Venezuela

Roberto Ferrer P., Jorge Hernández and Agustín Velázquez[1]

1 Introduction

This note documents the process by which the Venezuelan Input-Output Table (VIOT) was put together for the purpose of updating the database available to the Global Trade Analysis Project (GTAP). The previous Venezuelan table available to GTAP was a 1986 database assembled by members of the now extinct CORDIPLAN.[2] The new table built for the year 1997 is the second of such efforts.

The Central Bank of Venezuela (CBV) as the leading institution in charge of compiling economic statistics in Venezuela, has assumed this task as its own. More specifically, this is an initiative of the Bureau of Economic Research (of the Vice-presidency of Studies) supported by the Macroeconomic Accounts Division[3] (of the Statistical Office[4]), both at CBV.

This document is divided in five sections. The next section gives reference information and a description of the source tables that constitute the basis of this update. Section three describes the different treatments that were applied to the source tables in order to comply with GTAP requirements. Section four comments on the sectoral classification of the data sources and its mapping to the GTAP classification. Finally, we end with some remarks in section five.

2 The Source Data

The basis for the VIOT are a series of detailed statistical tables available for Venezuela in the year 1997. These tables were constructed by the CBV within the Program for Macroeconomic Data Update[5] whose goals were updating the base

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[1]The authors gratefully acknowledge helpful comments and discussion with Carmen M. Lurúa and Rodolfo Esquivel. Please address questions regarding content to Roberto Ferrer at rferrer@bcv.org.ve. *The views expressed here are the authors' and not necessarily those of the Central Bank of Venezuela. Any errors are the authors' responsibility.*

[2]Acronym for Oficina Central de Coordinación y Planificación de la Presidencia de la República, institution replaced by the Ministry of Planning and Development and currently, the Ministry of Planning and Finance.

[3]Translated from "Departamento de Cuentas Macroeconómicas".

[4]Translated from "Gerencia de Estadísticas Económicas".

[5]Officialy known as Programa de Actualización de las Estimaciones Macroeconómicas (PRACEM).

year of economic statistics and adapting Venezuela's national accounts methodology to those prescribed by the 1993 revision of the United Nations System of National Accounts (UN-SNA).

Below, we mention the tables that are concerned with VIOT updating:

1. domestic use table valued at basic prices
2. imported use table valued at CIF prices
3. import duties table
4. value-added tax table (domestic and imported are aggregated)
5. other taxes on products table (domestic and imported are aggregated)
6. subsidies on products table (domestic and imported are aggregated)

The general structure of the source tables is that of the UN-SNA and each of them has a sectoral detail of 300 commodities and 121 activities. All the tables are expressed in millions of (new) Bolívares (Bs.) and have an industry by commodity format. It can readily be noticed that those tables that are made up of aggregated values, have to be decomposed in someway as to assign the corresponding values between the domestic and imported parts. Other treatments are also necessary and will be detailed in the next section.

Table 1 shows a simplified version of our original domestic use table. The features we would like to point out are its activity-product format, the presence of mixed income as a component of the value added and the disaggregation of the different demand components (i.e. exports, final consumption and gross capital formation). Even though not visible due to the aggregation of commodities, the distribution margins are assigned precisely to the products that correspond to these margins, i.e. transport and commerce, and not to the different commodities to which they can be associated with. (Remember that this matrix is valued at basic prices.)

			Act			Exp						FC				GCF		
	IC (b)	A1	A2	A3	XC	XS	**X**	**Dom FD**	**IC (p)**	C HH	C NPISH	C ColP	C IndP	**CP**	GFCF	Ch Inv	Aq LDV	**Tot D (p)**
C1	22.9	3.2	18.8	0.9	0.9	-	0.9	31.2	22.9	7.0	-	-	-	-	1.2	0.1	-	32.0
C2	23.0	8.2	12.6	2.1	60.9	-	60.9	24.5	23.0	0.1	-	-	-	-	0.5	0.9	-	85.3
C3	96.7	7.5	49.1	40.0	50.2	0.2	50.4	187.5	96.7	70.6	-	-	1.1	1.1	14.4	4.8	-	237.9
C4	114.0	7.9	35.5	70.6	1.7	4.1	5.8	345.6	114.0	103.6	3.3	29.9	25.8	55.7	66.6	2.3	-	351.4
Uses NP (b)	256.5	26.9	116.1	113.6	113.7	4.3	117.9	588.7	256.5	181.4	3.3	29.9	26.9	56.8	82.6	8.1	-	706.6
Adj	-	-	-	-	-	2.1	2.1	0.3	-	0.3	-	-	-	-	-	-	-	2.4
DPA Res	-	-	-	-	-	-	-	2.4	-	2.4	-	-	-	-	-	-	-	2.4
DPA Nres	-	-	-	-	-	2.1	2.1	-2.1	-	-2.1	-	-	-	-	-	-	-	-
Sub-tot	256.5	26.9	116.1	113.6	113.7	6.4	120.0	589.0	256.5	181.7	3.3	29.9	26.9	56.8	82.6	8.1	-	709.0
M (CIF)	54.6	5.3	32.1	17.2	0.1	-	0.1	35.2	54.6	14.7	-	-	-	-	19.6	0.8	0.0	89.8
Tot U (b)	311.1	32.1	148.2	130.8	113.7	6.4	120.1	624.2	311.1	196.4	3.3	29.9	26.9	56.8	102.2	9.0	0.0	798.9
M dut	3.2	0.2	2.0	1.0	0.0	-	0.0	3.2	3.2	1.6	-	-	-	-	1.5	0.1	0.0	6.3
C tx	1.6	0.2	0.4	1.0	2.6	0.1	2.7	4.8	1.6	2.6	0.0	-	-	-	0.6	-0.0	-	7.4
C sub	-0.2	-0.0	-0.1	-0.2	-0.0	-	-0.0	-2.1	-0.2	-2.1	-	-	-	-	-	-0.0	-	-2.4
VAT	8.6	0.8	1.8	6.0	-	-	-	17.0	8.6	14.4	-	-	-	-	2.4	0.2	-	25.6
Tot U (p)	324.1	33.3	152.3	138.6	116.3	6.4	122.7	647.0	324.1	212.8	3.3	29.9	26.9	56.8	106.9	9.2	0.0	835.8
GVA (b)	382.5	85.9	88.6	208.0														
Comp E	140.0	15.4	26.5	98.2														
Wag Sal	106.3	11.4	20.3	74.6														
Soc C Emp	33.8	3.9	6.2	23.6														
O Tx Pr	4.4	0.4	1.0	3.0														
O Sub Pr	-0.2	-0.0	-0.0	-0.1														
Op Sur G	187.1	64.5	54.8	67.8														
MI G	51.2	5.6	6.4	39.2														
Occup	84.0	12.6	13.7	57.7														
Emp	49.0	8.0	8.2	32.8														
Self Emp	30.9	3.3	4.8	22.8														
Entrep	3.9	1.3	0.7	1.8														
U Fam W	0.3	-	-	0.3														
Prod (b)	706.6	119.2	240.9	346.6														

Table 1: Simplified Initial Domestic Use Table, 1997. Hundreds of MM of (current) Bs.F. Source: Central Bank of Venezuela.

Row acronyms. C1-C4: Commodities 1-4, Uses NP (b): Uses of national production at basic prices, Adj: Adjustments, DPA Res: Direct purchases abroad by residents, DPA Nres: Direct purchases abroad by non-residents, Sub-tot: Sub-totals, M (CIF): CIF imports, Tot U (b): Total uses at basic prices, M dut: Taxes on imports, C tx : Other taxes on products, C sub: Subsidies on products, VAT: Value added tax (vat), Tot U (p): Total uses at purchaser's prices, GVA (b): Gross value added at basic prices, Comp E: Compensation of employees, Wag Sal: Wages and salaries, Soc C Emp: Social contributions of employers, O Tx Pr: Other taxes on production, O Sub Pr (-): Other subsidies on production, Op Sur G: Operating surplus, gross, MI G: Mixed income, gross, Occup: Occupancy, Emp: Employees, Self Emp: Self employed, Entrep: Entrepreneurs, employers, bosses, U Fam W: Unpaid family workers, Prod (b): Production at basic prices.

Column acronyms. IC (b): Intermediate consumption at basic prices, A1-A3: Activities 1-3, XC: Exports goods, XS: Exports services, X: Exports total, Dom FD: Domestic final demand, IC (p): Intermediate consumption at purchaser's prices, C HH: Consumption households, C NPISH: Consumption NPISH, C ColP: Public adm. collective consumption, C IndP: Public adm. individual consumption, CP: Public adm. total consumption, GFCF: Gross fixed capital formation, Ch Inv: Changes in inventories, Aq LDV: Acquisition less disposals of valuables, Tot D (p): Total demand at purchaser's prices.

3 *Applied Treatments*

A number of adaptations were made in order to comply to GTAP requirements. We shall proceed to list them and present a detailed explanation of every one of them:

1. source table re-arrangements
2. domestic-imported decomposition for the net taxes on products table
3. direct purchases
4. negative surpluses
5. financial intermediation services indirectly measured adjustments
6. decomposition of some products
7. re-exports
8. transform the industry by commodity format to the commodity by commodity one

3.1 Source Table Re-arrangements

The first treatment deals with re-ordering the *domestic use table* considering that we are to submit the VIOT following the new unified format (see Section 3 of [1]). To fulfill this task it results useful to take a look at how the new format relates to the old format (Appendix B, ibid.).

On one hand, to comply with the GTAP requirement we have to add up and subtract the different columns that are necessary to get the six demand components; namely, intermediate consumption, investment, (household) consumption, government, change in stocks and exports. This is straightforward: intermediate consumption remains the same, investment is equal to gross fixed capital formation, household consumption is equal to Final consumption households plus Final consumption NPISH, government is equal to Public administration collective *and* individual consumption, change in stocks must be summed with Acquisition less disposals of valuables, and exports consist in exports of commodities and services.

On the other hand, we must also get rid of the gross mixed income category. This we do by adding it to the salaries of the economy. Table 2 shows the re-arranged matrix.

		AI01			**AI03**	**AI05**	**AI07**	**AI09**	**AI11**
		A1	A2	A3	FGCF	C HH + C NPISH	CP	Ch Inv + Aq LDV	X
	C1	3.2	18.8	0.9	1.2	7.0	-	0.1	0.9
	C2	8.2	12.6	2.1	0.5	0.1	-	0.9	60.9
	C3	7.5	49.1	40.0	14.4	70.6	1.1	4.8	50.4
	C4	7.9	35.5	70.6	66.6	107.0	55.7	2.3	5.8
	Uses NP (b)	26.9	116.1	113.6	82.6	184.7	56.8	8.1	117.9
	Adj	-	-	-	-	0.3	-	-	2.1
	DPA Res	-	-	-	-	2.4	-	-	-
	DPA Nres	-	-	-	-	-2.1	-	-	2.1
	Sub-tot	26.9	116.1	113.6	82.6	185.0	56.8	8.1	120.0
	M (CIF)	5.3	32.1	17.2	19.6	14.7	-	0.8	0.1
	Tot U (b)	32.1	148.2	130.8	102.2	199.7	56.8	9.0	120.1
	M dut	0.2	2.0	1.0	1.5	1.6	-	0.1	0.0
	C tx	0.2	0.4	1.0	0.6	2.6	-	-0.0	2.7
	C sub	-0.0	-0.1	-0.2	-	-2.1	-	-0.0	-0.0
	VAT	0.8	1.8	6.0	2.4	14.4	-	0.2	-
	Tot U (p)	33.3	152.3	138.6	106.9	216.1	56.8	9.2	122.7
	GVA (b)	85.9	88.6	208.0					
AI13	**Comp E + MI G**	21.0	32.9	137.4					
	N O Tx Pr	0.4	1.0	2.8					
AI14	**Op Sur G**	64.5	54.8	67.8					
	Prod (b)	119.2	240.9	346.6					

Table 2: Simplified Re-arranged Domestic Use Table, 1997. Hundreds of MM of (current) Bs.F. Source: Central Bank of Venezuela.

Row acronyms. C1-C4: Commodities 1-4, Uses NP (b): Uses of national production at basic prices, Adj: Adjustments, DPA Res: Direct purchases abroad by residents, DPA Nres: Direct purchases abroad by non-residents, Sub-tot: Sub-totals, M (CIF): CIF imports, Tot U (b): Total uses at basic prices, M dut: Import duties, C tx : Other taxes on products, C sub: Subsidies on products, VAT: Value added tax (vat), Tot U (p): Total uses at purchaser's prices, GVA (b): Gross value added at basic prices, Comp E + MI G: Compensation of employees + mixed income, gross, N O Tx Pr: Net (of subsidies) Other taxes on production, Op Sur G: Operating surplus, gross, Prod (b): Production at basic prices.
Column acronyms. A1-A3: Activities 1-3, FGCF: Fixed gross capital formation, C HH + C NPISH: Consumption households + Consumption NPISH, CP: Public adm. total consumption, Ch Inv + Aq LDV: Changes in inventories + Acquisition less disposals of valuables, X: Exports total.

All other source tables must be treated in this way. The resulting tables look just like the one in Table 2, but have only commodities as rows.

Once the previous treatment is made we are ready to compile a table very similar to the GTAP Matrix of pre-commodity-tax usage values (UF), the first of the two tables GTAP requires (again, see Appendix B, ibid.). This table format can be seen in Table 3. Note, however, that the data in the table does not correspond exactly to this step of the process. It includes other treatments that we have not talked about as yet. Neither the domestically produced commodities nor imports include commodity taxes, but imported commodities do include import duties. The latter is not clear from [1] but it can be inferred from GTAP's table formats shown in Figure 1 and available at GTAP's web page.

		A1	A2	A3	FGCF	C HH + C NPISH	CP	Ch Inv + Aq LDV	X
	Domestic	**AI01**			**AI03**	**AI05**	**AI07**	**AI09**	**AI11**
	C1	3.2	18.8	0.9	1.2	7.0	-	0.1	0.9
	C2	8.2	12.6	2.1	0.5	0.1	-	0.9	60.9
	C3	7.5	49.1	40.0	14.4	70.6	1.1	4.8	50.4
	C4	11.5	38.7	63.8	66.6	104.9	55.7	2.3	7.9
	Imported	**AI02**			**AI04**	**AI06**	**AI08**	**AI10**	**Re-exp**
	C1	0.1	2.9	0.1	0.0	0.6	-	0.1	
	C2	1.7	1.5	0.3	-	-	-	0.2	
	C3	3.0	27.6	13.8	19.9	14.3	-	0.6	
	C4	0.5	2.2	4.0	1.2	3.7	-	0.0	
AI13	**Comp E + MI G**	21.0	32.9	137.4					
AI14	**Op Sur G**	61.0	51.9	74.6					
	N O Tx Pr	0.2	0.7	2.8					
AI15	**Nat R**								
	M dut (∗)								
	C tx	0.2	0.4	1.0	0.6	2.6	-	-0.0	2.7
	C sub	-0.0	-0.1	-0.2	-	-2.1	-	-0.0	-0.0
	VAT	0.8	1.8	6.0	2.4	14.4	-	0.2	-
	Adj	-	-	-	-	-	-	-	-
	DPA Res	-	-	-	-	-	-	-	-
	DPA Nres	-	-	-	-	-	-	-	-
	Tot U (b)	3.6	15.3	12.5	10.4	20.1	5.7	0.9	12.0
	Tot U (p)	3.7	15.5	13.2	10.7	21.6	5.7	0.9	12.3

Table 3: Preliminary Table similar to GTAP Matrix of Pre-commodity-tax Usage Values (UF), 1997. Hundreds of MM of (current) Bs.F. Source: Central Bank of Venezuela. (∗) Import duties (M dut) are blank because they are assigned to the different imported commodities.

Row acronyms. C1-C4: Commodities 1-4, Comp E + MI G: Compensation of employees + mixed income, gross, Op Sur G: Operating surplus, gross, N O Tx Pr: Net (of subsidies) Other taxes on production, Nat R: Natural resources, M dut: Import duties, C tx : Other taxes on products, C sub: Subsidies on products, VAT: Value added tax (vat), Adj: Adjustments, DPA Res: Direct purchases abroad by residents, DPA Nres: Direct purchases abroad by non-residents, Tot U (b): Total uses at basic prices, Tot U (p): Total uses at purchaser's prices.

Column acronyms. A1-A3: Activities 1-3, FGCF: Fixed gross capital formation, C HH + C NPISH: Consumption households + Consumption NPISH, CP: Public adm. total consumption, Ch Inv + Aq LDV: Changes in inventories + Acquisition less disposals of valuables, X: Exports total.

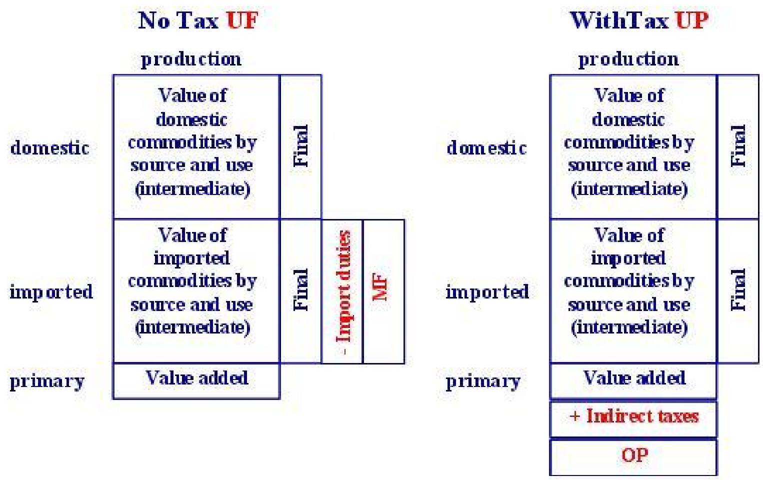

Figure 1: GTAP I-O Table Format.
Source: https://www.gtap.agecon.purdue.edu/databases/contribute/altviewformat.asp

3.2 Domestic-Imported Decomposition of Taxes on Products

Because GTAP requires only taxes on products net of subsidies (on products); the *value-added tax*, *other taxes on products* and *subsidies on products* tables were all consolidated to a *net taxes on products* table. These net taxes now need to be seperated into domestic and imported components.

To achieve this, a coefficient matrix was built where each element represents the ratio of domestic to total use (at basic prices) for every particular product and agent. The assumption behind this procedure is that there is no discrimination in the taxation of products according to its place of origin. For example, if the composition of the demand of machinery by a particular industry is such that 40% is satisfied domestically and 60% comes from abroad, then 40% of the net taxes paid for that product (and by that agent) correspond to demand of imports; the other 60% is associated with demand of domestically produced commodities. Using this coefficient matrix, we obtain the domestic net taxes on products table and by difference, we estimate the imported net taxes on products table.

3.3 Direct Purchases

According to the UN-SNA 1993 direct purchases are annex accounts because originally they are not integrated to the industry/commodity framework (see in Table 1, how they are considered *adjustments*). To maintain the overall consistency of the framework, the value of direct purchases have been reallocated to the household demand section of the VIOT. The changes are:

- Direct purchases by non-residents in the domestic market have been subtracted from household consumption and they have been added to exports.
- Foreign direct purchases by residents have been added to households' imported consumption.

To affect as little as possible the accounts, we have used only one product to do these adjustments: non-regular land transport services for passengers.

Table 3 has this treatment.

3.4 Negative Values for Capital Usage

Even though negative values for capital usage can be valid, reflecting operating losses, GTAP requires they be eliminated. Since capital usage is usually negative for a group of four industries (considering a time series that goes from 1997 to 2005), we have adjusted these values upwards to reflect a *reasonable* positive return on capital and adjusting production taxes downward to simulate an explicit or implicit subsidy. This is done following GTAP recommendations found in [1].

To estimate the reasonable positive return on capital we observe the temporal (1997-2005) cost structure (labor + capital + production taxes + intermediate consumption) of each of the problematic industries. If the industry has negative values every year, we use a simple mean of capital usage percentage of similar activities. If there is at least one positive value, we use the one closest to the reference year 1997. Then, the value of capital usage is adjusted so it represents this reasonable proportion within the total cost structure (production taxes are adjusted by this same amount). Table 4 shows relevant information.

Table 3 has this treatment.

3.5 Financial Intermediation Services Indirectly Measured

Financial intermediation services indirectly measured (FISIM) are presented in our source tables as intermediate consumption (and consequently negative capital usage) of a fictitious industry (following the 1993 UN-SNA). We proceeded as GTAP suggests apportioning the negative value of capital usage (-V) across the capital of all non-financial sectors (+X) according to each non-financial sectors share of X. Hence X is reduced by V.

Afterwards, intermediate consumption of each non-financial sector (Z) is raised by the amount which X was reduced by in the previous step. This procedure aims at keeping the balance for all non-financial sectors. Finally, we removed

Industries	A019	A046	A049	A095
1. Total costs	41,30	9,25	55,19	2,22
2. Reasonable weight of capital usage in cost structure	34,02%	2,48%	26,67%	4,77%
3. New capital usage $(1 * 2)$	14,05	0,23	14,72	0,11
4. Old capital usage	-0,50	-1,98	-10,78	-1,54
5. New taxes on production $(6 - 7)$	-14,52	-2,11	-25,50	-1,64
6. Old taxes on production	0,03	0,09	0,00	0,00
7. Adjustment $(3 - 4)$	14,54	2,21	25,50	1,64

Table 4: Adjustments Made to Negative Capital Usage. MM of 1997 Bs.F. Source: Central Bank of Venezuela and own calculations. (Rounding errors may be present.) A019: Other mining and quarrying, A046: Manuf. of coke oven prod., A049: Manuf. of fertil. and nitrogen compounds, A095: Transport via railways.

the imputed banking charge column and row. This will keep the financial sectors balanced as the fictitious industry was removed and Z was increased by V. The treatment is synthesized in Table 5

Table 3 has this treatment.

3.6 Re-exports

Re-exports are imported commodities that do not constitute intermediate consumption, final consumption, nor gross capital formation. Rather, they are destined to the exports category. GTAP prohibits these registers in their input-output matrices.

Venezuela presents a small amount of re-exports for the products shown in Table 6. They are eliminated from the database, along with the import duties they generate, and no further adjustment to the database is made.

Total re-exports only make up for 0.09% of total imports.

3.7 Commodity by Commodity Format Transformation

Given the preference GTAP has for commodity by commodity tables we must find a way to transform our commodity by activity tables to the desired format. We opted for the widely known mathematical method presented in Chapter IV, Section E of [3], based on the *industry technology assumption*.

Briefly, this method assumes that a given industry (activity) produces principal and secondary products using the same technology. For example, industry A produces its principal product A and a secondary product B. It produces both

	Non-financial	Financial	Imputed banking charge	Total
Financial sector	+Z	+A	+V	Z+A+V
Non-financial sector	+C	+B	0	C+B
Imputed banking charge	0	0	0	0
Capital	+X	+Y	-V	X+Y-V
Total	Z+C+X	A+B+Y	0	

(a) Before

	Non-financial	Financial	Total
Financial sector	+Z+V	+A	Z+A+V
Non-financial sector	+C	+B	C+B
Capital	+X-V	+Y	X+Y-V
Total	Z+C+X	+A+B+Y	

(b) After

Table 5: Financial Intermediation Services Indirectly Measured Adjustment.
Source: https://www.gtap.agecon.purdue.edu/databases/contribute/bankingsect.asp

Code	Description	Re-exports	Import duties
004	Other cereals	0.03	0.00
162	Smelted and rened gold	0.66	0.05
166	Basic precious and non-ferrous metals, n.e.c.	7.15	0.00
171	Steam generators, (except central heating boilers)	0.11	0.00
180	Office, accounting and computing machinery, n.e.c.	0.01	0.00
187	Electron. valves and tubes; electron. comp.; parts thereof	0.08	0.00
192	Watches and clocks, and parts thereof	0.09	0.00

Table 6: Re-exports and Corresponding Import Duties (from 300 products by 121 activities table). MM of 1997 Bs.F. Source: Central Bank of Venezuela.

products using exactly the same combination of inputs, no matter how different these products turn out to be. Product B of course is also produced elsewhere (as a principal product, maybe) with another technology (input combination). This in turn means that we can build some kind of average production function for each product. Based on the shares of production that all industries have over a particular commodity, a weighed production function can be built for each product. This production function in essence tells us how much of *other commodities* is needed (aside from value added and taxes) to produce a particular commodity. Combine this commodity by commodity technical coefficient matrix with the economy's make matrix and we get the symmetric input-output table we were looking for.

As we shall see in the next section, this method is not free of practical problems. Details and reasons for using it can be reviewed in the reference provided.

4 *Mapping to the GTAP Classification*

4.1 A Major Problem

The original source tables have a sectoral classification of 300 commodities and 121 activities. We have applied the mathematical treatment to go from commodity by activity tables to commodity by commodity tables, resulting input-output tables that are 300 commodities by 300 commodities. The next step would be creating a mapping from those 300 products to the 57 products of the GTAP sectoral classification. The mapping can be found in Table 10 in Appendix A.

The described procedure was supposed to be sufficient; but a careful inspection of the resulting matrices reveals a severe problem: some commodities have really unusual production functions. Considering the matrix of pre-commodity-tax usage values (UF) we will show an example. Take a look at Table 7. Observe how the Bovine cattle, sheep and goat, horse meat *products* industry (cmt) has an intermediate consumption of Bovine cattle, sheep and goats, horses (ctl) that is less than half than that of the Meat products nec industry (omt). This seems odd if you consider that ctl should be mostly consumed by cmt.

Going back to our 300 x 300 commodity by commodity matrix we can start getting an idea of the causes of the problem. Table 8 shows the Meat of *poultry*, fresh, chilled or frozen industry requiring even more live bovine animals than the industry of Meat of *bovine* animals, fresh, chilled or frozen. This makes no sense!

Digging deeper, it is clear how this result came up. If we consider both the method we are applying to make the symmetric table (industry technology assumption) and the sectoral characteristics of the original source tables (300 commodities by 121 activities), then the results make sense. For cases in which the

Poduct #		1	2	...	19	20	...	57
	Product	pdr	wht	...	cmt	omt	...	dwe
1	pdr	-	-		-	-		-
2	wht	-	-		-	-		-
3	gro	-	-		-	-		-
4	v_f	0.03	-		-	-		-
5	osd	-	-		-	0.00		-
6	c_b	-	-		-	-		-
7	pfb	-	-		-	-		-
8	ocr	0.10	-		-	-		-
9	ctl	-	-		1.50	3.06		-
10	oap	-	-		1.63	3.34		-
⋮	⋮							
57	dwe	-	-		-	-		-

Table 7: Problematic Production Functions Result of Symmetric Transformation (from 57 by 57, GTAP formated table). Hundreds of MM of (current) Bs.F. Source: Central Bank of Venezuela.

Row acronyms. pdr: Paddy rice, wht: Wheat, gro: Cereal grains nec, v_f: Vegetables, fruit, nuts, osd: Oil seeds, c_b: Sugar cane, sugar beet, pfb: Plant-based fibers, ocr: Crops nec, ctl: Bovine cattle, sheep and goats, horses, oap: Animal products nec, dwe: Dwellings.

Column acronyms. pdr: Paddy rice, wht: Wheat, cmt: Bovine cattle, sheep and goat, horse meat products, omt: Meat products nec, dwe: Dwellings.

Poduct #		001	002	...	075	076	077	078	079	...	300
	Product	R nh	Mze	...	M bov	M sw	M fres	M pou	Pres M	...	Dom Se
001	R nh	-	-		-	-	-	-	-		-
002	Mze	-	-		-	-	-	-	-		-
⋮	⋮										
032	Lve bov	-	-		1.50	0.58	0.11	1.77	0.60		-
⋮	⋮										
300	Dom Se	-	-		0.00	0.00	0.00	0.00	0.00		-

Table 8: Problematic Production Functions Result of Symmetric Transformation (from 300 by 300, commodity by commodity table). Hundreds of MM of (current) Bs.F. Source: Central Bank of Venezuela.
Row acronyms. R nh: Rice, not husked, Mze: Maize, Lve bov: Live bovine animals, Dom Se: Domestic services.
Column acronyms. R nh: Rice, not husked, Mze: Maize, M bov: Meat of bovine animals, fresh, chilled or frozen, M sw: Meat of swine, fresh, chilled or frozen, M fres: Meat, fresh, chilled or frozen n.e.c., M pou: Meat of poultry, fresh, chilled or frozen, Pres M: Preserves and preparations of meat, and meat products, Dom Se: Domestic services.

source tables contain many commodities relative to activities, we may have of course some activities producing many commodities. If one of such activities is the sole producer of those products then the resulting commodities in the symmetric table will all have the exact same production function. In our example, there is an activity that produces *all* five meat products (it is called A020. Production, processing and conservation of meat and derived products). Applying the industry technology assumption we would obtain as a result five meat related commodities with the same weighed production function (the aforementioned activity would have weight (i.e. market share) equal to one in the estimates). This is the reason all five meat products have large intermediate consumptions of Live bovine animals, even though they don't actually use this commodity in their production process (see again Table 8); every input used in the production process of a particular activity, will also be used by the new *commodity industries*[6] that are derived using the industry technology assumption.

Because no extra information is available, we have no other alternative than to aggregate these problematic sectors. Taking into account the relationship between activities and commodities in the original source tables, the corresponding production shares and expert opinion, we came up with the following concordance table that we use to aggregate our 57 sector commodity by commodity matrices, to 46 final sectors. Table 11 in Appendix B, presents this mapping.

[6]As opposed to *activity industries*.

Apart from the problems already presented, other minor problems were encountered. The next subsection comments on these and how they were addressed.

4.2 Some Minor Problems

High use of capital by Water transport (wtp). This industry comprises basically transport of crude oil and oil products. This sector's income is tied to the international prices of oil and the variations of this variable are reflected in the cost structure's residual variable which is the operating surplus.

High use of Business services nec (obs) by the Water industry (wtr). In this case, there seems to be a problem in the cost structure and the collection of the primary information in the base year. Because we do not have at the moment additional information to correct this, we are forced to leave it like it is. The Second Program for Macroeconomic Data Update[7] which amongst other things will update Venezuela's base year, will most probably solve this issue.

Zero labor use by Dwellings (dwe). In the case of owner-occupied residences the Venezuelan System of National Accounts assigns the gross value added of the sector to the operating surplus. This value is considered as the income that the owner is entitled to if she were not to occupy it, but rent it. Labor use is therefore zero.

High exports of Oil and Coal, oil products (p_c). These are with no doubt Venezuela's main exports. Venezuela is a major oil-producing country affiliated with the Organization of the Petroleum Exporting Countries (OPEC).

Gas manufacture, distribution (gdt) and Gas. Most of the Gas distribution in Venezuela (and specially in the year 1997) is not done via pipelines, but rather through tanks that are filled as needed. There is also a small part that is used in the process of oil extraction in the form of injections to the reservoirs. None of these gas distribution activities are accounted for by the Venezuelan System of National Accounts and so they take on values of zero in the original source tables. However, the *gdt* sector does include the value of Refinery gases such as ethane, propane, butane that are produced in the country. The measure we have taken to overcome the former deficiency is to sum Gas manufacture, distribution and Gas into one sector so they can be further treated by GTAP data specialists. Again, this is something that will be resolved in the Second Program for Macroeconomic Data Update.

High net taxes for stock changes of Beverages and tobacco products (b_t). Net taxes for this variable are in the order of 302%! Table 9 shows the large increment in the *b_t* industry once we add net taxes to the UF matrix. It also shows the industry's constitution. Venezuela presents very high excise taxes for

[7] Officially known as PRACEM II and currently in progress.

tobacco and some alcoholic beverages, which is precisely what we can see reflected in the table. Looked upon individually, these high taxes however, are not even near the 302%, as initially seen. That number is the result of combining the great rise in Other alcoholic beverages and Cigars coupled with a low variation of taxes for the cases in which stock changes are negative (Whiskey and Beer). This explains the big number and why it is not adjusted in any way.

Table 9: Pre and Post-Commodity Tax Values for Stock changes in the Beverage and Tobacco Industry

Stock changes	UF Matrix	UP Matrix	Absolute var.	Relative var. (%)
Beverages and tobacco products (b_t)	1.17	4.71	3.54	302.2
Whiskey	-2.85	-3.14	-0.29	10.2
Beer	-9.60	-9.24	0.36	-3.7
Other alcoholic beverages	5.15	7.53	2.38	46.2
Soft drinks	5.38	5.45	0.07	1.3
Other non-alcoholic beverages	1.27	1.33	0.06	4.8
Cigars	1.81	2.74	0.94	52.0
Other manufactured tobacco products	0.02	0.04	0.02	89.7

5 *Final Remarks*

This work represents the second (known) effort to update Venezuela's Input-Output table for GTAP, in a 25 year span. Although improvements are necessary, it is difficult to implement them at this point in time. However, CBV's Statistical Office is at this moment in the middle of its Second Program for Macroeconomic Data Update. Again, the main (but not exclusive) objectives are updating the base year of economic statistics to 2007 and adapting Venezuela's national accounts methodology to those prescribed by the 2008 revision of the UN-SNA. These new results will be of great value for upcoming Input-Output table updates.

Hopefully, this work will not be of interest only to future modelers, but also to CBV's Statistical Office staff for the purpose of statistical compilation.

References

[1] Huff et al., *Contributing Input-Output Tables to the GTAP Data Base.* GTAP Technical Paper No.1, Release 4.2, January 2000.

[2] Matlab, *MATLAB Getting started guide*, fifteenth printing. Natick, MA: The Math Works Inc., 2010.

[3] United Nations, *Handbook of Input-Output Table Compilation and Analysis*, Studies in Methods, Handbook of National Accounting, Series F, No.74. New York, 1999.

Appendix A

Table 10: Source to GTAP Sectoral Classification Mapping (57 products)

Code	Description	GTAP Num. code	GTAP Sec. code
001	Rice, not husked	1	pdr
002	Maize	3	gro
003	Sorghum	3	gro
004	Other cereals	3	gro
005	Black beans	3	gro
006	White beans	3	gro
007	Other dried leguminous fruit	3	gro
008	Potatoes	4	v_f
009	Yucca	4	v_f
010	Other edible roots and tubers	4	v_f
011	Sesamum	4	v_f
012	Cotton Seeds	7	pfb
013	Other textile and oleaginous fruit	5	osd
014	Sugar cane	6	c_b
015	Unmanufactured tobacco	8	ocr
016	Other crops	8	ocr
017	Tomatoes	4	v_f
018	Onions	4	v_f
019	Garlic	4	v_f
020	Sweet pepper	4	v_f
021	Carrots	4	v_f
022	Other vegetables, horticultural specialties and nursery products	4	v_f
023	Banana	4	v_f
024	Plantain	4	v_f
025	Oranges	4	v_f
026	Pineapples	4	v_f
027	Nuts	4	v_f
028	Other fruits	4	v_f
029	Coffee, not roasted, not decaffeinated	8	ocr
030	Cocoa beans, raw or roasted	8	ocr
031	Other beverage and spice crops	8	ocr
032	Live bovine animals	9	ctl
033	Other live animals	10	oap
034	Raw milk	11	rmk
035	Swine	10	oap
036	Poultry	10	oap
037	Other live animals	10	oap
038	Eggs of hens or other birds	10	oap

Continues on the next page . . .

Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
039	Other animal products	10	oap
040	Agricultural service activities	8	ocr
041	Animal husbandry service activities, except veterinary activities	9	ctl
042	Foundation of agricultural plantations	8	ocr
043	Foundation of forest plantations	8	ocr
044	Agricultural improvements	8	ocr
045	Forestry products	13	for
046	Silviculture products and support services	13	for
047	Tuna	14	fsh
048	Red porgy	14	fsh
049	Bass	14	fsh
050	Kingfish	14	fsh
051	Sardines	14	fsh
052	Other fishes, live, fresh or chilled	14	fsh
053	Shrimp, live, fresh	14	fsh
054	Other crustaceans, not frozen, live, fresh or chilled	14	fsh
055	Coal	15	col
056	Lignite and peat	15	col
057	Crude petroleum	16	oil
058	Natural gas	17	gas
059	Support activities for petroleum extraction	16	oil
060	Uranium and thorium ores	18	omn
061	Iron ores	18	omn
062	Aluminium ores	18	omn
063	Gold	18	omn
064	Other precious metal ores	18	omn
065	Nickel ores	18	omn
066	Other non-ferrous metal ores	18	omn
067	Granite and other construction stones	18	omn
068	Limestone and gypsum	18	omn
069	Sands, gravel, broken or crushed stone	18	omn
070	Clays	18	omn
071	Chemical and fertilizer minerals	18	omn
072	Salt	18	omn
073	Diamonds and other precious stones	18	omn
074	Other minerals	18	omn
075	Meat of bovine animals, fresh, chilled or frozen	19	cmt
076	Meat of swine, fresh, chilled or frozen	20	omt
077	Meat, fresh, chilled or frozen n.e.c.	20	omt

Continues on the next page . . .

Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
078	Meat of poultry, fresh, chilled or frozen	20	omt
079	Preserves and preparations of meat, and meat products	20	omt
080	Canned fish and crustaceans, smoked, in brine	25	ofd
081	Prepared and preserved vegetables and fruits	25	ofd
082	Animal and vegetable oils and fats	21	vol
083	Butters and cheese	22	mil
084	Pasteurized milk	22	mil
085	Powdered milk	22	mil
086	Other dairy products	22	mil
087	Wheat flour	25	ofd
088	Corn flour	25	ofd
089	Husked rice	23	pcr
090	Other cereal products	25	ofd
091	Corn oil	25	ofd
092	Other grain mill products	25	ofd
093	Preparations used in animal feeding	25	ofd
094	Bread	25	ofd
095	Bakery products, n.e.c.	25	ofd
096	Sugar	24	sgr
097	Sugar products	24	sgr
098	Cocoa, chocolate and sugar confectionery	25	ofd
099	Macaroni, noodles, couscous and similar farinaceous product	25	ofd
100	Coffee and tea	25	ofd
101	Food products n.e.c.	25	ofd
102	Whiskey	26	b_t
103	Beer	26	b_t
104	Other alcoholic beverages	26	b_t
105	Soft drinks	26	b_t
106	Other non-alcoholic beverages	26	b_t
107	Cigars	26	b_t
108	Other manufactured tobacco products	26	b_t
109	Yarn and thread; woven and tufted textile fabrics	27	tex
110	Textile articles other than apparel	27	tex
111	Knitted or crocheted fabrics	27	tex
112	Wearing apparel, except fur and leather apparel	28	wap
113	Tanned or dressed fur skins and artificial fur; articles thereof	28	wap
114	Leather and leather products	29	lea
115	Footwear	29	lea
116	Sawnwood	30	lum

Continues on the next page . . .

Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
117	Products of wood, cork, straw and plaiting materials	30	lum
118	Pulp, paper and paperboard	31	ppp
119	Corrugated paper and paperboard and of containers of paper and paperboard	31	ppp
120	Other articles of paper and paperboard articles	31	ppp
121	Books, brochures and other publications	31	ppp
122	Newspapers, journals and periodicals	31	ppp
123	Recording and other editing products	31	ppp
124	Printing services	31	ppp
125	Reproduction of recorded media	31	ppp
126	Coke oven products	32	p_c
127	Gasoline	32	p_c
128	Distillate fuel oil	32	p_c
129	Residue fuel oil	32	p_c
130	Lubricants	32	p_c
131	Refinery gases such as ethane, propane, butane etc.	44	gdt
132	Other refined petroleum products	32	p_c
133	Basic chemicals, except fertilizers and nitrogen compounds	33	crp
134	Fertilizers and nitrogen compounds	33	crp
135	Plastics in primary forms and of synthetic rubber	33	crp
136	Pesticides and other agrochemical products	33	crp
137	Paints, varnishes and similar coatings	33	crp
138	Pharmaceuticals, medicinal chemicals and botanical products	33	crp
139	Soap and detergents, cleaning and polishing preparations, perfumes and toilet prep.	33	crp
140	Processed salt	33	crp
141	Other chemical products n.e.c.	33	crp
142	Man-made fibers	27	tex
143	Rubber tires and tubes	33	crp
144	Other rubber products	33	crp
145	Plastic tubes, pipes and hoses	33	crp
146	Plastic bags, sacks, containers, boxes, cases, carboys, bottles	33	crp
147	Other plastic products	33	crp
148	Glass, glass fibers, glass for cars	34	nmm
149	Bottles and other containers of glass or crystal	34	nmm
150	Objects and clay vessels, pottery, porcelain and ceramics	34	nmm
151	Refractory ceramic products	34	nmm
152	Structural non-refractory clay and ceramic products	34	nmm
153	Cement	34	nmm
154	Lime and plaster	34	nmm
155	Articles of concrete, cement and plaster	34	nmm

Continues on the next page ...

Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
156	Solid asphalt for paving	34	nmm
157	Other asphalt products	34	nmm
158	Semi-elaborate iron and steel products	35	i_s
159	Slate iron and steel products	35	i_s
160	Non-slate iron and steel products	35	i_s
161	Iron and steel, n.e.c.	35	i_s
162	Smelted and refined gold	36	nfm
163	Slate aluminium products	36	nfm
164	Non-slate aluminium products	36	nfm
165	Alumina	36	nfm
166	Basic precious and non-ferrous metals, n.e.c.	36	nfm
167	Casting of iron and steel	35	i_s
168	Casting of non-ferrous metals	35	i_s
169	Structural metal products	37	fmp
170	Tanks, reservoirs and containers of metal	37	fmp
171	Steam generators, (except central heating boilers)	37	fmp
172	Other fabricated metal products n.e.c.	37	fmp
173	Engines, turbines, pumps, compressors	41	ome
174	Other general-purpose machinery and parts thereof	41	ome
175	Machinery for mining, quarrying and construction	41	ome
176	Other special-purpose machinery and parts thereof	41	ome
177	Domestic appliances, n.e.c.	41	ome
178	Automatic data processing machines	41	ome
179	Printing machines	41	ome
180	Office, accounting and computing machinery, n.e.c.	41	ome
181	Electric motors, generators and transformers, and parts thereof	41	ome
182	Electricity distribution and control apparatus, and parts thereof	41	ome
183	Insulated wire and cable	41	ome
184	Accumulators, primary cells and primary batteries, and parts thereof	41	ome
185	Electric filament or discharge lamps; arc lamps; lighting equipment; parts thereof	41	ome
186	Other electrical equipment and parts thereof	41	ome
187	Electronic valves and tubes; electronic components; parts thereof	40	ele
188	Television and radio transmitters and apparatus for line telephony or telegraphy ...	40	ele
189	Radio broadcast and television receivers; apparatus for sound and video ...	40	ele
190	Medical and surgical equipment; instruments and appliances for measuring, ...	41	ome
191	Optical instruments and photographic equipment, and parts and accessories thereof	41	ome
192	Watches and clocks, and parts thereof	41	ome
193	Passenger cars	38	mvh
194	Other motor vehicles	38	mvh

Continues on the next page ...

Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
195	Bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	38	mvh
196	Parts and accessories for motor vehicles and their engines	38	mvh
197	Ships and boats	39	otn
198	Other transport equipment	39	otn
199	Furniture	42	omf
200	Manufacturing n.e.c.	42	omf
201	Wastes or scraps	42	omf
202	Electricity supply	43	ely
203	Gas supply	17	gas
204	Water supply	45	wtr
205	General construction services of one- and two-dwelling buildings	46	cns
206	General construction services of multi-dwelling buildings	46	cns
207	General construction services of industrial buildings	46	cns
208	General construction services of commercial buildings	46	cns
209	Construction services of indoor sports or recreation installations	46	cns
210	Construction services of hotels, motels, inns, hostels, rest. and similar buildings	46	cns
211	Construction services of educational buildings	46	cns
212	Construction services of health buildings	46	cns
213	General construction services of highways, streets, roads, railways and airfield runways	46	cns
214	General construction services of waterworks	46	cns
215	General construction services of communication and power lines	46	cns
216	Construction services of the oil industry	46	cns
217	Other construction services, n.e.c.	46	cns
218	Renting of construction or demolition equipment with operator	46	cns
219	Urbanism	46	cns
220	Wholesale trade services	47	trd
221	Retail trade service	47	trd
222	Maintenance and repair of motor vehicles and motorcycles	47	trd
223	Repair of personal and household goods	47	trd
224	Lodging services	47	trd
225	Food and beverage serving services for consumption on the premises	47	trd
226	Railway transport services of passengers	48	otp
227	Railway transport services of freight	48	otp
228	Subway and subway-bus transport services	48	otp
229	Other scheduled road transport services of passengers n.e.c.	48	otp
230	Non-scheduled road transport services of passengers	48	otp
231	Scheduled road transport services of freight	48	otp
232	Non-scheduled road transport services of freight	48	otp
233	Passenger transportation by vehicle with driver	48	otp

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Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
234	Pipeline transport of petroleum and gas	48	otp
235	Water transport services of passengers	49	wtp
236	Water transport services of freight	49	wtp
237	Air transport services of passengers	50	atp
238	Air transport services of freight	50	atp
239	Storage and warehousing services	48	otp
240	Bus station services	48	otp
241	Highway, bridge and tunnel operation services	48	otp
242	Parking lot services	48	otp
243	Port and waterway operation services (excl. cargo handling)	48	otp
244	Supporting services for air or space transport	48	otp
245	Supporting services for water transport	48	otp
246	Travel agency, tour operator and tourist guide services	48	otp
247	Auxiliary and other supporting transport services	48	otp
248	Postal and courier services	51	cmn
249	Fixed telephony services	51	cmn
250	Mobile telephony services	51	cmn
251	Transmission of data and messages	51	cmn
252	Transmission (transport) of radio and cable television programme	51	cmn
253	Other telecommunications services	51	cmn
254	Central banking services	52	ofi
255	Other monetary intermediation services	52	ofi
256	Financial leasing services	52	ofi
257	Other credit granting services	52	ofi
258	Other financial service act., except insurance and pension funding activities, n.e.c.	52	ofi
259	Life insurance services	53	isr
260	Pension funding	53	isr
261	Non-life insurance	53	isr
262	Administration of financial markets	52	ofi
263	Security and commodity contracts brokerage	52	ofi
264	Financial advisory services	52	ofi
265	Other activities auxiliary to financial service activities	52	ofi
266	Insurance agents and brokers services	53	isr
267	Other services auxiliary to insurance and pension funding	53	isr
268	Leasing services involving residential property	54	obs
269	Dwellings	57	dwe
270	Renting services involving non-residential property	54	obs
271	Real estate serv. on a fee or contract basis; including buying and selling of property	54	obs
272	Renting of transport equipment	54	obs

Continues on the next page ...

Table 10 – Continued

Code	Description	GTAP Sec. code	GTAP Sec. code
273	Renting of other machinery and equipment	54	obs
274	Renting of personal and household goods n.e.c.	54	obs
275	Software publishing, consultancy and supply	54	obs
276	Research and development services	54	obs
277	Legal services	54	obs
278	Accounting, bookkeeping and auditing services; tax consultancy	54	obs
279	Architectural, engineering and other technical services	54	obs
280	Advertising	54	obs
281	Other Business services	54	obs
282	Public administration and defence services	56	osg
283	Compulsory social security services	56	osg
284	Primary and secondary education	56	osg
285	Higher education	56	osg
286	Other education	56	osg
287	Hospital, clinic and laboratory services	56	osg
288	Private medical and dental practice services	56	osg
289	Other health and social services	56	osg
290	Sewage and refuse disposal, sanitation and other environmental protection services	56	osg
291	Activities of business, employers and professional organizations	56	osg
292	Activities of trade unions, services of other membership organizations	56	osg
293	Motion picture and video production, distribution and projection	55	ros
294	Broadcasting (programming and scheduling) services	55	ros
295	Other entertainment activities n.e.c	55	ros
296	Other Recreational, cultural and sporting services	55	ros
297	Hairdressing and other beauty treatment	55	ros
298	Funeral and related services	55	ros
299	Other services n.e.c	55	ros
300	Domestic services	55	ros

Appendix B

Table 11: Aggregate GTAP Sectoral Classification for Venezuelan Database

GSEC No.	GSEC Longname	GSEC Short	New No.	New Longname	New Shortname
1	Paddy rice	pdr	1	Paddy rice, wheat, [see rest in footnote]	pdr, wht, gro, pfb, osd, c_b
2	Wheat	wht	1	Paddy rice, wheat, [see rest in footnote]	pdr, wht, gro, pfb, osd, c_b
3	Cereal grains nec	gro	1	Paddy rice, wheat, [see rest in footnote]	pdr, wht, gro, pfb, osd, c_b
4	Vegetables, fruit, nuts	v_f	2	Vegetables, fruit, nuts	v_f
5	Oil seeds	osd	1	Paddy rice, wheat, [see rest in footnote]	pdr, wht, gro, pfb, osd, c_b
6	Sugar cane, sugar beet	c_b	1	Paddy rice, wheat, [see rest in footnote]	pdr, wht, gro, pfb, osd, c_b
7	Plant-based fibers	pfb	1	Paddy rice, wheat, [see rest in footnote]	pdr, wht, gro, pfb, osd, c_b
8	Crops nec	ocr	3	Crops nec	ocr
9	Bovine cattle, sheep and goats, horses	ctl	4	Cattle, [see rest in footnote]	ctl_oap_rmk_wol
10	Animal products nec	oap	4	Cattle, [see rest in footnote]	ctl_oap_rmk_wol
11	Raw milk	rmk	4	Cattle, [see rest in footnote]	ctl_oap_rmk_wol
12	Wool, silk-worm cocoons	wol	4	Cattle, [see rest in footnote]	ctl_oap_rmk_wol
13	Forestry	for	5	Forestry	for
14	Fishing	fsh	6	Fishing	fsh
15	Coal	col	7	Coal	col
16	Oil	oil	8	Oil	oil
17	Gas	gas	9	Gas, Gas manufacture, distribution	gas, gdt
18	Minerals nec	omn	10	Minerals nec	omn
19	Bovine cattle, sheep, goat, horse meat prod.	cmt	11	Meat products	cmt_omt
20	Meat products nec	omt	11	Meat products	cmt_omt
21	Vegetable oils and fats	vol	12	Vegetable oils and fats	vol
22	Dairy products	mil	13	Dairy products	mil
23	Processed rice	pcr	14	Processed rice and food products nec	pcr_ofd
24	Sugar	sgr	15	Sugar	sgr
25	Food products nec	ofd	14	Processed rice and food products nec	pcr_ofd
26	Beverages and tobacco products	b_t	16	Beverages and tobacco products	b_t
27	Textiles	tex	17	Textiles	tex
28	Wearing apparel	wap	18	Wearing apparel	wap
29	Leather products	lea	19	Leather products	lea
30	Wood products	lum	20	Wood products	lum
31	Paper products, publishing	ppp	21	Paper products, publishing	ppp
32	Petroleum, coal products	p_c	22	Petroleum, coal products	p_c
33	Chemical, rubber, plastic products	crp	23	Chemical, rubber, plastic products	crp
34	Mineral products nec	nmm	24	Mineral products nec	nmm
35	Ferrous metals	i_s	25	Ferrous metals	i_s

New No.1: Paddy rice, wheat, cereal grains nec, plant based fibers, oilseeds, sugar cane
New No.4: Cattle, animal products nec (includ. raw milk and animal materials for textiles)
Continues on the next page ...

Table 11 – Continued

GSEC No.	GSEC Longname	GSEC Short	New No.	New Longname	New Shortname
36	Metals nec	nfm	26	Metals nec	nfm
37	Metal products	fmp	27	Metal products	fmp
38	Motor vehicles and parts	mvh	28	Motor vehicles and parts	mvh
39	Transport equipment nec	otn	29	Transport equipment nec	otn
40	Electronic equipment	ele	30	Electronic equipment	ele
41	Machinery and equipment nec	ome	31	Machinery and equipment nec	ome
42	Manufactures nec	omf	32	Manufactures nec	omf
43	Electricity	ely	33	Electricity	ely
44	Gas manufacture, distribution	gdt	12	Gas, Gas manuf., distribution	gas, gdt
45	Water	wtr	34	Water	wtr
46	Construction	cns	35	Construction	cns
47	Trade	trd	36	Trade	trd
48	Transport nec	otp	37	Transport nec	otp
49	Water transport	wtp	38	Water transport	wtp
50	Air transport	atp	39	Air transport	atp
51	Communication	cmn	40	Communication	cmn
52	Financial services nec	ofi	41	Financial services nec	ofi
53	Insurance	isr	42	Insurance	isr
54	Business services nec	obs	43	Business services nec	obs
55	Recreational and other services	ros	44	Recreational and other services	ros
56	Public admin. and defence, educ., health	osg	45	Public admin. and defence, educ., health	osg
57	Dwellings	dwe	46	Dwellings	dwe