

Methodological note on the Symmetric Input-output table of the Spanish economy for Base 2000

1. Foreword

The Symmetric Input-output Table (SIOT) for the Spanish economy, completes the basic Input Output Framework of current Spanish National Accounts' base 2000. The elaboration of these tables is established in the European Parliament and Council Regulation (EC) No. 1392/2007 which modifies the Regulation No. 2223/96 regarding the transmission of national accounts data. It is a five-yearly transmission since year 2000. In base 2000, INE has elaborated years 2000 and 2005 SIOT in compliance of this Regulation.

It is a table derived from Supply & Use Tables (SUT), which, by means of different procedures, manages to integrate in a single table, basic data thereof. On the other hand, while SUT have a mainly "statistical" nature, the greatest interest of symmetric tables lies on its analytical applicability, as some of the main coefficients and models used in Input-Output economic analysis can be obtained from it¹.

2. General characteristics: evaluation criteria and flow types.

2.1 Evaluation criteria

The SIOT is represented with basic price values, the suitable value when using the tables as instruments for economic analysis. However, the selection of basic price criteria to present product data, implies incorporating some adjustment items in order to observe the accounting principle whereby uses should be valued at purchasers' prices. Specifically, it is necessary to introduce a line to incorporate net taxes on products, to obtain intermediate consumption by homogeneous branches and final uses at purchaser's prices.

It is important to point out the different valuations that some operations present when they are disaggregated by product group or presented a total for institutional sectors accounts.

¹ To obtain a detailed list of the basic models and coefficients which can be obtained in the Input-Output framework can be found in the following INE publication: <http://www.ine.es/daco/daco42/daco4214/cbtc26.pdf>

This valuation change occurs in final consumption expenditure of households, and in imports and exports of goods and services.

Final consumption expenditure of households (P:3): it consists of expenditure incurred by resident households on goods or services that are used for the direct satisfaction of individual needs. This expenditure may take place on the domestic territory or abroad.

In the Supply & Use Tables (SUT) consumption expenditure by product in domestic economy by resident and non resident households is estimated. As a result of using different consumption criteria two lines of adjustments must be introduced in the SUT. The first one to deduct purchases by non residents in the domestic territory and the second to include purchases by residents outside the domestic territory. In this way, we obtain the final consumption expenditure of households as the total by product plus these two items. To balance the uses and resources of the SUT it is necessary to introduce these items in their corresponding transactions. Purchases by non residents in the domestic territory must be included in the exports column and purchases by residents outside the domestic territory must be deducted from the imports one.

Exports (P.6) and imports (P.7): ESA 95 establishes that total imports and exports of goods must be valued at the exporter's customs frontier, or free on board (fob). However, in SUT and in SIOT imports of goods must be valued at the importer's customs frontier (cif value). These different criteria demand the inclusion of two adjustment items. CIF valuation overestimates imports' costs when transport and insurance services, included in cif values are rendered by resident units.

The result of using different valuation criteria is that total net imports are the same, but both total imports and total exports are higher at cif valuation. The two valuation principles can be conciliated in SUT introducing elements of adjustment both for imports and for exports. The adjustment items are the same as the value of transport and insurance services rendered by residents from the export's custom frontier to the Spanish frontier.

These adjustment entries appear in the SUT annually elaborated by INE. They do not appear in the SIOT presentation since they do not affect their analytical utility.

This means that in SIOT the total valuation of imports corresponds to a cif valuation of goods (with its corresponding repercussion in total exports) and consumption expenditure of households appears in domestic terms. On the other hand, in SUT total imports correspond to a fob valuation of goods (with its corresponding repercussion in total exports) and consumption expenditure of households is that made by residents (inside or outside the domestic territory).

2.2 FLOW TYPES

According to the usual criteria applied by INE in all I-O tables elaborated since year 1980, the symmetric table for base 2000 has been broken down on a flow supply basis, distinguishing between domestically produced goods and services and import flows, an infor-

mation which is essential for using the table in economic analysis models and which holds correspondence with the flow distribution previously estimated for use table.

Regarding methodology, basic criteria are similar to the criteria used in SIOT for 1995, by directing the reader to the methodological note for that table². The only exception worth remarking makes reference to the change introduced in the different treatment of Financial Intermediation Services Indirectly Measured (FISIM) in the accounting base (supply and use tables).

The essential characteristic of this change (which can be consulted in the notes published in INE's National Accounts Department Web³) is, in terms of Input-Output structures, that the fictitious branch used in previous accounting bases to register this type of services in the Input-Output frame disappears. In fact, in the current account base these services, included in the overall production of financial intermediaries, are assigned to the different users just as any other product: either as an intermediate consumption of the different industries in the economy, or as a final demand component. This treatment for FISIM has advantages from a SIOT application point of view, provided that conceptual and practical problems previously introduced by the fictitious branch in the calculation of Leontief's inverse matrix are eliminated.

3. Content.

The file in which the symmetric table is presented is divided in 9 components, which can be grouped into three categories:

- Tables 1 through 3. Table 1 details the information regarding the magnitudes in the symmetric table corresponding to the Spanish economy for a specific year, in basic prices, while tables 2 and 3 distinguish on a flow supply basis: total, domestic flows and imported flows.
- Tables 4 through 7. Present main analytic coefficients obtained from the SIOT. On the one hand, tables 4 and 5 technical coefficients on production. On the other hand, tables 6 and 7 contain the coefficients for the so-called Leontief's inverse matrix, which is used to construct the main and most widely used economic analysis models based on the Input Output methodology.
- Finally, tables 8 and 9 show the information referred to the classifications used, a feature which is discussed hereunder.

² The main methodological characteristics of the symmetric tables elaborated by INE based on the table for year 1995 can be accessed through: <http://www.ine.es/daco/daco42/daco4214/cbtc22.pdf>

³ See http://www.ine.es/daco/daco42/cne00/sifmi_b2000.pdf.

4. Classification used in the symmetric table for the Spanish economy 2000 and comparison with the table for 1995

Chart 1 includes the classification for homogeneous branches of activity used in base 2000's symmetric table. It also comprises the correspondence with the branches of the supply and use tables, and with the classification of economic activities (NACE93-rev1.1). This breakdown of activities is consistent with the one used within the supply and use tables of base 2000.

The SIOT is broken down in 73 homogeneous branches.

Chart 2 covers the correspondence between the SIOT, which is being published now, and the previous one for year 1995.

Chart 1 Classification of the SIOT, and correspondences with SUT and NACE/CPA

Industries	SIOT codes	SUT codes	NACE93/CPA2002
Agriculture, livestock and hunting	1	1	01
Forestry, logging and related service activities	2	2	02
Fishing	3	3	05
Mining of coal and lignite; extraction of peat	4	4	10
Extraction of crude petroleum and natural gas; mining of uranium and thorium ores	5	5	11-12
Mining of metal ores	6	6	13
Other mining and quarrying	7	7	14
Manufacture of coke, refined petroleum products and nuclear fuel	8	8	23
Production and distribution of electricity	9	9	401
Manufacture of gas; distribution of gaseous fuels through mains; steam and hot water supply	10	10	402-403
Collection, purification and distribution of water	11	11	41
Manufacture of meat products	12	12	151
Manufacture of dairy products	13	13	155
Manufacture of other food products	14	14	152-154,156-158
Manufacture of beverages	15	15	159
Manufacture of tobacco products	16	16	16
Manufacture of textiles	17	17	17
Manufacture of wearing apparel; dressing and dyeing of fur	18	18	18
Manufacture of leather and leather products	19	19	19
Manufacture of wood and wood products	20	20	20
Manufacture of pulp, paper and paper products	21	21	21
Publishing and printing	22	22	22
Manufacture of chemicals and chemical products	23	23	24
Manufacture of rubber and plastic products	24	24	25
Manufacture of cement, lime and plaster	25	25	265
Manufacture of glass and glass products	26	26	261
Manufacture of ceramic products	27	27	262-264
Manufacture of other non-metallic mineral products	28	28	266-268
Manufacture of basics metals	29	29	27
Manufacture of fabricated metal products	30	30	28
Manufacture of machinery and equipment n.e.c.	31	31	29
Manufacture of office machinery and computers	32	32	30
Manufacture of electrical machinery and apparatus n.e.c.	33	33	31
Manufacture of electronic equipment and apparatus	34	34	32
Manufacture of medical, precision and optical instruments	35	35	33
Manufacture of motor vehicles, trailers and semi-trailers	36	36	34
Manufacture of other transport equipment	37	37	35

Industries	SIOT codes	SUT codes	NACE93/CPA2002
Manufacture of furniture; manufacturing n.e.c.	38	38	36
Recycling	39	39	37
Construction	40	40	45
Sale and retail of motor vehicles; retail sale of automotive fuel	41	41	50
Wholesale trade and commission trade	42	42	51
Retail trade; repair of personal and household goods	43	43	52
Hotels	44	44	55.1-55.2
Restaurants	45	45	55.3-55.5
Railway transport	46	46	601
Other land transport; transport via pipelines	47	47	602-603
Water transport	48	48	61
Air transport	49	49	62
Support and auxiliary transport activities	50	50	63.1-63.2 , 63.4
Travel agencies activities	51	51	63.3
Post and telecommunications	52	52	64
Financial intermediation, except insurance and pension funding	53	53	65
Insurance and pension funding, except compulsory social security	54	54	66
Activities auxiliary to financial intermediation	55	55	67
Real estate activities	56	56	70
Renting of machinery, personal and household goods	57	57	71
Computer and related activities	58	58	72
Research and development	59	59	73
Other business activities	60	60	74
Market education	61	62	80(p)
Market health and social work	62	64	85(p)
Market sewage and refuse disposal, sanitation and similar activities	63	67	90(p)
Market activities of membership organization n.e.c.	64	69	91(p)
Market recreational, cultural and sporting activities	65	71	92(p)
Other service activities	66	74	93
Public Administration	67	61	75
Non-market education	68	63	80(p)
Non-market health and social work	69	65-66	85(p)
Non-market sewage and refuse disposal, sanitation and similar activities	70	68	90(p)
Non-market activities of membership organization n.e.c	71	70	91(p)
Non-market recreational, cultural and sporting activities	72	72-73	92(p)
Private households with employed persons	73	75	95

Chart 2 Correspondences between SIOT on base 2000 and SIOT on base 1995

Codes	Homogeneous branches SIOT base 2000
1	Agriculture, livestock and hunting
2	Forestry, logging and related service activities
3	Fishing
4	Mining of coal and lignite; extraction of peat
5	Extraction of crude petroleum and natural gas; mining of uranium and thorium ores
6	Mining of metal ores
7	Other mining and quarrying
8	Manufacture of coke, refined petroleum products and nuclear fuel
9	Production and distribution of electricity
10	Manufacture of gas; distribution of gaseous fuels through mains; steam and hot water supply
11	Collection, purification and distribution of water
12	Manufacture of meat products
13	Manufacture of dairy products
14	Manufacture of other food products
15	Manufacture of beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Manufacture of leather and leather products
20	Manufacture of wood and wood products
21	Manufacture of pulp, paper and paper products
22	Publishing and printing
23	Manufacture of chemicals and chemical products
24	Manufacture of rubber and plastic products
25	Manufacture of cement, lime and plaster
26	Manufacture of glass and glass products
27	Manufacture of ceramic products
28	Manufacture of other non-metallic mineral products
29	Manufacture of basics metals
30	Manufacture of fabricated metal products
31	Manufacture of machinery and equipment n.e.c.
32	Manufacture of office machinery and computers
33	Manufacture of electrical machinery and apparatus n.e.c.
34	Manufacture of electronic equipment and apparatus
35	Manufacture of medical, precision and optical instruments

Codes	Homogeneous branches SIOT base 1995
1	Agriculture, livestock and hunting
2	Forestry, logging and related service activities
3	Fishing
4	Mining of coal and lignite; extraction of peat
5	Extraction of crude petroleum and natural gas; mining of uranium and thorium ores
6	Mining of metal ores
7	Other mining and quarrying
8	Manufacture of coke, refined petroleum products and nuclear fuel
9	Production and distribution of electricity
10	Manufacture of gas; distribution of gaseous fuels through mains; steam and hot water supply
11	Collection, purification and distribution of water
12	Manufacture of meat products
13	Manufacture of dairy products
14	Manufacture of other food products
15	Manufacture of beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Manufacture of leather and leather products
20	Manufacture of wood and wood products
21	Manufacture of pulp, paper and paper products
22	Publishing and printing
23	Manufacture of chemicals and chemical products
24	Manufacture of rubber and plastic products
25	Manufacture of cement, lime and plaster
26	Manufacture of glass and glass products
27	Manufacture of ceramic products
28	Manufacture of other non-metallic mineral products
29	Manufacture of basics metals
30	Manufacture of fabricated metal products
31	Manufacture of machinery and equipment n.e.c.
32	Manufacture of office machinery and computers
33	Manufacture of electrical machinery and apparatus n.e.c.
34	Manufacture of electronic equipment and apparatus
35	Manufacture of medical, precision and optical instruments

Codes	Homogeneous branches SIOT base 2000
36	Manufacture of motor vehicles, trailers and semi-trailers
37	Manufacture of other transport equipment
38	Manufacture of furniture; manufacturing n.e.c.
39	Recycling
40	Construction
41	Sale and retail of motor vehicles; retail sale of automotive fuel
42	Wholesale trade and commission trade
43	Retail trade; repair of personal and household goods
44	Hotels
45	Restaurants
46	Railway transport
47	Other land transport; transport via pipelines
48	Water transport
49	Air transport
50	Support and auxiliary transport activities
51	Travel agencies activities
52	Post and telecommunications
53	Financial intermediation, except insurance and pension funding
54	Insurance and pension funding, except compulsory social security
55	Activities auxiliary to financial intermediation
56	Real estate activities
57	Renting of machinery, personal and household goods
58	Computer and related activities
59	Research and development
60	Other business activities
61	Market education
62	Market health and social work
63	Market sewage and refuse disposal, sanitation and similar activities
64	Market activities of membership organization n.e.c.
65	Market recreational, cultural and sporting activities
66	Other service activities

Codes	Homogeneous branches SIOT base 1995
36	Manufacture of motor vehicles, trailers and semi-trailers
37	Manufacture of other transport equipment
38	Manufacture of furniture; manufacturing n.e.c.
39	Recycling
40	Construction
41	Sale and retail of motor vehicles; retail sale of automotive fuel
42	Wholesale trade and commission trade
43	Retail trade; repair of personal and household goods
44	Hotel and restaurant services
45	Railway transport
46	Other land transport; transport via pipelines
47	Water transport
48	Air transport
49	Support and auxiliary transport activities; Travel agencies activities
50	Post and telecommunications
51	Financial intermediation, except insurance and pension funding
52	Insurance and pension funding, except compulsory social security
53	Activities auxiliary to financial intermediation
54	Real estate activities
55	Renting of machinery, personal and household goods
56	Computer and related activities
57	Research and development
58	Other business activities
59	Market education
60	Market health and social work
61	Market sewage and refuse disposal, sanitation and similar activities
62	Market recreational, cultural and sporting activities
63	Other service activities

Codes	Homogeneous branches SIOT base 2000
67	Public Administration
69	Non-market education
68	Non-market health and social work
70	Non-market sewage and refuse disposal, sanitation and similar activities
71	Non-market activities of membership organization n.e.c
72	Non-market recreational, cultural and sporting activities
73	Private households with employed persons
	(*)

Codes	Homogeneous branches SIOT base 1995
64	Public Administration
65	Non-market education
66	Non-market health and social work
67	Non-market sewage and refuse disposal, sanitation and similar activities
68	Non-market activities of membership organization n.e.c of NPISHs
69	Non-market recreational, cultural and sporting activities
70	Private households with employed persons
71	Financial Intermediation Services Indirectly Measures (FISIM) (*)

(*) This branch disappears in base 2000, the implementation of the new treatment implies that this services are allocated to the different branches/sectors users.