whs
66.	53	Postal and courier services	cmn	cmn
67.	55	Accommodation services	afs	afs
68.	56	Food and beverage serving services	afs	afs
69.	58	Publishing services	cmn	cmn
70.	59-60	Motion Picture, Video & TV Programme Production, Sound Recording & Music Publishing services & Programming And Broadcasting services	cmn	cmn
71.	61	Telecommunications services	cmn	cmn
72.	62	Computer programming, consultancy and related services	cmn	cmn
73.	63	Information services	cmn	cmn
74.	64	Financial services, except insurance and pension funding	ofi	ofi
75.	65	Insurance and reinsurance, except compulsory social security & Pension funding	ins	ins
76.	66	Services auxiliary to financial services and insurance services	Was split between …	ofi ins
77.	68.1-2	Real estate services, excluding on a fee or contract basis and imputed rent	rsa	rsa
78.	68.2IMP	Owner-Occupiers' Housing Services	dwe	dwe
79.	68.3	Real estate services on a fee or contract basis	rsa	rsa
80.	69.1	Legal services	obs	obs
81.	69.2	Accounting, bookkeeping and auditing services; tax consulting services	obs	obs
82.	70	Services of head offices; management consulting services	obs	obs
83.	71	Architectural and engineering services; technical testing and analysis services	obs	obs
84.	72	Scientific research and development services	obs	obs
85.	73	Advertising and market research services	obs	obs
86.	74	Other professional, scientific and technical services	obs	obs
87.	75	Veterinary services	obs	obs
88.	77	Rental and leasing services	obs	obs
89.	78	Employment services	obs	obs
90.	79	Travel agency, tour operator and other reservation services and related services	obs	obs
91.	80	Security and investigation services	obs	obs
92.	81	Services to buildings and landscape	obs	obs
93.	82	Office administrative, office support and other business support services	obs	obs
94.	84	Public administration and defence services; compulsory social security services	osg	osg
95.	85	Education services	edu	edu

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Commodity number	ONS industry code	Industry description	Mapping to sectors of submitted IO table	Component GSEC3 commodities
96.	86	Human health services	hht	hht
97.	87-88	Residential Care & Social Work services	hht	hht
98.	90	Creative, arts and entertainment services	ros	ros
99.	91	Libraries, archives, museums and other cultural services	ros	ros
100.	92	Gambling and betting services	ros	ros
101.	93	Sports services and amusement and recreation services	ros	ros
102.	94	Services furnished by membership organisations	ros	ros
103.	95	Repair services of computers and personal and household goods	ros	ros
104.	96	Other personal services	ros	ros
105.	97	Services of households as employers of domestic personnel	ros	ros

Table 8.38: Commodities in the submitted IO table

Commodity number	Aggregated GSEC3	Commodity number	Aggregated GSEC3
1	AgricHunting	26	ome
2	frs	27	mvh
3	fsh	28	otn
4	coa	29	omf
5	oil_gas_oxt	30	ely
6	cmt_omt	31	gdt
7	ofd_pcr_sgr	32	wtr
8	vol	33	cns
9	mil	34	trd
10	b_t	35	otp
11	tex	36	wtp
12	wap	37	atp
13	lea	38	whs
14	lum	39	cmn
15	ppp	40	afs
16	p_c	41	ofi
17	chm	42	isr
18	bph	43	rsa
19	rpp	44	dwe
20	nmm	45	obs
21	i_s	46	osg
22	nfm	47	edu
23	fmp	48	hht
24	ele	49	ros
25	eeq		

Table 8.39: Mapping from GSEC3 commodities to sectors of the submitted IO table

	GSEC3 Code	Description	Aggregated GSEC3
1	pdr	Paddy rice	AgricHunting
2	wht	Wheat	AgricHunting
3	gro	Cereal grains nec	AgricHunting
4	v_f	Vegetables, fruit, nuts	AgricHunting
5	osd	Oil seeds	AgricHunting
6	c_b	Sugar cane, sugar beet	AgricHunting
7	pfb	Plant-based fibers	AgricHunting
8	ocr	Crops nec	AgricHunting
9	ctl	Bovine cattle, sheep and goats, horses	AgricHunting
10	oap	Animal products nec	AgricHunting
11	rmk	Raw milk	AgricHunting
12	wol	Wool, silk-worm cocoons	AgricHunting
13	frs	Forestry	frs
14	fsh	Fishing	fsh
15	coa	Coal	coa
16	oil	Oil	oil_gas_omn
17	gas	Gas	oil_gas_omn
18	omn	Minerals nec	oil_gas_omn
19	cmt	Bovine meat products	cmt_omt
20	omt	Meat products nec	cmt_omt
21	vol	Vegetable oils and fats	vol
22	mil	Dairy products	mil
23	pcr	Processed rice	ofd_pcr_sgr
24	sgr	Sugar	ofd_pcr_sgr
25	ofd	Food products nec	ofd_pcr_sgr
26	b_t	Beverages and tobacco products	b_t
27	tex	Textiles	tex
28	wap	Wearing apparel	wap
29	lea	Leather products	lea
30	lum	Wood products	lum
31	ppp	Paper products, publishing	ppp
32	p_c	Petroleum, coal products	p_c
33	chm	Chemical products	chm
34	bph	Basic pharmaceutical products	bph
35	rpp	Rubber and plastic products	rpp
36	nmm	Mineral products nec	nmm
37	i_s	Ferrous metals	i_s
38	nfm	Metals nec	nfm
39	fmp	Metal products	fmp
40	ele	Computer, electronic and optical products	ele
41	eeq	Electrical equipment	eeq
42	ome	Machinery and equipment nec	ome
43	mvh	Motor vehicles and parts	mvh
44	otn	Transport equipment nec	otn
45	omf	Manufactures nec	omf
46	ely	Electricity	ely
47	gdt	Gas manufacture, distribution	gdt
48	wtr	Water	wtr
49	cns	Construction	cns

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	GSEC3 Code	Description	Aggregated GSEC3
50	trd	Trade	trd
51	afs	Accommodation, Food and service activities	afs
52	otp	Transport nec	otp
53	wtp	Water transport	wtp
54	atp	Air transport	atp
55	whs	Warehousing and support activities	whs
56	cmn	Communication	cmn
57	ofi	Financial services nec	ofi
58	isr	Insurance	isr
59	rsa	Real estate activities	rsa
60	obs	Business services nec	obs
61	ros	Recreational and other services	ros
62	osg	Public Administration and defense	osg
63	edu	Education	edu
64	hht	Human health and social work activities	hht
65	dwe	Dwellings	dwe