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# "compilation of use matrix of intermediate consumption in France for a new benchmark"

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This paper shows the compilation of "**intermediate uses" matrix** in France for a new benchmark (base 2000). The **intermediate uses** shows purchases of products by industry, in order to produce their output. Here, we will speak about balance of intermediate consumption (IC) but it means in fact balance of value added (VA) and then balance of IC.

The first part of the present paper describes the **statistical sources** which are used for the compilation : for example business enterprise register was used to estimate total intermediate consumption by industry and its breakdown between goods and services products. Another example is given by "annual branch surveys" : the commodity flow approach gives a clear advantage in identifying many flows. For many products, by their nature, it is possible to identify whether they are current or capital goods, and even where they are used. For example, tractors can only be capital goods that are used in agricultural industries or output of the machinery for paper is consumed by papers industries. At the 5-digit level, the CPC identifies more than 1800 products. When compiling commodity flows at a very detailed level, it is thus often possible to allocate the supply of a particular product to only one domestic use.

Secondly, it describes a **new procedure of balancing**, specially the reconciliation between annual enterprise surveys and Supply and Use table. **The reconciliation consists in the same level of output in the two approaches, then valued added and intermediate consumption (IC)** which is the first improvement in the new benchmark (year 2000). In the case of IC, we start from a SUT by branch "to go" to a SUT by sectors of activity (which is most proxy of industries). The other important aspect is the resolution of what we call **"EFFET-LIGNE" and "EFFET-COLONNE"** to estimate the SUT from one year to an other year , for example from year 1999 to year 2000; i.e. to compile a SUT in current year which reconciles all statistical sources in a integrated framework.

## I - THE SUPPLY AND USE TABLE (SUT) IN FRENCH SYSTEM

### 1.1 rows and columns in French SUT

Commodity flows are the lines of our "SUT". They are calculated as a reconciliation of all kinds of sources on each specified product; Commodity flows at G level (118 items) grouping of NACE-CPA rev.1 class 4, the level of synthesis in SIE-PAC and SUT, calculation of VA by branches, sectors...

About column, the units in the French statistics which are surveyed are **enterprises** instead of local kind of activity units (LKAU). In fact, SNA 93 and ESA 95 distinguish first the kind-of-activity unit (KAU) which groups all the parts of an institutional unit in its capacity as producer contributing to the performance of an activity at « class » level (4 digits) of the NACE rev.1 and secondly the local KAU which is a part of the KAU situated in a geographically identified place. It is sometimes called « establishment » in the SNA .

The main aspect is the practical observation. In France we do not dispose of information required below the level of enterprise . If we accept (local) KAU = enterprise (and not establishment !), so « industries » of ESA correspond to « activity sectors » = « institutional sectors » + « industries » (as there are defined in ESA 95 2.108). An "**activity sector**" of enterprises gather all enterprises which produce the main principal activity.

In France, the mix of business accounts and annual enterprise surveys adds an important feature : the system gives not only the total of sales ; it includes also the detail of sales by group of commodities (i.e. "unit of homogeneous production"), according to the classification of products used in national accounts (this classification relies on the European Classification of Products according to Activities - CPA). The « unit of homogeneous production » (UHP) has a unique activity identified by inputs, process and outputs, classified by reference to products . **A branch gather all UHP which belong to this branch**.

The « homogeneous branch » consists of a grouping of units of homogeneous production. The homogeneous branch produces those goods and services specified in its classification and only those products. (ESA 1995 2.114). In France, « branches », are the columns of SUT. This is reason, why we compile at first SUT by branch and then we deduce SUT by "activity sectors", which is the contrary way of SNA recommendations, but the final result is same.

### 1.2 the main statistical source (System intermediate of enterprise)

Since the late sixties French statisticians have built a data base made of about three million individual sets of records coming from enterprises' accounts. At the same time a comprehensive system of annual enterprise surveys was progressively developed, covering mining and manufacturing industry first, then construction, transport, wholesale and retail trade, and finally non financial market services. The concepts used in their questionnaires are derived from business accounting standards. This system of annual enterprise surveys has therefore the same conceptual framework of reference as the fiscal data base. The use of a common identification code (number SIREN) for all relations between government and enterprises allows to compare and finally to merge both sets of data. The outcome is a data base named "Unified System of Enterprises Statistics".

To summarize, the Unified System of Enterprises Statistics contains individual sets of data. Each of them corresponds to an enterprise on which a number of characteristics are known : principal economic activity, size - measured through sales or number of employees, since both criteria are available -, location, legal status, fiscal status, etc.

One of the most important outputs of the Unified System of Enterprises Statistics is the "intermediate system of enterprises". This system provides a framework to analyse the accounts of enterprises. Data are organized according to the conceptual framework of national accounts but they continue to follow accounting rules (timing, valuation, etc.) of business accounts. That explains why this system is labelled "`intermediate". It is built by exclusively adding individual enterprises' records, while being conceptually close to national accounts. As a bridge linking individual business accounts and macro-economic national accounts, the intermediate system of enterprises plays a key-role in the elaboration of national accounts.

### 1.3 Surveys used to compile IC matrix in year 1999

The most commonly used approach consists in starting from the total IC by industry, i.e. the row 'Total'. Then, there is a balancing process with the amounts which are available for intermediate use in the different product commodity flows. Finally, an equality is obtained between the sum of the row 'Total' by industry and the sum of the column 'Total' by product.

In France, especially where accounts rely on data sources on enterprises (institutional approach), IC may be initially known at the level of the whole economy. The source of information come from the business accounts of enterprises. Some adjustments are necessary to pass from the IC of these accounts to IC of national accounts. We call these adjustments "intermediate system of enterprises - passage to annual accounts" (SIE - PAC).

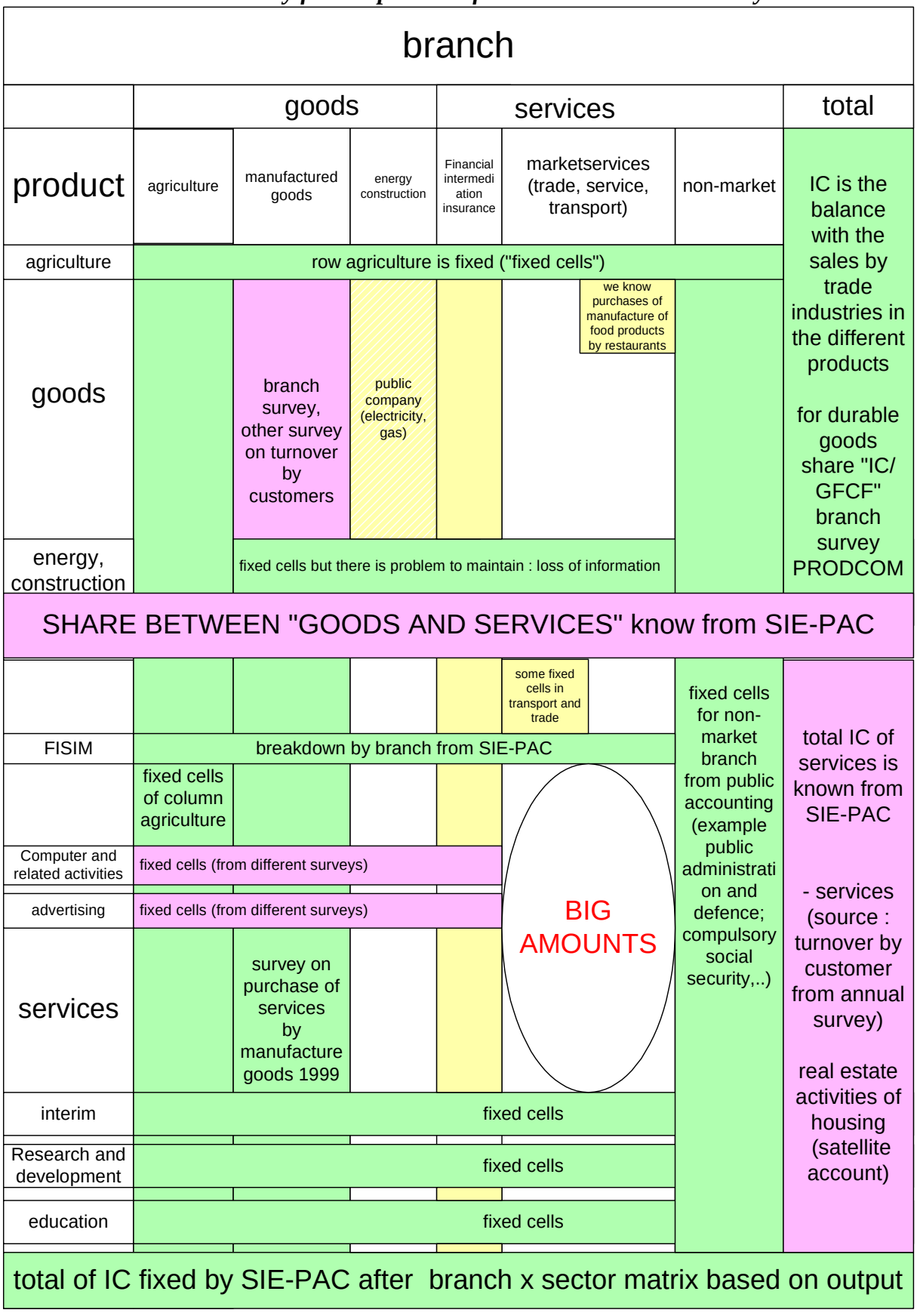
Note that inputs as reported in business accounts are rarely detailed enough for the purpose of SUT compilation. Even when more detailed business accounts are obtained, they contain only broad categories of inputs. For example, the category of other services is reported instead of the detailed information such as computer and related services, research and development services, other business services etc. In these cases, it is necessary to make supplementary surveys to break down these aggregate items. Then , from SIE - PAC , it was possible to distinguish two kind of purchases : (1) purchase of goods, (2) purchase of services.

For compilation of "Intermediate entries table" (TEI), we use a lot of surveys in year 1999. If we breakdown the TEI between 4 quadrants, "top left" is well known because of different surveys (branch survey at a very detailed level : example seats for motor vehicles, …).

Then the "bottom left" is also well known by a survey on purchases of services products by manufactured goods industries. The only question mark is to pass from business accounting to national accounts (for example even if insurance premiums usually appear as operating costs in business accounts, the insurance service is measured in a different way in national accounting, through the equality : Premiums earned + premium supplements – claims due.

The "top right" is not very precise but the amounts (purchase of goods by services) are not so much big. And it could be added that public accounting allow to know purchase of goods by non market services. So the most important problem was the estimation of IC of services by services. About 55% of IC of total services are not very well allocated (figure 1)

***Figure 1***
***Statistical sources and survey for compilation of intermediate use matrix in year 1999***




*green : very good estimated ; rose : good estimated ; yellow : almost good estimated ; white: bad estimated.*

## 1.4 Special treatments of IC in the French SUT

### *1.4.1 Diagonal*

The diagonal records the intermediate consumption that an industry makes of products which correspond to its main activity. Thus, one finds here:

- Inter-establishment deliveries carried out between establishments belonging to the same enterprise. They are recorded in the total output of the enterprise as a whole.
- Intra-establishment deliveries, i.e. deliveries of goods and services produced and consumed within the same accounting period and the same establishment are not recorded as part of production of that unit, thus are not included in either intermediate consumption or output.

Inter-deliveries may not give rise to sales and so their value must be adequately estimated. Deliveries which are not sold must also be entered in the diagonal, i.e. the exchanges between two enterprises or two unit of homogeneous production without there being invoicing.

For agriculture, the diagonal corresponds especially to the production of hay, bleaches on grass and forages, for which there is no market, and also grains and plants for sowing and planting. Market prices are applied to the known quantities.

In energy, one part of the output of certain goods - specifically designed in the NACE - is consumed within the same group of the NACE in which they are produced: hard coal consumed by coal mines in the production of coal briquettes; lignite consumed in the production of lignite briquettes, coke and coke dust, natural gas, refinery products and other petroleum products, electrical energy consumed by power stations and their auxiliary services; energy consumed for pumping.

### *1.4.2. Treatment of general contractors (sub-contracting)*

The practice of sub-contracting requires particular attention in the new benchmark 2000. It means that a company works with the exclusive specifications ordered by another company (the buyer). The sub-contractor manufactures either spare-parts or semi-finished products that will integrate directly into the buyer’s final product.

In practise, it is necessary to first distinguish specialised sub-contracting. Whenever a firm, because of its own strategy, does not intend to master a specific part of the industrial process, it will then call for a specialised sub-contractor, selected upon twin criteria of know-how and technical equipment. This sub-contracting relates to goods (raw materials or manufactured goods) and relates to an activity different from that of the company which buy them. One must regard the provided raw material as intermediate consumption.

In another situation, though used to making a product itself, a firm exceptionally delegates some particular production to a sub-contractor because it does not have the ‘capacity’ (sub-contracting of capacity). This occasional call for sub-contracting is quite separate from specialised sub-contracting.

The diagonal includes finally this sub-contracting of ‘capacity’. Sometimes, in the case of construction, one carries out a consolidation of flow (for example, when the management of part of the building site is transferred). However, it is normal to value that sub-contracting, which forms the largest single purchase for this industry .

Finally, it is important to distinguish in ‘commodity flows’ this sub-contracting from other ‘internal exchanges’ because of wide variety of reasons for doing so, which are not technical.

### *1.4.3. Trade*

Some rows are devoted to trade services (including car-services and other repairs). Conversely, trade margins paid by the different industries on their intermediate consumption are already counted in the purchasers’ price of the IC. Let us recall that the total output of the trade industry is the sum of output of the repairs and of the other “commercial services” carried out by trade and of the trade margins generated by trade. On the other hand, the total of trade margins by product is equal to trade margins generated by the trade industry plus trade margins coming from secondary activity of other industries.

### *1.4.4. Financial intermediaries (the treatment of FISIM)*

A row corresponds to financial services. Parts of these services give rise to actual payments by customers, and they are treated as other services.

Conversely, a part of the financial intermediary services is not charged directly to customers. Financial intermediaries pay or charge different rates of interest to borrowers and lenders, the resulting net receipts being used to defray their expenses and provide an operating surplus. Thus, their output is conventionally measured by the surplus of the property income they earned on the amount of interest they have to pay.

For new benchmark year 2000, these indirectly measured services are broken down between the various possible uses : IC, consumers’ expenditure, imports and exports of services. In the previous benchmark (year 1995), this output was treated as IC of the whole economy, and not distributed among industries. It is thus allocated as a whole in an additional column which corresponds to a notional industry, which has no other IC. The total output of this notional industry was set to zero, leading to a negative entry both for its value added and operating surplus, which counterbalances the overstatement of the operating surplus resulting from industries’ reduced costs.

### *1.4.5. Transport services*

Transport of goods is usually treated as transport margins and thus is not shown as an intermediate consumption item. Nevertheless, some records are made in respect of transport services on intermediate consumption rows in some few cases. It is frequent in the trade industry to organize itself the transportation of the goods they resell, without invoicing separately for this purpose: this corresponds to an intermediate consumption of transport services by trade industry. Also, uses of infrastructure or storage (airports, parking etc.) services, which are included as transport activities in international classification, are intermediate consumption of carriers (plus also subcontracting of transport).

## II - THE COMMODITY FLOW METHOD

The identity between resources and uses of products supposes that commodity flows by products can be compiled. It may be noted that this step is more difficult with a lack of information. But in France, as a general approach to national accounting, it is more developed because it is considered a good procedure to compile value added of the whole economy and also because of lack of information about the input structures of industries. In general, it can be said that the commodity flow method is appropriate for rectangular systems with many product groups.

The elaboration of industry uses provides a major method to fill in the use table along each row. The aim of the method is to trace across each row of the use matrix the consumption of every good and service by industries as intermediate consumption and by various institutional sectors as final demand.

The consumption of a product as intermediate inputs is determined by three factors: (i) input coefficients of this product by the industries which consume the product as inputs, (ii) outputs of the industries that consume the products as inputs (iii) output of the product itself. Given final uses (i) and (ii), it is possible to estimate intermediate uses of a product and then to estimate its total uses.

So we can note that the quadrant of intermediate uses shows intermediate consumption at purchasers' prices, by industry in columns, and by product in rows. The TEI (intermediate entries table) is the heart SUT or I-O table. It reconciles the approaches expenditure and production according this simple idea : IC of a product = IC of a producer.

The commodity flow approach gives a clear advantage in identifying many flows. For many products, by their nature, it is possible to identify whether they are current or capital goods, and even where they are used. For example, tractors can only be capital goods that are used in agricultural industries. When compiling commodity flows at a very detailed level, it is thus often possible to allocate the supply of a particular product to only one domestic use: intermediate consumption of a well defined branch, final consumption expenditure, GFCF. For example, one can accept that the output of the machinery for paper is consumed by papers industries. Therefore, France compile commodity flows by product according to a more detailed classification than that of the industries : for instance, 472 products in France. At the 5-digit level, the CPC identifies more than 1800 products.

Ideally, all of the components of the equation between supply and uses could be estimated separately. But, in practise, it is impossible due to a lack of information.

The commodity flow method is thus not so sophisticated when one of the uses must be estimated as a balancing item, or when the breakdown between users must be estimated by way of some fixed proportions. Some data are very well known and can be elaborated in the detailed classification, e.g imports, exports, taxes and subsidies and products, and sometimes final consumption expenditure. In practise, intermediate consumption is often calculated as a balancing item if there is no gross capital formation (see next table the example of "manufacture of office machinery and computers"). On the other hand, if there is capital formation, it is possible to make a first split between capital formation and intermediate consumption, and to refine it during the general balancing process .

***Table 1***
***Share between final uses from detailed PRODCOM level of example Manufacture of office machinery and computers (year 1996)***

| PRODCOM | **CLASSIFICATION** | **share of uses** | | | | | | **commodity flow** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | IC | GFCF | HFC | PRO | IMP. | EXP. | tot. | IC | GFCF | HFC |
| 30011100 | Automatic typewriters and machinery | | 50% | 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011200 | Electric typewriters | | 50% | 50% | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011320 | computers | | 10% | 90% | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011330 | Accounting machines | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011350 | Cash registers | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011370 | Other machinery of SH 8470 | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011430 | Parts and accessories of the machi | 100% | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30011450 | Parts and accessories of the machines | 100% | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30012170 | Apparatuses of photocopy electrostat | | 100% | | 1 | 1 | 0 | 2 | 0 | 2 | 0 |
| 30012190 | Apparatuses of thermocopie and photocopy | | 100% | | 1 | 2 | 2 | 0 | 0 | 0 | 0 |
| 30012330 | Duplicators of office | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30012350 | Printing machines, to address, stamp, sort, | | 100% | | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30012370 | Machines with sorting, counting | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30012390 | Other machines and apparatuses of office of the | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30012393 | Commercial terminals of self-service store: billetery | | 100% | | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 30012400 | Parts and accessories of the machines of N 8472 | 100% | | | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 30012500 | Parts and accessories of the apparatus | 100% | | | 0 | 3 | 2 | 2 | 2 | 0 | 0 |
| 30021100 | Automatic machines of treatment | | 100% | | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 30021200 | Portable micro-computers | 30% | 30% | 40% | 2 | 3 | 1 | 4 | 1 | 1 | 2 |
| 30021300 | Small data processing machines | 20% | 45% | 35% | 13 | 2 | 1 | 14 | 3 | 6 | 5 |
| 30021400 | Data processing machines | | 100% | | 22 | 1 | 5 | 19 | 0 | 19 | 0 |
| 30021500 | Other automatic of data processing, numerical | 100% | | | 0 | 10 | 10 | 0 | 0 | 0 | 0 |
| 30021630 | Printers | 10% | 65% | 25% | 3 | 9 | 7 | 5 | 0 | 3 | 1 |
| 30021650 | keyboards | 100% | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30021670 | Other exit or input units | 100% | | | 1 | 6 | 3 | 4 | 4 | 0 | 0 |
| 30021673 | Screens (screens plasma, LCD) | 50% | 50% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30021677 | Commercial terminals of self-service | 50% | 50% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30021679 | Other exit and input units | 50% | 50% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30021730 | Central storage units | | 100% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30021755 | Storage units to discs: optics (magneto-optical ) | 50% | 50% | | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 30021757 | Other storage units to discs | 50% | 50% | | 1 | 6 | 2 | 5 | 2 | 2 | 0 |
| 30021770 | Storage units to bands | 50% | 50% | | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 30021790 | Other storage units of the HS 8471 | 50% | 50% | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30021800 | Other machines of the HS 8471, n.c.a. | 50% | 50% | | 4 | 4 | 3 | 5 | 3 | 3 | 0 |
| 30021900 | Parts and accessories of the machines of the HS | 97,5% | | 2,5% | 3 | 19 | 11 | 11 | 10 | 0 | 0 |
| 30029000 | installation of computers | 100% | | | 0 | | | 0 | 0 | 0 | 0 |
| | **total (millions francs)** | | | | 54 | 71 | 50 | 75 | 28 | 39 | 8 |
| | **estimated** | | | | | | | | 41 | 57 | 12 |
| | **commodity flow (benchmark 95)** | | | | | | | | 51 | 51 | 9 |
| | **difference** | | | | | | | | -10 | 6 | 3 |

*Source : PRODOM branch annual survey 1996*

This example shows that we have reduced IC of Manufacture of office machinery and computer product about ten billions and increase at the same time GFCF about 6 and Final household consumption about 3 between the two benchmark year 1995 and 2000. To explain the method, after estimating ratio of breakdown for these three aggregate respectively for instance 20 % , 45% and 35% for small data processing machines (PRODCOM 30021300), we estimate the domestic market equal to 14 (13 output + 2 imports - 1 exports) and apply those proportions to estimate IC, CFCF and household final consumption. For example IC = 20% * 14 = 3.

## 2.1 Compilation of intermediate consumption by products

Intermediate consumption of different products is in general calculated by difference (see figure 2), after a balance with changes in inventories at users and GFCF (see below the example of PRODCOM), except when precise information on the total of intermediate consumption is available, where the following applies . When commodity flows are compiled in a very high level of detail, intermediate consumption is often the only use or almost the only use. This is the case for some services to business which are not exported, such as security or cleaning. Note that there is a need for statistical surveys on the intermediate uses of services, including trade and transport, because they now represent about 70% of GDP.

In a second case, the total of intermediate consumption is known via information on uses by the various users. This can often be the case for energy products, research and certain business services (advertising, data processing departments, etc.). The best example can be given when a company is in a position of quasi-monopoly (like large public-sector firms) which enables it to know its customers (enterprises and households).

### *2.1.1. goods :*

To break down these broad expenditures into a more detailed product classification, and to supplement the gaps in the household expenditure surveys, which are generally based on small samples, it is necessary to resort to annual retail sales statistics. In annual enterprises survey, it is possible to distinguish the sales by trade industries in the different kinds of products. It is then possible to compile a table called 'products-industries matrix'.. This estimate is partial, in the sense that it relates only to the part of consumption which is likely to be sold through trade. All the services are thus excluded, as well as products such as gas and electricity. In addition, it can only be made by groups of products (about 42) because of the difficulty in carrying out a fine analysis of the turnover of non-specialized trade.

Then, after estimating final household expenditure, the question is to make breakdown between GFCF and IC and eventually change in inventories which are estimated from SIE - PAC. We know the total of GFCF from SIE - PAC which could be balanced. Again, we follow the method presented before about the example of manufacture of office machinery and computers. This method was applied for durables goods (electrical and machinery).

### *2.1.2. Services*

Final consumption expenditure of services should be estimated by the commodity flow approach, using various sources. The most common sources are : transport surveys for transport, enterprise annual surveys for market services to enterprise and to households, satellite accounts of housing for real estate services, reports of public utility undertakings, reports from the tourist industry, household expenditure surveys, etc… .

We must conciliate two aims . At first, the level of IC of total services must remain fixed on the total of IC of the services resulting from the SIE-PAC . Secondly, we used a survey which gave the breakdown of turnover of enterprises between IC, and final use (i.e. by customer) for each product of services at the 118 NACE classification level. Here we can see the ratio between total of household consumption from annual enterprise survey is about 23% in 1999, which is almost the same percentage for services in commodity flow in benchmark 2000 instead of 26% in benchmark 1995.

## 2.1 Compilation of IC by branch in year 1999

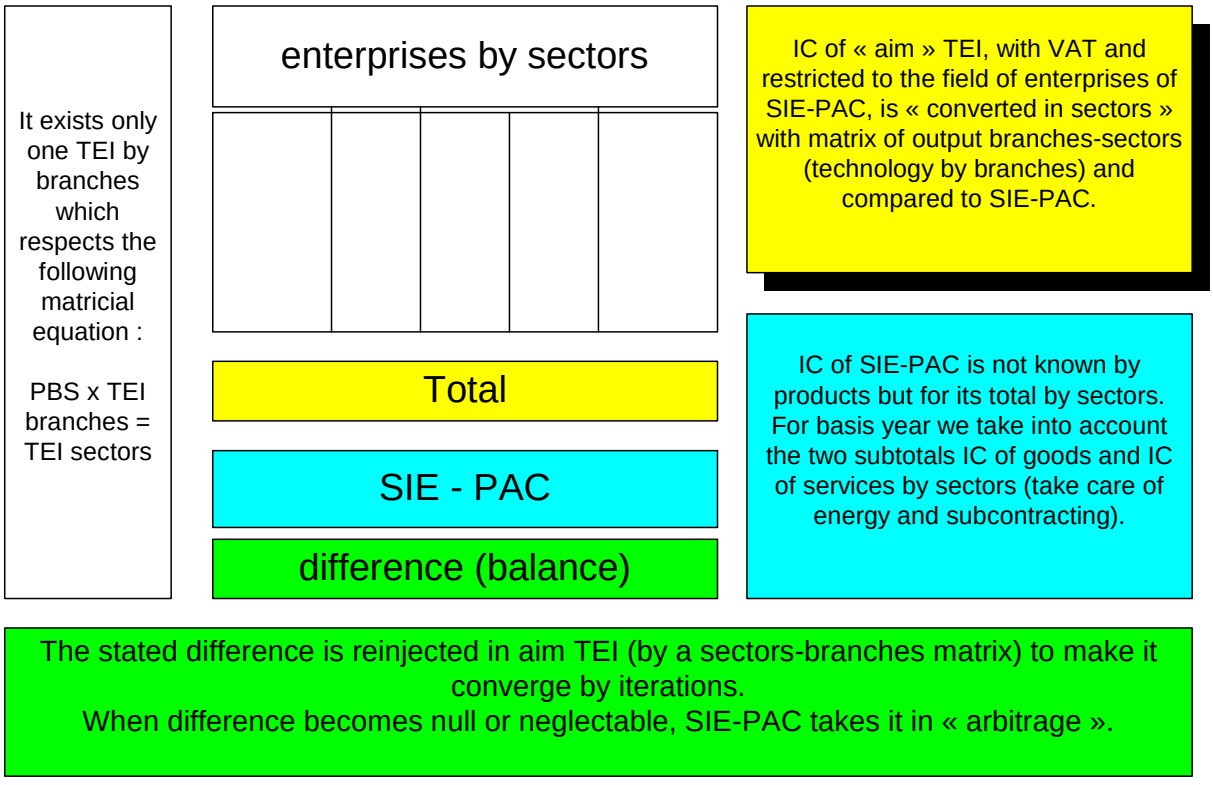
In SUT, we are looking for input structures that best describe technical relationships in production techniques. It is therefore always better to classify activities in as much detailed as possible and, if aggregation is necessary, only activities with similar input structures should be aggregated. The main reason is that if an industry in a SUT is an aggregate of many activities, each one with a different set of inputs, then when the shares of outputs of each type of activities change, the aggregate input structure of the industry changes, even though the input structures of the component activities remain unchanged.

So, in France , our principle was to estimate the IC by branch, then the IC by different institutional sectors, and by branch. The IC of non financial corporation was estimated by difference between the total and the other institutional sectors. At this step, it is still IC by branch of non financial corporation institutional sector.

The next step is to calculate IC by "sectors" of activity of non financial corporation because total IC are observed by sectors in SIE - PAC. This is possible when multiplying :

- matrix of technical coefficient of enterprises by branch (product in row, branch in column) x
- sector matrix based on output (branch in row, sectors in column) (technology by branches).

***Figure 2***
***Checking of « correctness » of « aim » TEI***



## 2.2 Compilation of IC by branch in current years. Two conceptual issues ; EFFET-LIGNE and EFFET-COLONNE

The method to estimate the TEI in current prices from year to year (and also in volume and in chain linking price) , is a little bit different than that one for a benchmark year.

We will explain hereafter by the mean of a numerical example (table 2). So there are different steps in the estimation of TEI year 2000 from TEI year 1999.

◆ The first step is to estimate cells (bottom of figure 3). These estimates are obtained **by projection of TEI** of previous year, according to index of volume of branch and index of price of product. **We will then think in value terms.** We make the projection without IC2 (subcontracting of capacity , see before), which does not respect this projection calculation, because it varies very strongly from year to year, not for technological reason .

We take into account fixed cells too, which are in green color in the figure 3 and in the numerical example (table 2). These cells are known from survey every year as for the benchmark year and there is no reason to change the corresponding amounts.

◆ In a second step, we compare the IC obtained by projection with IC obtained by commodity flows. The ratios between both are called "EFFET-LIGNES" and step 2 consists to reduce these EFFETS in volume (step 2 in the numerical example of table 2).

◆ Step 3 consists to estimate SUT in current price (step 3 of table 2).

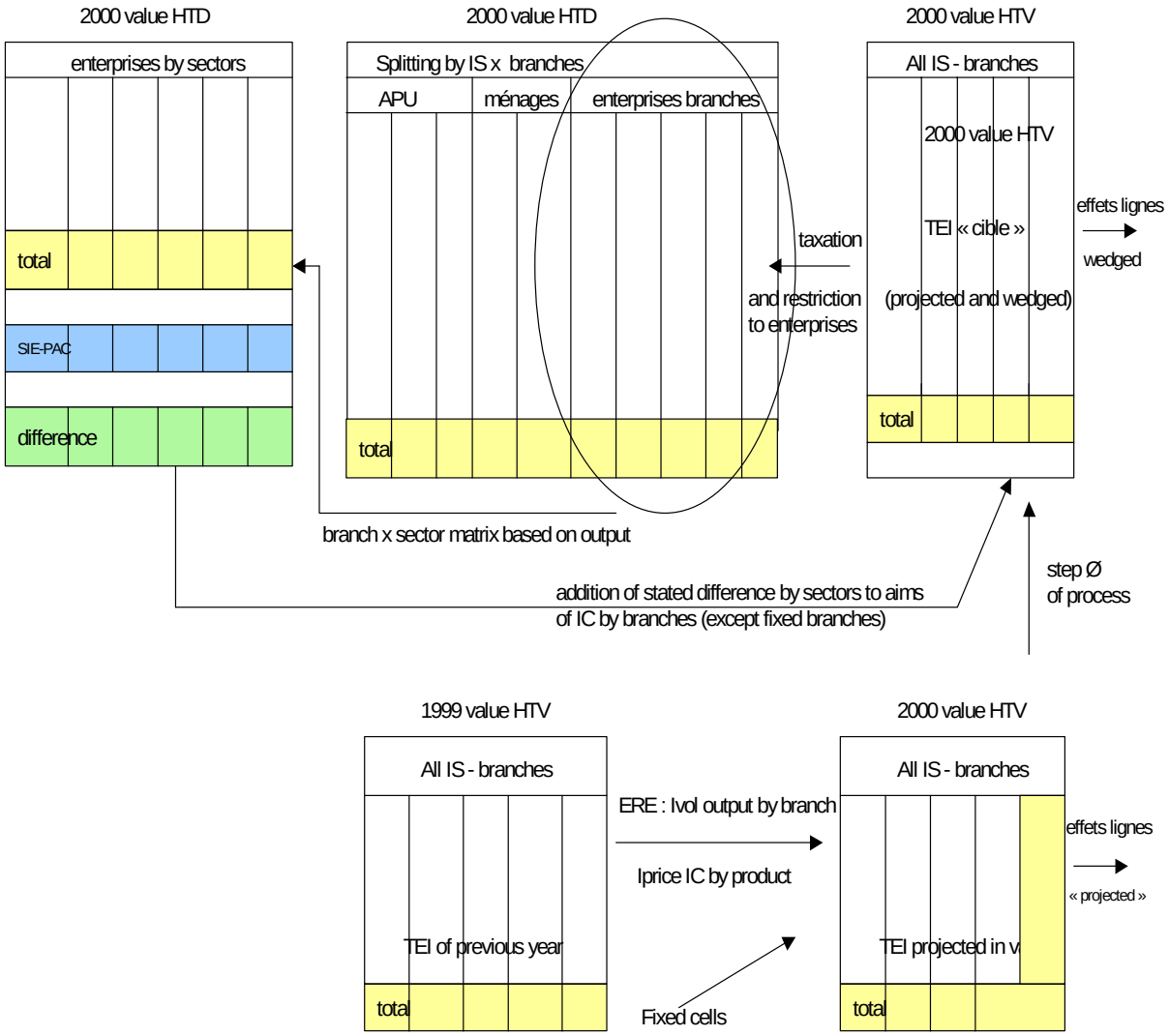
Then, after multiplying IC by the rates of VAT (taxation), we calculate IC of branch just for enterprises sectors. IC of enterprises are obtained by difference with other institutional sectors, "exogenous » by branches and products or only by branches. In the numerical example, agriculture is produced by households and non market services by General Government so that IC for enterprises sectors do not concern these two branches .

◆ Then, we multiply the matrix of technical coefficient for enterprises by the "branch x sector" matrix based on output (step 4) to obtain a TEI by « activity sectors ». Hypothesis of technology by branches means all combination of inputs and outputs only depend of branch and not of sector. To reinject them in branches, we must inverse the matrix of structure branches-sectors. So we obtained a total of IC by « activity sectors » which is different from total IC of SIE-PAC. Then, we must reach the total IC of SIE -PAC by changing some cells [1].

◆ Last step consists to change the cells in the TEI by branch with the same difference than in TEI by « activity sectors ». For example, if we add 6 on some cell in the TEI by « activity sectors », we will add 6 in TEI by branch on the same cell.

[1] In practice, one team, which gathers people who compile commodity flows, will try to modify IC by products when they have strong « EFFETS-LIGNES » in the same sign by projection and wedging. Or they can fix cells or rows when they are sure of IC and dispose of some information. About strong « EFFET-COLONNE » , they can also fix cells or totals of IC of branches. They have to look also to their value added too. In another step, the proposals made by the synthesis team are introduced to solve strong relative EFFETS-LIGNES in commodities flows. If such proposals are considered inconsistent with the supplies and uses, a check is carried out on both sides, until an agreement is reached. So it will modify other and small EFFETS-LIGNES during the process. At the end of the process, SIE-PAC takes the difference in « arbitrage » (i.e. balancing).

***Figure 3***
***Overview of "TEI calculation": Resolution of table of intermediate consumption, by Products and branches/sectors in "base 2000"***




*"ménages = households", "TEI CIBLE = TEI aim"*

We give a numerical example how to reach to the good level of intermediate consumption matrix. The example can be applied, in particular, to the compilation of input-output tables. However, we have simplified it with respect to ESA95. In the example, seven industries (and products) are included. There are trade margins on products (agriculture, energy and manufacture). We assume that output of trade is exactly equal to the total of trade margins.

For the first step of year 2000 "EFFETS LIGNES" are higher than [-2,+2%]. EFFET-LIGNE is equal to the ratio between IC from projection of technical coefficient and IC from commodity flow (E.R.E. in French) . For example, for product market services EFFET LIGNE is equal to 0,967 = 1559 /1618 (see table 2 step 1 in bottom of next page). So, the first aim is to reduce "EFFET LIGNE" between 0,98 and 1,02.

In a next step, it is necessary to reach the level of IC given by SIE-PAC for the total economy and for each branch (see table 2 step 4) without changing the fixed cells (IC of product agriculture and energy or IC by agriculture and by non-market services) (green color).

## *Table 2*
## *Resolution of table of intermediate consumption (TEI), by Products and branches/sectors*

**SUT year 1999 in value** — **(year 1999 at current price)**

| branch / product | agri-culture | energy | goods | const. | trade | market serv | non-m. serv | **Total IC** | | final cons. house. | final cons. APU | GFCF | change invent. prod. | change invent. users | Export | **Total uses** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| agricullture | 102 | | 230 | | | 17 | 7 | 356 | | 153 | | 3 | -3 | -2 | 78 | 585 |
| energy | 14 | 90 | 93 | 10 | 42 | 38 | 25 | 312 | | 231 | | | | | 23 | 566 |
| goods | 109 | 41 | 1 367 | 241 | 40 | 248 | 148 | 2 194 | | 1 353 | 45 | 446 | 9 | 8 | 914 | 4 969 |
| construction | 1 | 10 | 4 | 39 | 2 | 19 | 35 | 110 | | 27 | | 546 | | 1 | | 684 |
| market services | 15 | 40 | 592 | 119 | 102 | 526 | 99 | 1 493 | | 1 233 | | 88 | | | 258 | 3 072 |
| non-market services | | | | | | | | 0 | | 87 | 1 075 | | | | | 1 162 |
| total IC | 241 | 181 | 2 286 | 409 | 186 | 848 | 314 | 4 465 | | 3 084 | 1 120 | 1 083 | 6 | 7 | 1 273 | 11 038 |
| **value added** | 234 | 185 | 858 | 275 | 838 | 1 976 | 946 | 5 312 | | | | | | | | |
| **PROD° branch** | 475 | 366 | 3 144 | 684 | 1 024 | 2 824 | 1 260 | 9 777 | | | | | | | | |
| transfers | -44 | | 44 | | | | | 0 | | | | | | | | |
| incidental sales | | | 11 | | | 87 | -98 | 0 | | | | | | | | |
| **PROD° product** | 431 | 366 | 3 199 | 684 | 1 024 | 2 911 | 1 162 | 9 777 | | | | | | | | |
| importations | 49 | 90 | 938 | | | 161 | | 1 238 | | | | | | | | |
| duties taxes | 1 | | 9 | | | | | 10 | | | | | | | | |
| trade margins | | | | | | | | | | | | | | | | |
| - on IC | 44 | 28 | 284 | | -356 | | | 0 | | | | | | | | |
| - on HFC | 76 | 41 | 476 | | -593 | | | 0 | | | | | | | | |
| - on GFCF | | | 35 | | -35 | | | 0 | | | | | | | | |
| - on exports | 12 | | 28 | | -40 | | | 0 | | | | | | | | |
| taxes on product | -28 | 41 | | | | | | 13 | | | | | | | | |
| **Total supplies** | 585 | 566 | 4 969 | 684 | 0 | 3 072 | 1 162 | 11 038 | | | | | | | | |

**SUT year 2000 in volume**

**STEP 1 : CALCULATION OF "OTHER CELLS" BY PROJECTION OF TECHNICAL COEFFICIENT**

| branch / product | agri-culture | energy | goods | const. | trade | market serv | non-m. serv | **Total C. I.** | **C. I. ERE** | final cons. house. | final cons. APU | GFCF | change invent. prod. | change invent. users | Export | **Total uses** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| agricullture | 89 | | 234 | | | 18 | 8 | 349 | 349 | 156 | | 4 | 8 | 4 | 81 | 602 |
| energy | 15 | 93 | 97 | 10 | 44 | 40 | 29 | 328 | 328 | 237 | | | | | 23 | 588 |
| goods | 110 | **43** | **1 397** | **251** | **41** | **264** | 169 | **2 275** | 2 265 | 1 392 | 48 | 460 | -2 | 0 | 975 | 5 138 |
| construction | 1 | **10** | **4** | **41** | **2** | **20** | 43 | **121** | 114 | 28 | | 570 | | 1 | | 713 |
| market services | 15 | **42** | **605** | **124** | **105** | **560** | 108 | **1 559** | 1 618 | 1 286 | | 91 | | | 278 | 3 273 |
| non-market services | 0 | **0** | **0** | **0** | **0** | **0** | 0 | **0** | 0 | 89 | 1 092 | | | | | 1 181 |
| total IC | 230 | **188** | **2 337** | **426** | **192** | **902** | 357 | **4 632** | 4 674 | 3 188 | 1 140 | 1 125 | 6 | 5 | 1 357 | 11 495 |
| **value added** | | | | | | | | | | | | | | | | |
| **product° branch** | 493 | 382 | 3 213 | 713 | 1 052 | 3 008 | 1 286 | 10 147 | | | | | | | | |
| transfers | -47 | | 47 | | | | | 0 | | | | | | | | |
| incidental sales | | | 12 | | | 93 | -105 | 0 | | | | | | | | |
| **PROD° product** | 446 | 382 | 3 272 | 713 | 1 052 | 3 101 | 1 181 | 10 147 | | | | | | | | |
| importations | 51 | 92 | 1 007 | | | 172 | | 1 322 | | | | | | | | |
| duties taxes | 1 | | 10 | | | | | 11 | | | | | | | | |
| trade margins | | | | | | | | | | | | | | | | |
| - on IC | 43 | 29 | 293 | | -365 | | | 0 | | | | | | | | |
| - on HFC | 77 | 42 | 490 | | -609 | | | 0 | | | | | | | | |
| - on GFCF | | | 36 | | -36 | | | 0 | | | | | | | | |
| - on exports | 12 | | 30 | | -42 | | | 0 | | | | | | | | |
| taxes on product | -28 | 43 | | | | | | 15 | | | | | | | | |
| **Total supllies** | 602 | 588 | 5 138 | 713 | 0 | 3 273 | 1 181 | 11 495 | | | | | | | | |

EFFET-LIGNE
=2275/2265

1397 = 1367 * 3213/3144

step 1

in grey fixed cells

**explanation : projection of technical coefficient**

The estimation of this IC start from the assumption that the technical coefficient does not change from year N-1 to year N. For example, we multiply 1367 by the volume index of output of manufactured goods industry which is supposed to be equal to 3213 / 3144. The problem is with that calculation (and same for the other cells) , the "EFFET LIGNE" are too much different from interval [-2%,+2%] . For example, for market services products, EFFET LIGNE is equal to 1559 /1618 =0.963 so it not in the gap [-2%,+2%] .

## *Table 2 (following)*
## *Resolution of table of intermediate consumption, by Products and branches/sectors*

**SUT year 2000 in volume**

**STEP 2 : REDUCTION OF "EFFET-LIGNE"**

| branch / product | agri-culture | energy | goods | const. | trade | market serv | non-m. serv | Total C. I. | C. I. ERE | final cons. house. | final cons. APU | GFCF | change invent. prod. | change invent. users | Export | Total uses |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| agricullture | 89 | | 234 | | | 18 | 8 | 349 | 349 | 156 | | 4 | 8 | 4 | 81 | 602 |
| energy | 15 | 93 | 97 | 10 | 44 | 40 | 29 | 328 | 328 | 237 | | | | | 23 | 588 |
| goods | 110 | 43 | **1 389** | **250** | 41 | **263** | 169 | **2 265** | 2 265 | 1 392 | 48 | 460 | -2 | 0 | 975 | 5 138 |
| construction | 1 | 10 | 4 | 41 | 2 | 20 | 43 | 121 | **121** | 28 | | **563** | | 1 | | 713 |
| market services | 15 | **43** | **618** | **126** | **107** | **572** | 108 | **1 589** | **1 589** | **1 315** | | 91 | | | 278 | 3 273 |
| non-market services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 89 | 1 092 | | | | | 1 181 |
| total IC | 230 | 189 | **2 342** | 427 | 194 | **913** | 357 | **4 652** | **4 652** | **3 217** | 1 140 | **1 118** | 6 | 5 | 1 357 | 11 495 |
| **value added** | 263 | 193 | 871 | 286 | 858 | 2 095 | 929 | 5 495 | | | | | | | | |
| **product° branch** | 493 | 382 | 3 213 | 713 | 1 052 | 3 008 | 1 286 | 10 147 | | | | | | | | |
| transfers | -47 | | 47 | | | | | 0 | | | | | | | | |
| incidental sales | | | 12 | | | 93 | -105 | 0 | | | | | | | | |
| **PROD° product** | 446 | 382 | 3 272 | 713 | 1 052 | 3 101 | 1 181 | 10 147 | | | | | | | | |
| importations | 51 | 92 | 1 007 | | | 172 | | 1 322 | | | | | | | | |
| duties taxes | 1 | | 10 | | | | | 11 | | | | | | | | |
| trade margins | | | | | | | | | | | | | | | | |
| - on IC | 43 | 29 | 293 | | -365 | | | 0 | | | | | | | | |
| - on HFC | 77 | 42 | 490 | | -609 | | | 0 | | | | | | | | |
| - on GFCF | | | 36 | | -36 | | | 0 | | | | | | | | |
| - on exports | 12 | | 30 | | -42 | | | 0 | | | | | | | | |
| taxes on product | -28 | 43 | | | | | | 15 | | | | | | | | |
| **Total supplies** | 602 | 588 | 5 138 | 713 | 0 | 3 273 | 1 181 | 11 495 | | | | | | | | |

**SUT year 2000 in value (current prices)**

**STEP 3 : CALCULATION IN VALUE**

| branch / product | agri-culture | energy | goods | const. | trade | market serv | non-m. serv | Total C. I. | C. I. ERE | final cons. house. | final cons. APU | GFCF | change invent. prod. | change invent. users | Export | Total uses |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| agricullture | 91 | | 241 | | | 19 | 8 | 359 | 359 | 163 | | 4 | 9 | 6 | 86 | 627 |
| energy | 16 | 107 | 101 | 11 | 46 | 42 | 30 | 353 | 353 | 248 | | | | | 26 | 627 |
| goods | 115 | **45** | **1 449** | **261** | **43** | **274** | 174 | **2 361** | 2 361 | 1 431 | 49 | 472 | -2 | 0 | 1 023 | 5 334 |
| construction | 1 | **10** | **4** | **45** | **2** | **21** | 44 | 127 | **127** | 29 | | **584** | | 1 | | 741 |
| trade | | | | | | | | | | | | | | | | |
| market services | 16 | **45** | **649** | **132** | **112** | **602** | 113 | **1 669** | **1 669** | **1 370** | | 94 | | | 289 | 3 422 |
| non-market services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 89 | 1 092 | | | | | 1 181 |
| total IC | 239 | 207 | **2 444** | 449 | 203 | **958** | 369 | **4 869** | **4 869** | **3 330** | 1 141 | **1 154** | 7 | 7 | 1 424 | 11 932 |
| **value added** | 275 | 189 | 875 | 292 | 889 | 2 188 | 917 | 5 625 | | | | | | | | |
| **product° branch** | 514 | 396 | 3 319 | 741 | 1 092 | 3 146 | 1 286 | 10 494 | | | | | | | | |
| transfers | -49 | | 49 | | | | | 0 | | | | | | | | |
| incidental sales | | | 12 | | | 97 | -105 | 4 | | | | | | | | |
| **PROD° product** | 465 | 396 | 3 380 | 741 | 1 092 | 3 243 | 1 181 | 10 498 | | | | | | | | |
| importations | 52 | 111 | 1 066 | | | 179 | | 1 408 | | | | | | | | |
| duties taxes | 1 | | 10 | | | | | 11 | | | | | | | | |
| trade margins | | | | | | | | | | | | | | | | |
| - on IC | 44 | 32 | 306 | | -382 | | | 0 | | | | | | | | |
| - on HFC | 81 | 44 | 504 | | -629 | | | 0 | | | | | | | | |
| - on GFCF | 0 | | 37 | | -37 | | | 0 | | | | | | | | |
| - on exports | 13 | | 31 | | -44 | | | 0 | | | | | | | | |
| taxes on product | -29 | 44 | | | | | | 15 | | | | | | | | |
| **Total supllies** | 627 | 627 | 5 334 | 741 | 0 | 3 422 | 1 181 | 11 932 | | | | | | | | |

we multiply each cell by the price of IC of each product

**explanation : reduction of EFFET LIGNE and calculation in VALUE of year 2000**

The first aim is to reduce EFFET LIGNE. For example, for market services we estimate level of IC which is between the level of projection (i.e. 1559) and the level of commodity flow (i.e. 1618). A good level would be 1589. Then we calculate new IC by branch with the same proportions. After this step, it is necessary to estimate the SUT in value of year n by multiplying all the cells (aggregates) by the price index we have calculated before.

## *Table 2 (following) Wedge to IC of SIE-PAC*

**SUT year 2000 in current prices**

**STEP 4 : CALCULATION BY SECTOR AND SUPPRESSION OF EFFET COLONNE**

**OUTPUT MATRIX**

| sectors / branch | EN | GOOD | CONST | TRADE | SM | total |
|---|---|---|---|---|---|---|
| energy | 374 | 15 | 7 | 0 | 0 | 396 |
| goods | 0 | 3 059 | 26 | 0 | 234 | 3 319 |
| construction | 0 | 12 | 721 | 0 | 8 | 741 |
| trade | 0 | 0 | 0 | 1 039 | 53 | 1 092 |
| market services | 0 | 130 | 22 | 0 | 2 994 | 3 146 |
| total output | 374 | 3 216 | 776 | 1 039 | 3 289 | 8 694 |

**TECHNICAL COEFFICIENT (from step 3)**

| branch / product | EN | GOOD | CONST | TRADE | SM |
|---|---|---|---|---|---|
| energy | 0,27 | 0,03 | 0,01 | 0,04 | 0,01 |
| goods | 0,11 | 0,44 | 0,35 | 0,04 | 0,09 |
| construction | 0,03 | 0,00 | 0,06 | 0,00 | 0,01 |
| trade | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| market services | 0,11 | 0,20 | 0,18 | 0,10 | 0,19 |
| **total** | **0,52** | **0,66** | **0,61** | **0,19** | **0,30** |

**matricial result = technical coefficient * Output matrix**

**IC BY ACTIVITY SECTORS**

| sectors / product | EN | GOOD | CONST | TRADE | SM | total |
|---|---|---|---|---|---|---|
| energy | 101 | 99 | 14 | 44 | 49 | 307 |
| goods | 42 | 1 353 | 268 | 41 | 368 | 2 072 |
| construction | 9 | 6 | 44 | 2 | 21 | 82 |
| trade | 0 | 0 | 0 | 0 | 0 | 0 |
| market services | 43 | 627 | 139 | 107 | 626 | 1 540 |
| total IC | 195 | 2 084 | 464 | 193 | 1 064 | 4 001 |
| IC from SIE PAC | 200 | 2096 | 460 | 190 | 1060 | 4006 |
| difference | 5 | 12 | -4 | -3 | -4 | 5 |

EFFET COLONNE

WEDGE ON SIE PAC

| sectors / product | EN | GOOD | CONST | TRADE | SM | total |
|---|---|---|---|---|---|---|
| energy | 101 | 99 | 14 | 44 | 49 | 307 |
| goods | 45 | 1 361 | 265 | 40 | 367 | 2 078 |
| construction | 9 | 6 | 44 | 2 | 21 | 82 |
| trade | 0 | 0 | 0 | 0 | 0 | 0 |
| market services | 45 | 630 | 138 | 105 | 623 | 1 539 |
| total IC | 200 | 2 095 | 460 | 190 | 1 060 | 4 006 |
| IC from SIE PAC | 200 | 2096 | 460 | 190 | 1060 | 4 006 |

NEW "TEI" BY BRANCH FROM THE AIM BY SECTORS

| branch / product | EN | GOOD | CONST | TRADE | SM | total |
|---|---|---|---|---|---|---|
| energy | 107 | 101 | 11 | 46 | 42 | 307 |
| goods | 48 | 1 457 | 258 | 42 | 273 | 2 078 |
| construction | 10 | 4 | 45 | 2 | 21 | 82 |
| trade | 0 | 0 | 0 | 0 | 0 | 0 |
| market services | 47 | 652 | 131 | 110 | 599 | 1 539 |
| total IC | 212 | 2 214 | 445 | 200 | 935 | 4 006 |

RECALL OLD TEI ( previous page )

| branch / product | EN | GOOD | CONST | TRADE | SM | total |
|---|---|---|---|---|---|---|
| energy | 107 | 101 | 11 | 46 | 42 | 307 |
| goods | 45 | 1 449 | 261 | 43 | 274 | 2 072 |
| construction | 10 | 4 | 45 | 2 | 21 | 82 |
| trade | 0 | 0 | 0 | 0 | 0 | 0 |
| market services | 45 | 649 | 132 | 112 | 602 | 1 540 |
| total IC | 207 | 2 203 | 449 | 203 | 939 | 4 001 |

***In blue : those figures that will be changed to be wedge with IC of SIE-PAC, in gray fixed cells of energy product.***

**Suppression of « EFFET COLONNE »**

When we multiply the matrix of technical coefficient (product in row, branch in column) by the output matrix (branch in row, sectors in column), we obtain an intermediate consumption matrix by sectors in column. Note that the total column of output matrix is the level we found in the previous table (example 3319 for goods). So it is possible to compare the total of IC by sectors with the total of IC from SIE-PAC. There is a difference what we call in France "EFFET COLONNE". For example, for goods, it is equal to 12 (2096 - 2084). The method consists in adding 12 on the whole of the sector proportionally with the no change on the fixed cells ( here energy product are fixed cells). For example, we add 8 to IC of goods by goods sector and 3 to IC of services by goods sector to reach the level of 2095 and then to suppress "EFFET COLONNE".

Then when the level of IC is equal for all sectors to the IC of SIE-PAC and for the total (4006), we inject this adjustment in the IC matrix by branch. For example, as IC of goods product by goods branch was before 1449 (see table step 5), it will be now 1457 (1449 + 8). Note that the total by branch is the same than the total by sector (4006).

**explanation : last step calculation in VALUE and in VOLUME of year 2000**

So at last step, we can introduce these new estimates in the SUT of year 2000. Finally, IC will be 4874 instead of 4869 and VA 5620 instead of 5625. So it is necessary to reduce finals uses, for example household consumption expenditure of minus 5 (minus 6 for goods products, plus 1 for services products).

## *Table 2 (step 5 calculation in value and step 6 calculation in volume)*

**LAST STEP (5) : CALCULATION IN VALUE after reduction of EFFET LIGNE and suppression of EFFET COLONNE**

| branch / product | agri-culture | energy | goods | const. | trade | market serv | non-m. serv | Total C. I. | C. I. step 6 | final cons. house. | final cons. APU | GFCF | change invent. prod. | change invent. users | Export | Total uses |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| agricullture | 91 | | 241 | | | 19 | 8 | 359 | 359 | 163 | | 4 | 9 | 6 | 86 | 627 |
| energy | 16 | 107 | 101 | 11 | 46 | 42 | 30 | 353 | 353 | 248 | | | | | 26 | 627 |
| goods | 115 | 48 | 1 457 | 258 | 42 | 273 | 174 | 2 367 | 2 361 | 1 425 | 49 | 472 | -2 | 0 | 1 023 | 5 334 |
| construction | 1 | 10 | 4 | 45 | 2 | 21 | 44 | 127 | 127 | 29 | | 584 | | 1 | | 741 |
| market services | 16 | 47 | 652 | 131 | 110 | 599 | 113 | 1 668 | 1 669 | 1 371 | | 94 | | | 289 | 3 422 |
| non-market services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 89 | 1 092 | | | | | 1 181 |
| total IC | 239 | 212 | 2 455 | 445 | 200 | 954 | 369 | 4 874 | 4 869 | 3 325 | 1 141 | 1 154 | 7 | 7 | 1 424 | 11 932 |
| value added | 275 | 184 | 864 | 296 | 892 | 2 192 | 917 | 5 620 | | | | | | | | |
| product° branch | 514 | 396 | 3 319 | 741 | 1 092 | 3 146 | 1 286 | 10 494 | | | | | | | | |
| transfers | -49 | | 49 | | | | | 0 | | | | | | | | |
| incidental sales | | | 12 | | | 97 | -105 | 4 | | | | | | | | |
| PROD° product | 465 | 396 | 3 380 | 741 | 1 092 | 3 243 | 1 181 | 10 498 | | | | | | | | |
| importations | 52 | 111 | 1 066 | | | 179 | | 1 408 | | | | | | | | |
| duties taxes | 1 | | 10 | | | | | 11 | | | | | | | | |
| trade margins | | | | | | | | | | | | | | | | |
| - on IC | 44 | 32 | 306 | | -382 | | | 0 | | | | | | | | |
| - on HFC | 81 | 44 | 504 | | -629 | | | 0 | | | | | | | | |
| - on GFCF | 0 | | 37 | | -37 | | | 0 | | | | | | | | |
| - on exports | 13 | | 31 | | -44 | | | 0 | | | | | | | | |
| taxes on product | -29 | 44 | | | | | | 15 | | | | | | | | |
| Total supllies | 627 | 627 | 5 334 | 741 | 0 | 3 422 | 1 181 | 11 932 | | | | | | | | |

step 5

in blue new change with previous step 3

**LAST STEP (6) : CALCULATION IN VOLUME by dividing SUT in value by price index**

| branch / product | agri-culture | energy | goods | const. | trade | market serv | non-m. serv | Total C. I. | step 2 | final cons. house. | final cons. APU | GFCF | change invent. prod. | change invent. users | Export | Total uses |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| agricullture | 89 | 0 | 234 | 0 | 0 | 18 | 8 | 349 | 349 | 156 | 0 | 4 | 8 | 4 | 81 | 602 |
| energy | 15 | 93 | 97 | 10 | 44 | 40 | 29 | 328 | 328 | 237 | 0 | 0 | 0 | 0 | 23 | 588 |
| goods | 110 | 46 | 1 397 | 247 | 40 | 262 | 169 | 2 271 | 2 265 | 1 386 | 48 | 460 | -2 | 0 | 975 | 5 138 |
| construction | 1 | 10 | 4 | 41 | 2 | 20 | 43 | 121 | 121 | 28 | 0 | 563 | 0 | 1 | 0 | 713 |
| market services | 15 | 45 | 621 | 125 | 105 | 569 | 108 | 1 588 | 1 589 | 1 316 | 0 | 91 | 0 | 0 | 278 | 3 273 |
| non-market services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 89 | 1 092 | 0 | 0 | 0 | 0 | 1 181 |
| total IC | 230 | 194 | 2 353 | 423 | 191 | 909 | 357 | 4 657 | 4 652 | 3 212 | 1 140 | 1 118 | 6 | 5 | 1 357 | 11 490 |
| value added | 263 | 188 | 860 | 290 | 861 | 2 099 | 929 | 5 490 | | | | | | | | |
| product° branch | 493 | 382 | 3 213 | 713 | 1 052 | 3 008 | 1 286 | 10 147 | | | | | | | | |
| transfers | -47 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | | | | | | | | |
| incidental sales | 0 | 0 | 12 | 0 | 0 | 93 | -105 | 0 | | | | | | | | |
| PROD° product | 446 | 382 | 3 272 | 713 | 1 052 | 3 101 | 1 181 | 10 147 | | | | | | | | |
| importations | 51 | 92 | 1 007 | 0 | 0 | 172 | 0 | 1 322 | | | | | | | | |
| duties taxes | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 11 | | | | | | | | |
| trade margins | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| - on IC | 43 | 29 | 293 | 0 | -365 | 0 | 0 | 0 | | | | | | | | |
| - on HFC | 77 | 42 | 490 | 0 | -609 | 0 | 0 | 0 | | | | | | | | |
| - on GFCF | 0 | 0 | 36 | 0 | -36 | 0 | 0 | 0 | | | | | | | | |
| - on exports | 12 | 0 | 30 | 0 | -42 | 0 | 0 | 0 | | | | | | | | |
| taxes on product | -28 | 43 | 0 | 0 | 0 | 0 | 0 | 15 | | | | | | | | |
| Total supllies | 602 | 588 | 5 138 | 713 | 0 | 3 273 | 1 181 | 11 495 | | | | | | | | |

last step