AN INPUT-OUTPUT MODEL OF THE FRENCH ECONOMY

by

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Title of Thesis: An Input-Output Model of the French Economy

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ABSTRACT

Title of Thesis: An Input-Output Model of the French Economy

Patrick Hénaff, Master of Arts, 1980

Thesis directed by: Dr. Clopper Almon, Jr., Professor of Economics, Department of Economics

This study develops an input-output model of the French economy, including both a model in constant prices that produces forecasts of domestic output by industry and the framework of a price model that forecasts current-price value added and domestic prices.

Because the French input-output tables show flows in purchaser prices, with non-deductible value-added tax included, several transformations are necessary to obtain homogeneous evaluation of flows across the rows of tables. Specific attention is given to the accounting of the value-added tax and trade margins. Behavioral equations are estimated for three final demand components, and the model in constant prices is completed by an employment block forecasting labor productivity and the length of the work week.

As opposed to the real side, where the final demand components are forecasted by product at the level of aggregation of the input-output table (88 commodities), the price model forecasts the current-price value added in a 35-industries classification and then allocates it to the 88 I/O sectors. Close attention is given to this bridging. However, since no behavioral equations were estimated for the price model, a forecast is

finally run using exogenously specified prices. A reference forecast and a variant are presented for the period 1980-1985.

The model is built with the SLIMFORP program developed by the Inforum Project at the University of Maryland and at the International Institute for Applied System Analysis (IIASA) in Laxenburg, Austria. It is anticipated that this model will be developed into the French member of an international system of input-output models being co-ordinated by IIASA.

La cuisine est un art simple

et tout d'éxécution

Curnonsky

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TABLE OF CONTENTS

LIST OF APPENDIX TABLES

CHAPTER I

OVERVIEW OF THE STUDY

1. Introduction

The present study develops an input-output model of the French economy which fits into a network of international models. In the recent past, exports have become the driving force of the French economy. At he same time, imports have had a critical impact on it, either because of increased foreign competition or soaring prices of imported energy sources and raw materials. Such a situation is faced by many other countries; in these troubled economic times, there is no need to emphasize the growing interdependency of the economies of the Western world through their foreign trade. As a result, a comprehensive modeling of the foreign trade sector has become a necessary part of every model. The behavior of a national economy should be forecasted within an international system of models; only this can provide a comprehensive modeling of international trade.

The construction of such a system is currently underway, coordinated by Inforum[1] and IIASA[2]. This system includes two components:

- A set of input-output models, one for each major country. At this point, models at various degree of sophistication exist for Canada, Japan, Germany, the Netherlands, the U.K. and the U.S.
- An international trade model which acts as a linking mecanism between the national models. This model was constructed by D. Nyhus in 1975[3].

In order to make the linking easier, every national model is constructed according to a common framework and uses a standard set of

programs called SLIMFORP.

The present study fits into this project in two respects: it provides a starting point for the French model and develops the programming of a price model for SLIMFORP.

1.2 Plan for the study

Chapter 2 describes the various transformations performed to make the INSEE input-output table more appropriate for our purpose. The two main steps are described in section 2.2, where the removal of the value-added tax is described, and in section 2.3, which addresses in detail the problems of accounting for trade margins. A new price system is defined, the "standard price system", and all the input-output calculations will be performed in this price system.

Chapters 3 to 6 deal with the estimation of the constant-price model. Chapter 3 describes the various price systems used in the forecast of the final demand components. The main point is found in section 3.1, where the correspondence between the standard price and the consumer price is discussed. In chapter 4, we estimate the behavioral equations at the input-output level of detail for private consumption expenditures, imports and exports. Finally, the forecast of employment by industry is discussed in chapter 5. This chapter concludes the presentation of the constant-price model. Chapter 6 describes the price side of the model. In section 6.1, we give a general presentation and pay specific attention to the interaction mechanism between the constant-price model and the price model. In section 6.2, a detailed description is given of how the current-price value added is computed at the input-output level. These computations represent a significant extension of the software previously

developed at Inforum and IIASA. This chapter concludes our description of the model.

In chapter 7, two alternate forecasts are presented. Since at this point our model still depends quite heavily on exogenous assumptions, the discussion of each forecast is preceded by a presentation of the underlying assumptions. Chapter 8 concludes this study by suggesting developments to the present model.

1 Interindustry Forecasting Project at the University of Maryland.

2 International Institute for Applied System Analysis, Laxenburg, Austria.

3 Douglas Nyhus, The Trade Model of a Dynamic World Input-Output Forecasting System, unpublished Ph.D. dissertation, University of Maryland, 1975.

CHAPTER II

Economic Accounting - Remodeling the INSEE Input-Output Table

2.1 Description of the I/O table, as released by the INSEE
2.2 The Value-Added Tax
2.3 Accounting of the trade margins
2.4 Government expenditures, non allocated services, imports
2.5 Time series of final demand components.

This chapter describes the input-output tables as they are currently released by the INSEE, and discusses the various transformations performed to make the tables more appropriate for the calculations in which they will be used. The basic idea will be to make the units of measurement homogeneous across a row of the table. Because the INSEE tables are in purchaser prices, some entries in a row carry large trade margin and value-added tax (the value-added tax will be referred to from now on as VAT) while other entries carry almost no margin or tax. In section 2, we discuss how the VAT was removed from the table. In section 3, the concept of "standard trade margin ratio" is introduced, and used to estimate every element in a row with homogeneous trade margins. We start, however, by taking a closer look at the table as it is released by the INSEE.

2.1 Description of the input-output table

The input-output table shows industrial production broken down into 87 products and services. Shown across one row are sales of each product to 112 buyer categories that can be grouped as follows. On the right hand side of the double rule in Table 2.1 we find 14 final demand buyers:

- Households and two categories of administrations
- Six categories of investors
- Four categories of changes in inventories

Table 2.1 - Input-Output Table
INSEE

		Commerce		Final Consumption	Investment	Inventory Change	Exports	Final demand	Total use
Total Int. Cons.									
Value added		0							
Value-added tax		0							
Imports		0							
Transfers		0							
M1		-TM1							
M2		-TM2							
M3		-TM3							
M4		-TM4							
Total use		0							

M1 = margin on intermediate consumptions — TM1 = total row M1

M2 = margin on private consumption expenditures — TM2 = " " M2

M3 = margin on investment — TM3 = " " M3

M4 = margin on exports — Tm4 = " " M4

- Exports

These 14 columns add up to the final uses of all products and services. The 87 by 88 table on the left hand side of the double rule describes the intermediate purchases of goods and services. For a given product or service, the sum of all intermediate and final uses is by definition equal to the domestic production plus the imports. Domestic production and imports are found in the bottom rows of the table. Imports in 88 products, from all origins, are entered as a single row. Domestic production is the sum of several components: total intermediate consumption, gross value added, transfers and trade margins.

The gross value added is by itself a total that can be broken down into three main components: labor income (wages and other labor compensations), taxes, both direct and indirect, and capital income, which includes depreciation, net interests and after-tax profit. In this table, however, one indirect tax has been set apart from the value-added row: the value-added tax.

We next find three transfer rows that make corrections for the products that were sold by one industrial sector, but do not correspond to its activity.

1) Transfers of secondary production. The natural gas industry produces some sulphur while refining the gas. This production is reallocated to the Non-Organic Chemicals sector by entering in the first transfer row the production of sulphur with a negative sign in the Natural Gas cell, and with a positive sign in the Non-Organic Chemicals cell (Sector names are capitalized).

2) Transfers of research services. This row performs the same kind of adjustment as the first transfer row, but for services instead of

merchandise. This row reduces the output of various sectors by the amount originating from the sale of services, and adds that amount to the Services to Businesses cell.

3) Transfers of sales from the administration. This third row reallocates to the corresponding sectors' output of the administration originating from activities which are not its purpose, such as the sale of used furniture or of wood from the national parks.

It should be noticed that by definition each of these rows adds up to zero across the row.

At last, we find four trade margin rows. Each row shows the amount of trade margin charged on each product to a particular category of buyer. There are four categories: intermediate ~~consumers~~ users, households, investors and foreign trade. Here again, the rows add up to zero across the row, since the cell number 68 Commerce carries the negative of the sum of all the other cells across the row. We actually find more peculiar features about column 68.

On the left hand side of the double rule of Table 2.1, we find 88 columns of intermediate buyers. Appendix Table 1 lists the titles of these 88 columns. Note that we have only 87 products, or rows in the table, for there is a Commerce column, but no Commerce row. How is the table balanced then? Clearly, the Commerce column has to have a zero output: the total of intermediate consumptions and value-added of the Commerce column is offset by the negative of the sum across the row of the trade margin rows. Looking at Table 2.2, we find the intermediate consumptions of the Commerce sector to be 57901 and its value added to be 169331. The domestic output of the Commerce sector is therefore 57901+169331= 227232. But the last four cells of the Commerce column add up to the negative of the domestic

output, causing the column total to equal zero.

These trade margins are already included in the flows showing sales to intermediate and final buyers. The trade margin on sales of agricultural products to private consumption expenditures (PCE), found to be 26450 in 1976 (Table 2.2) is included in the total sales of agricultural products to PCE, which amounted to 58889.

We find a large difference between the margin rate charged to intermediate ~~consumers~~ users

8060 / (136486 - 8060) = .062

and the trade margin rate that households PCE are charged:

26450 / (58889 - 26450) = .815

Our concern with the accounting of the trade margins, to be developed in section 3, stems from this large difference.

Transportation costs are also included in these flows, as well as the non-deductible VAT, so that the table is said to be in purchaser prices. Let us now take a closer look at the accounting of the VAT.

2.2 The value-added tax

Businesses purchase products and services, and the price they pay includes some VAT. The same businesses also charge VAT for the Tax Administration on the products they sell. In the simplest case, a business will reimburse the Administration the difference between the VAT received along with its sales and the VAT paid on its purchases. If the whole amount of the VAT paid could be subtracted from the VAT received when computing the balance due to the Administration, then all the VAT would be " deductible". Reality is never that simple, and part of the VAT paid remains "non-deductible".

Table 2.2

	Agriculture	Commerce	Total I.D.	PCE	GOV	INVH	INVAPB	INVAPR	INVIN	INVBK	INVBU	VEN	EXPORTS	F.D.	Total Demand
Agriculture	24832		136486	58889	978		14				1997	-2197	19550	79231	215717
I.C.	73309	57901													
Value added	78926	169331													
Transfer 1															
Transfer 2	-9														
Transfer 3	425														
Imports	22653														
VAT	4385														
Tariffs	591														
M1	8060	-42637													
M2	26450	-172240													
M3		-7951													
M4	925	-4404													
Total Resources	215717	0													

PCE = Private Consumption Expenditures
GOV = Government Spending
INVH = Investment of Households
INVAPB = Investment of Public Administrations
INVAPR = Investment of Private Administrations
INVIN = Investment of Businesses
INVBK = Investment of Banking Institutions
INVBU = Investment of Insurance Institutions
VEN = Changes in Inventories
F.D. = Final Demand

As a rule, VAT paid on goods directly used in the production process is deductible. Hence, all the VAT paid on intermediate consumption is deductible. For investments, the case gets more complicated. The VAT on investment is deductible if the investment:

1- is exclusively used for production

2- and is used for producing products on whose sales some VAT is charged.

According to condition 1, the VAT paid by a business on the purchase of a company car will not be deductible. Condition 2 implies that farmers will not be able to deduct all the VAT paid on agricultural machinery, since part of the agricultural production does not carry VAT. If a particular farmer collects VAT on only 70% of his production, he will be allowed to deduct only 70% of the VAT he had to pay on machinery. A non-profit organization is similarly unfortunate, since it does not charge VAT on the sales of its products or services. Banking institutions cannot deduct much VAT either, as they charge VAT only on service fees, but not on their main source of income, the interest received. Finally, a few products such as tobacco, or services such as insurance, do not carry VAT, but a special sales tax.

Now back to the table. We find the non-deductible VAT in a row as a value-added component. This entry in, say, the paper industry column, is the VAT on paper products which the buyers will not be able to deduct. This non-deductible VAT is unevenly spread over the row. The non-deductible VAT on final consumption is very close to the gross VAT paid, since households have almost no way to deduct VAT. Conversely, as we have seen, the non-deductible VAT remaining on investment is very small. One exemption should be pointed out: one third of the investment in construction comes from households, who, again, cannot deduct VAT. The

non-deductible VAT rate on construction will therefore be higher than for other commodities, for which businesses are the only investors.

What is the undesirable effect of this accounting of the VAT? Let us consider a product such as automobile, which is sold both to households and businesses. For the first category, sales are actually recorded in the table VAT included. For the second category, sales are almost VAT excluded. A shift of final demand from PCE to investment by businesses, the total demand staying constant, will decrease the non-deductible value-added tax, and therefore the domestic product. Also, if the final demand components do not change at exactly the same rate, the VAT per unit of output will vary, making meaningless long term comparisons. This is a very undesirable feature of a system intended for mid-to-long-range forecast.

The solution is clearly to try to remove the non-deductible VAT from the table. To do so, we would need for each product the implicit rate of non-deductible VAT on intermediate consumption, final consumption and investments. Unfortunately, such information was not available to us, and we had to use a rather simplistic approach. We assume first that there is no non-deductible VAT on the intermediate consumption. Next, we divide the final demand components into two groups. The first one includes the seven final demand components that carry non-deductible VAT at a rate which is close to the full VAT rate:

- PCE
- Government expenditure (GOV)
- Investment of households (INVH)
- Investment of public and private administrations (INVAPB,INVAPR)
- Investment of insurance and banking institutions (~~INVBA~~,INVBK).

INVIN

The second group consists exclusively of the investment of businesses, that carry non-deductible VAT at a much lower rate than the full rate.

For each product i, we estimate over the period 1970-1978 the relation:

$$VAT^i_t = a_i \, FNC^i_t + b_i \, INVBU^i_t + u_t \qquad [2.1]$$

where FNC^i_t is the final demand of product i that carries VAT at the high rate

$$FNC^i_t = PCE^i_t + GOV^i_t + INVAPB^i_t + INVAPR^i_t + INVIN^i_t + INVBK^i_t + INVH^i_t \qquad [2.2]$$

Since FNC^i_t already includes the VAT, $a^i/(1-a^i)$ will be the estimated implicit non-deductible VAT rate. We expect this rate to be very close to the actual VAT rate, that is 7% for agricultural products, 17.5% for intermediate goods and, last but not least, 33% on such luxury items as automobiles and stereos. For most products, the regression coefficients were found very consistent with these expectations. For a few products, namely automobiles and construction, coefficients were constrained such that a_i would be about three times b_i. Coefficients are listed in Appendix Table 2.

With these coefficients in hand, we can compute $VATF^i_t$ and $VATI^i_t$, the high-rate and low-rate components of the predicted value-added tax. In each year, some residual, $VATR^i_t$, remains:

$$VATR^i_t = VAT^i_t - VATF^i_t - VATI^i_t$$

We simply allocate it proportionally to the estimated value of each VAT component. Let us illustrate the procedure with the data on agriculture

found in Table 2.2. For this product, the regression coefficients were found to be

$$a_i = .072 \qquad b_i = .049$$

so that, for the year 1976,

$$\text{VATF} = .072 \times (58889 + 978 + 14) = 4311$$
$$\text{VATI} = .049 \times 1997 = 98$$
$$4409$$

The residual is

$$\text{VATR} = 4384 - 4409 = -24$$

Table 2.3 shows the computations carried to allocate the residual between VATR and the various components of VATF. The non-deductible VAT is subtracted from each final demand component and gathered in two columns: one for the non-deductible VAT originating from high VAT rate group, and the other one for the VAT taken from the investment of businesses. Totals in Table 2.3 and 2.5 do not match because of rounding errors.

Table 2.3 - Computation of the Non-Deductible VAT

Final Demand Components	Estimated VAT	Share	Allocated Residuals	Non-Deductible VAT
PCE	4240	.962	-23.	4216
GOV	70	.016	0.	70
INVAPB	1	.000	0.	1
INVBU	98	.022	-1.	97
TOTAL	4409	1.0	-24.	4384

The agriculture row of the 1976 table "non-deductible VAT excluded" is shown in Table 2.4. Although we are going to carry all the calculations with the table "non-deductible VAT excluded", it would be a simple matter to get back to a table "non-deductible VAT included". To illustrate the procedure, let us introduce the VAT back into the table. There is no

Table 2.4 - Agriculture Row, Non-Deductible VAT Excluded

	AGRIC	I.C.	PCE	GOV	INVH	INVAPB	INV APR	INV IN	INV BK	INVBU	VEN	EXPORTS	FD	TOTAL DEMAND	VATF	VATI
Agriculture	24832	136486	54672	908		13.				1900	-2197	19550	74846	211332	4287.6	97.4

problem with the second column, VATI: it is allocated in full to investment by businesses, which becomes

1900 + 97 = 1997.

We then allocate proportionally the VATF column between the seven final demand columns of the high VAT rate group. The computation is shown in Table 2.5. Finally, the total non-deductible VAT is added to the row total in order to keep the table balanced. The table is again "non-deductible VAT included".

Table 2.5 - From the Table "VAT Excluded" back to the Table "VAT Included"

Final Demand Components	Value, VAT Excluded	Shares		Allocated VAT	Value, VAT Included
PCE	54672	.983		4216	5889 58889
GOV	908	.016		70	978
INVAPB	12	.001		1	13
INVBU	1900		1.0	97	1997
TOTAL	57492	1.0	1.0	4384	61877

We will now discuss a second correction that introduces major changes in the table.

2.3 Accounting of the trade margins

Sales to intermediate and final demand consumers are entered in the table with trade margins included. Again, the result is that, when we add across a row of the table, we are adding heterogeneous items, since they include trade margins at various rates. The trade margin rows in the value-added portion of the INSEE table give a breakdown of the total margin into four components: the margins on intermediate consumption, investment, private consumption expenditures and exports. Ideally, we would like to

remove all the trade margins, and have our table showing flows in producer prices + transportation costs. This cannot be done, however, because we do not have any information on how to allocate the total trade margin on intermediate ~~consumption~~ use among the 88 buyers. Since we have to leave the margin on intermediate ~~consumption~~ use in the table, let us call that trade margin "standard". We define the standard margin rate on a particular product as the average trade margin rate on the intermediate consumption of this product. We are now going to evaluate each final demand component with the standard margin included, as opposed to the actual margin presently included. When this will be done, we will have a homogeneous measure of the flows along a row, since every flow will include trade margins in the same proportion.

The basic idea of our computation will be to estimate for each product the standard margin rate, then compute the standard margin on each final demand flow of the row. Next, the difference between the computed standard margin and the actual margin included in the flow will be removed. We will call this difference "super margin". All the super margins will finally be added to the standard margins to make the output of commerce. Let us go through the procedure one step at the time. We will illustrate our discussion with data we are now familiar with: the product "agriculture" taken from the 1976 current-price I/O table. Having taken away the non-deductible VAT, the relevant data look now like in Table 2.6.

The standard margin rate, STMR, on agricultural products is

$$\frac{M1}{(IC + GOV) - M1} = \frac{8060}{(136486 + 908) - 8060} = .0623$$

Let us now compute the standard margin on PCE (STMP), investment (STMI) and exports (STME).

Table 2.6 Trade Margins for Agriculture - 1976 Current Prices - T Classifications

	Agriculture	Commerce	I.C.	PCE	GOV	INV	EXP	VEN	Q
Agriculture	24832		136486	54672	908	1912	19550	-2197	211332
Commerce	-	-							
VAT									
M1	8060	-42637							
M2	26450	-172240							
M3	0	-7951							
M4	925	-4404							
Output	211332	0							

8060
26450
925
35

Where

I.C.	Intermediate consumptions
PCE	Private consumption expenditures
GOV	Government expenditures
INV	Investments
EXP	Exports
VEN	Change in inventories
Q	Output

STMP = STMR x (PCE - M2) = .0623 x (54672 - 26450) = 1758
STMI = STMR x (INV - M3) = .0623 x (1913 - 0) = 119
STME = STMR x (EXP - M4) = .0623 x (19550 - 925) = 1160
3037

The super margin on PCE (SUMP), on investment (SUMI) and on exports (SUME) are found to be:

SUMP = M2 - STMP = 26450 - 1758 = 24692
SUMI = M3 - STMI = 0 - 119 = -119
SUME = M4 - STME = 925 - 1160 = -235

We now remove the super margins from the Agriculture row. To preserve the original data, we do not subtract directly the super margins, but create three new columns, one for each type of super margin. These columns will contain the super margins with the opposite sign, so that when we add across a row, the super margins are removed from the total. This operation should not modify the domestic production nor the gross national product. Hence, the super margins that we have just subtracted from the Agriculture row should now be inserted back somewhere in the final demand part of the table. Since the trade margins are the output of the sector Commerce, it is natural to insert the super margins in the Commerce row. This row does not exist for now: Commerce has a zero output in the original INSEE table. In our presentation of the table, the Commerce column will have an output equal to the total trade margins, and there will be a Commerce row, adding up of course to the same total.

We insert a blank Commerce row in the table, and fill it by adding in the super margin cell the super margins subtracted from all the other rows of the super margin columns. In the following tables, we will represent by [x] a cell in which x has been added. Starting with row 1, we insert 24692, -119 and -235 in the 3 super margin columns, and the negative of the same three entries in row 68, as shown in Table 2.7. To keep the

Table 2.7 - I/O Table With Super Margin Columns

	Agric.	Com.
Agriculture	24832	
Commerce	11098	
Total I.C.	8440	
Value Added	78926	
Transfers	416	
Imports	22653	
Tariffs	591	
Output	186993	[35436]

Total I.D.	PCE	GOV	INV	EXP	AVEN	SUMP	SUMI	SUME	OUT	VAT/FNC	VAT/INV
136486	54672	908	1912	19550	-2197	-24692	119	235	186993	4287	97
0	0		0	0	0	[+24692]	[-119]	[-235]	[35436]	0	0
						0	0	0			

$> (N(COM,IS) - SUPERP - SUPERI \cdot SUPERS = A(NTMT,IS)$

accounting identity between row and column totals, the super margins we have just subtracted from the final demand should also be subtracted from their corresponding trade margin rows. The Agriculture cells of the trade margin rows are now reduced to the standard margin on PCE (STMP), on investments (STMI) and on exports (STME).

The first column of rows M1 to M4 are now as shown in Table 2.7. Note that since we have subtracted 24692-119-235 = 24338 from both row and column 1, the accounts of the sector Agriculture are still balanced. Since we have at the same time added 24338 to row and column 68, the accounts of the sector Commerce are also still balanced. Of course, the GNP has not been affected. The row M1, which contains the margins on sales to intermediate buyers, is for the moment unchanged. When we have done this for the 87 products, the margin rows are stripped of their super margin components, and only contain standard margins. The standard margins are also part of the output of the sector Commerce, so that we add together our four trade margin rows, which add up to the total standard margin on the sales of each product, and insert the total row in row 68 in the intermediate portion of the table. The column totals are not changed, and the row 68 now adds up to the total trade margin. The standard margins are found in the intermediate portion of row 68, and the super margins are in the three super margin cells of row 68.

Up to now, we have ignored the fact that inputs in the table come in part from domestic production and in part from imports. Imports are found as a row, since the INSEE table displays the total uses and resources of a product, and not the domestic output. Since our purpose is to forecast the latter, we modify the table so that the rows and columns will sum up to the domestic production. This is simply done by subtracting the imports from

the row totals and inserting them with a negative sign as a final demand component. The margin rows that we have split into standard margins and super margins contain the trade margins on imported goods as well as the trade margins on domestic production. Hence, in our Commerce row, the element j is the total standard margin on sale of product j. However, this entry represents the purchase of the commerce service by domestic industry j, and should therefore contain the trade margin on only domestic production of industry j. It should not include the trade margin on imported goods. The trade margin on imported goods should nevertheless be included in the output of commerce. We perform, therefore, the following correction:

First, we compute for each product the standard margin on imported goods so that the standard margin on imports is equal to the imports, cif + tariffs, times the standard margin ratio.

Secondly, we create a new column beside the import column. In it we enter the standard margin on imports with a negative sign. This standard margin is also taken away from the standard margin in row 68, so that rows and columns still add up to the same domestic output. Since the output of commerce should not be reduced, we cumulate the standard margins on imports in the cell "standard margin on imports" of row 68. Like the other margin columns, the standard margins on imports add to zero, so that GNP is not modified. The entry in row 68, column j of the intermediate portion of the table now shows the standard margin on domestically produced good j.

Let us make this last correction to our Agriculture row. Imports of agricultural products amount to 22653, tariffs are 591, so that the standard margin on imports is:

$$STMM = (22653 + 531) \times STMR$$
$$= (22653 + 531) \times .0623$$
$$= 1448$$

This standard margin is subtracted from row 68. Table 2.8 shows the row Agriculture after this last correction.

2.4 Government spending, non-allocated intermediate flows

In the INSEE table, government spending is found as an intermediate flow. Following a widely accepted principle, we have shifted this column over to final demand. The table shows as well the non-allocated intermediate consumption of banking services bought by a dummy branch. This flow accounts for the fact that account holders do not pay for the full cost of the services rendered to them by the bank. We want to allocate this flow in order to keep a clean square intermediate flow matrix. The natural way to do it is to spread this flow along the banking services row proportionally to the purchases of banking services by each buyer. It is equivalent, and more simple to add this non-allocated flow to the consumption of banking services by itself, and this is what was done.

How does this table compare with an input-output table in producer prices, such as the one released by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce?

The BEA table also gives homogeneous measurements of flows across one row, but these flows do not include any trade margin. Moreover, the BEA table shows flows in producer prices, which means that transportation costs of hauling all the intermediate inputs into an industry are lumped together in the transportation row sales to that industry. In the original INSEE table, and in our modified presentation, intermediate flows include the transportation costs of hauling these inputs from the producer's plant to

Table 2.8 I/O Table After the Last Transformation

	AGRI	COM	TOTAL I.C.	PCE	GOV	INV	EXP	IMP	STM	VEN	SUMP	SUMI	SUME	OUT	VATF	VATFT
Agriculture	24832		136486	54672	908	1912	19550	-23244	-1448	-2197	-24692	119	235	162301	4287	97
Commerce	9650								[1448]		[24692]	[-119]	[-235]	[35436]		
Total I.C.	82959															
Value added	78926															
Transfers	416															
Output	162301	[35436]														

the buyer's location. Therefore, the transportation rows show as input into industry, the cost of hauling industry i's product.

Let us illustrate the point with an example: the electric utilities industry buys coal, transported by rail, and oil, transported by pipe. The flow of coal, oil, and transportation could look like this:

	Coal	Oil	Electric Utilities
Coal	0	0	30
Rail	0	0	5
Oil	0	0	20
Pipe	0	0	2

BEA Producer

In the INSEE table, the same cells would be

	Coal	Oil	Electric Utilities
Coal	0	0	35
Rail	[5]	0	0
Oil	0	0	22
Pipe	0	[2]	0

Following the same convention as above, [5] and [2] denote flows including these amounts along with charges for moving oil and coal to industries other than electric utilities. The coal industry buys the transportation to move its product to its users, so that the price of coal and oil sold to the electric utilities industry include the transportation costs.

The second presentation has a definite advantage over the first one. Consider a severe oil shortage that causes the electric utilities industry to switch completely to coal. If we do not pay attention, the electric utilities column in the BEA presentation will have a zero coefficient for oil, but still a non-zero coefficient for pipe. Hence, when performing coefficient changes of product inputs, one must also keep track of the transportation input coefficients. Conversely, this is done automatically in our table, since the coal and oil inputs into the electric utilities column includes the transportation cost along with the standard price of

the purchase. Also, transportation data come on a product-hauled basis, so that it is easier to study competition among modes in the INSEE table than in the BEA table.

2.5 Time series of final demand components

In 1971, the nomenclature changed from a 78 to an 88 product classification. At the same time, several changes were made in the accounting principles. As a result, the consistent set of input-output tables available yearly since 1959 was interrupted. Tables in the new classification are available since 1970, the latest release being the 1978 table.

Nine observations were of course quite insufficient to estimate the final demand equations. Since we were determined to estimate all components of the model in the new classification, we had to draw from various sources to extend our time series of final demand components in the new classifications previous to 1970.

Time series of private consumption expenditures in current and constant prices were provided by the INSEE. Although no exact bridge table can be drawn from the old to the new classification at the published level of aggregation, such bridging is possible using worksheets where private consumption expenditures are disaggregated into 420 and 600 products. These worksheets were used to construct the PCE time series. Unfortunately, INSEE did not pursue the effort for the other components of final demand. We then had to reconstruct the time series for imports, exports, and output on our own.

The available data were: time series of the three components in the old classification from 1959 to 1974, and secondly, a time series of tables

in the new classification at an aggregated level of 15 products. This time series of tables extends from 1959 to 1976.

Lastly, we had the short time series in the new classification that we wanted to extend. This extension was done in a rather crude way. First, each new classification time series was regressed (without intercept) on its most appropriate counterpart in the old classification over the period of five overlapping years. The old classification independent variable was then used to compute a predicted value of the variable in the new classification from 1969 back to 1959. Next, the predicted values were aggregated in 15 products and scaled to match the table data. The scaling proved to be very light most of the time. The scaling factor was always under 1.10, except for the sector Household Equipment, where the scaling factor reached 1.4 in 1959. Fortunately, this sector accounts for less than 1% of the total output.

The basic set of data was then established. We will discuss the other sources of data as we come upon them.

CHAPTER III

The Prices Used in the Forecast of the Final Demand Components

With this chapter, we start the description of the forecast of final demand components in constant prices.

Behavioral equations have been estimated for three final demand components, accounting for 64% of total final demand in the 1976 current price table. These components are private consumption expenditures, imports and exports. The other components, namely government expenditures, investments and changes in inventories were left exogenous.

Before we turn to the equations themselves, we have to take a closer look at the price system in which we will estimate and forecast each component, since we have just defined in chapter 2 two systems of prices, standard prices and purchaser prices. In section 1 to 3, we describe the price systems used to estimate imports, PCE and exports, and summarize the chapter in section 4. Since the price of imports contributes to consumer prices, we first discuss foreign prices and the evaluation of imports.

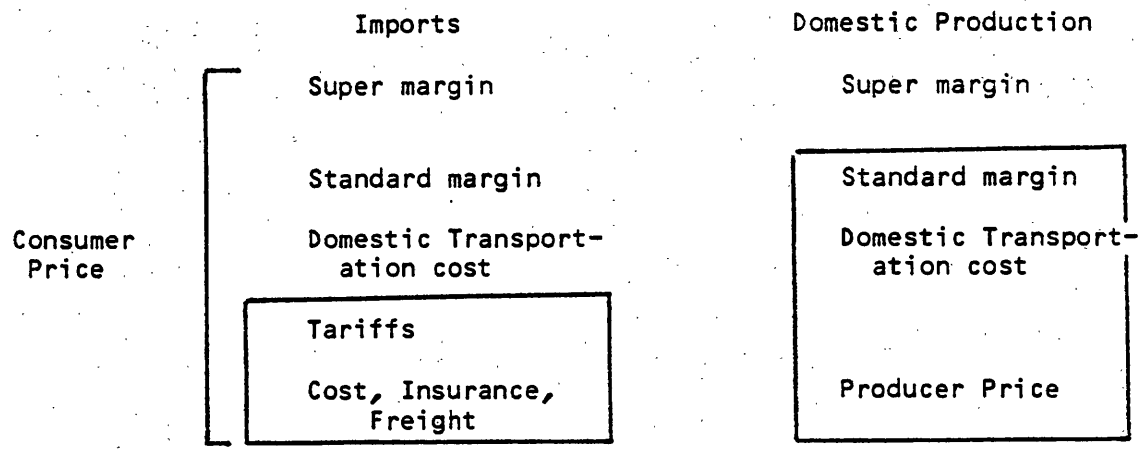
3.1 Evaluation of imports

We make imports of product i dependent upon the domestic demand for this particular product and the relative prices of foreign and domestic production of the same product. First of all, we want to use consistent domestic and foreign prices to compute the relative prices. Our source of

data for foreign prices, to be discussed in the next chapter, is an index of foreign wholesale prices. Hence, we should also use domestic wholesale prices for the computation of the relative prices. Standard prices, which include only the margin rate charged to intermediate buyers, fit approximately this requirement. This match is only approximate because our standard price includes some transportation cost, while the foreign wholesale price does not include such cost. Unfortunately, this is the closest match we can find.

The imports are entered in the table "Cost, Insurance and Freight" plus tariffs. To forecast them in this price system, we should relate them to the domestic demand at producer prices. It is, however, almost equivalent to forecast the imports at standard prices as a function of domestic demand estimated at standard prices. In the first case, transportation costs are excluded; in the second case, transportation costs are included. How do we define imports at standard prices? We simply assume that the standard margin on imported goods is the same as the overall standard margin, for each particular product, and we mark up imports, evaluated cif + tariffs by the standard margin ratio. Again, we said that evaluating both components at standard prices was almost equivalent to evaluating them both at producer prices, because the standard price is the sum of the producer price plus transportation cost plus standard margin. When we mark up imports by the standard margin ratio, we still do not include the transportation cost within France. However, this discrepancy is believed to be negligible. Let us summarize this discussion in Table 3.1 by showing the cost structure of imported goods and domestic production. The black boxes show at which price level each component is entered in the I/O table.

Table 3.1 Cost Structure of Domestic Production and Imported goods.



We now have the dependent and independent variables estimated in a similar price system. Imports, forecasted at standard prices, are, of course, converted back to "cif + tariffs" prices by taking away the standard margin on imports.

The dependent variable of the import equation is then:

$$IMPS_i^t = (IMP_i^t + TRF_i^t) \times (1 + STMR_i) \qquad [3.1]$$

where

$IMPS_i$ = imports, evaluated at standard price

IMP_i = imports CIF

TRF_i = tariffs on imports of product i

$STMR_i$ = standard margin rate on product i.

The general form of the import equation is then:

$$IMPS_i^t = f\left(DD_i^t, \frac{PFORI_i^t}{P_i^t}\right) \qquad [3.2]$$

where

DD_i = domestic demand for product i

$= Q_i + IMPS_i - EXPS_i$

P_i = standard price index of product i (output deflator)

$PFORI_i$ = wholesale foreign price index for product i, to be discussed in section 4.3.

3.2 From the producer prices to the consumer prices

We clearly want to forecast PCE at the price faced by the consumers, that is, the purchaser price, which includes the super margin and the non-deductible VAT. The explanatory variables of consumption of product i are disposable income, the change in disposable income, a trend term and a set of relative prices. The relative prices should, of course, be the relative prices that the consumer actually faces: the purchaser prices. However, the price model generates output deflators; a procedure has to be found to compute the consumer prices from the output of the price model. The consumer price of a product is the combination of three components:

- its standard price, SP_i
- the price of the super margin on this product, SMP_i
- the VAT mark-up.

The standard price and the price of the super margin should be weighted by the shares of the standard price value and of the super margin in the consumer price. The weights should therefore be:

$$\frac{PCES_i}{PCE_i} \quad \text{and} \quad \frac{SUMP_i}{PCE_i}$$

Let us now define the super margin ratio on consumption of product i in year t:

$$SUMRP_i^t = \frac{SUMP_i^t}{PCE_i^t} \qquad [3.3]$$

If we assume that the super margin ratio for a given product is constant over time, the weights can be written:

$$\frac{PCES_i^t}{PCE_i^t} = \frac{(1 - SUMRP_i^t)\ PCE_i^t}{PCE_i^t} = 1 - SUMRP_i$$

$$\frac{SUMP_i^t}{PCE_i^t} = SUMRP_i^t = SUMRP_i \qquad [3.4]$$

where

$SUMRP_i$ = base year super margin ratio on consumption of product i.

Dropping the year superscripts for clarity, the consumer price of product i in year t can be written:

$$CP_i = [(1 - SUMRP_i)\ SP_i + SUMPRP_i\ SMP_i] \times (1 + VATRP_i) \qquad [3.5]$$

where

CP_i = consumer price of product i in year t

SP_i = standard PCE price of product i in year t

SMP_i = super margin price of product i in year t.

Since the PCE includes imported goods as well as domestically produced goods, the standard PCE price of a product is a weighted average of the standard domestic price, P_i, and the standard price of imports of this particular product.

Two assumptions made in chapter 2 will help to derive from [3.5] a

simple relation between the CP_i, the output deflators and the foreign prices. These assumptions are:

- The trade margin rate is constant across the row in the intermediate portion of the table, and therefore equal to the average margin rate on intermediate consumptions.
- The imports/domestic production ratio is constant for all entries of a row.

These assumptions were made necessary by lack of data. It should be noted that, while they will greatly simplify the derivation of the consumer prices, they are by no means necessary to the computation.

From the first assumption, one sees that the standard prices are equal for all buyers, so that the PCE standard price is the overall standard price. The overall standard price is a weighted average of the standard domestic price and the standard price of imports. From assumption 2, it is seen that the weights are simply the overall shares of imports and domestic production in the total use of product i. SP_i, the standard price of product i can therefore be written:

$$SP_i = \frac{Q_i}{Q_i + IMPS_i} P_i + \frac{IMPS_i}{Q_i + IMPS_i} SPM_i \qquad [3.6]$$

where

P_i = standard domestic price, i.e., the output deflator

SPM_i = standard price of imports

$= (1 + STMR_i)\ PFORI_i$

Let us now consider SMP_i, the price of the super margin on the PCE of product i. The price of the super margin is by definition the same as the price of the standard margin; it is the output deflator for the

Commerce sector, since the Commerce row does not include any import.

$$SPM_i = P_{68} \quad \text{for all products } i \qquad [3.7]$$

$$\text{let } w_i = \frac{Q_i}{Q_i + IMPS_i}$$

then

$$SP_i = w_i P_i + (1 - w_i) \times (1 + STMR_i) \times PFORI_i \qquad [3.8]$$

When SP_i and SMP_i of [3.5] are replaced by their values, we see that CP_i, the consumer price of product i, can be expressed as a function of the foreign price for product i and the output deflators generated by the price model.

3.3 Evaluation of exports

Exports of product i are dependent upon the foreign demand for this product and relative prices of domestic production over foreign prices. For the same reasons as the ones developed in section 3.1, we forecast exports evaluated at standard prices.

The general form of the export equations is:

$$EXPS_i^t = f\left(FDEM_i^t, \frac{P_i^t}{PFORE_i^t}\right) \qquad [3.9]$$

where

$EXPS_i$ = exports of product i in year t, evaluated at standard price

$FDEM_i$ = index of foreign demand for product i in year t

$PFORE_i$ = foreign price index of product i in year t, to be discussed in section 4.2.

The forecast of exports will however be displayed in purchaser prices, consistently with the way exports are entered in the INSEE table. The exports at purchaser prices are equal to the exports at standard prices plus the super margin on exports. To compute the super margin, we use the same assumption as in section 3.2: we assume that the super margin ratio on exports for a given product is constant over time:

$$SUMRE_i^t = \frac{SUME_i^t}{EXP_i^t} = SUMRE_i \qquad [3.10]$$

where

$SUMRE_i^t$ = super margin ratio on exports for product i in year t

$SUMRE_i$ = base year super margin ratio

The super margin on exports of product i in year t is then:

$$SUME_i = \frac{SUMRE_i}{1 - SUMRE_i} EXPS_i^t \qquad [3.11]$$

and the purchaser-price exports are finally computed by:

$$EXP_i^t = EXPS_i^t + SUME_i^t = \frac{1}{1 - SUMRE_i}t \quad EXPS_i^t \qquad [3.12]$$

3.4 Summary

The reader may feel at this point somewhat lost in the maze of VAT rates and super margins. To get our bearings, let us summarize with Table 3.2 our discussion of the price systems. This table shows for each final demand component the price system in which it is forecasted, and the transformation performed to convert the forecast into the price system used

in the I/O table. We will comment on the table in a moment, but let us first say a word about the programming of the model, which will explain why it is so critical to have a clear view of the various price systems.

A distinctive feature of the SLIMFORP program used to build the model is its capacity to easily accept exogenous controls on the final demand components. It is indeed possible to override the forecasted value of any final demand component by a value we specify. We will do so either because actual data have been released, or because we have some good reasons to correct the predicted value, or simply to experiment with the model. An important question is then to know in which price system should those exogenous controls be entered. Table 3.2 answers that question, and shows at which stage of the computation the various controls affect the forecasts.

Let us now go through the table. Private consumption expenditures are forecasted in consumer prices. Any fixes we want to introduce to override the computed value should also be specified in consumer prices. Next, the VAT on PCE is taken away, using the VAT equation discussed in chapter 2, section 2. Finally, the super margin is computed, using the base year super margin rate on PCE, SUMRP.

Investments, in the same way, are forecasted at purchaser prices. Then the VAT and the super margin on investments are computed.

Imports are estimated in standard prices, then converted to "cif + tariffs" prices, using the base year standard margin ratios. Since the I/O table shows imports "cif + tariffs", any fixes we want to specify on imports are also specified in that price system.

Exports are estimated in that price system as well. Using the base year super margin ratio on exports, the super margin on exports is

computed. Fixes on exports are specified in purchaser prices, since this is the price system in which the exports column is shown in the I/O table. The super margin is finally computed.

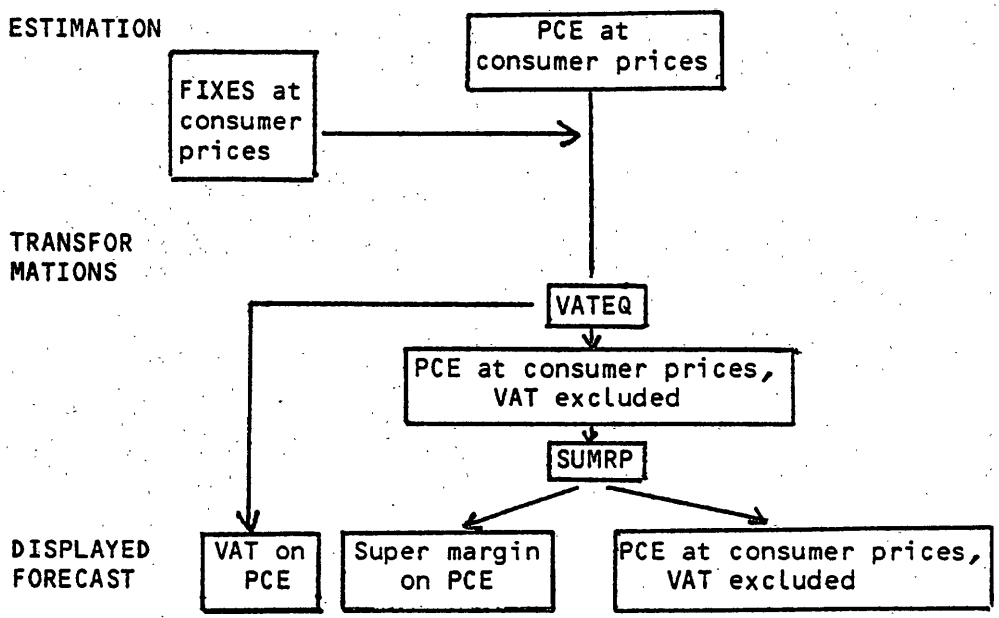
Through this intricate procedure, we have tried to reach two goals:

- Display the forecast and specify the fixes in the price system of the historical data, so that they are readily comparable with the published tables.
- Estimate the equations in a consistent system of prices, but leave all the necessary transformations transparent to the user.

In the next chapter, we start the discussion of the estimation of the behavioral equations for the final demand components.

Table 3.2 Price Systems for the Estimation and Display of the Final Demand Components

Private Consumption Expenditures



Investments

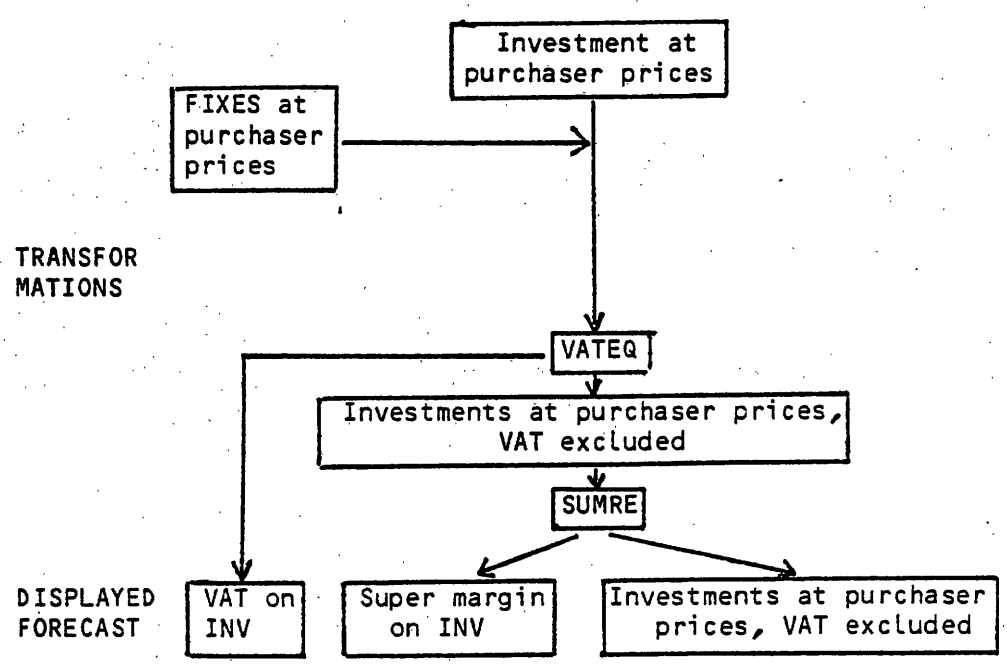
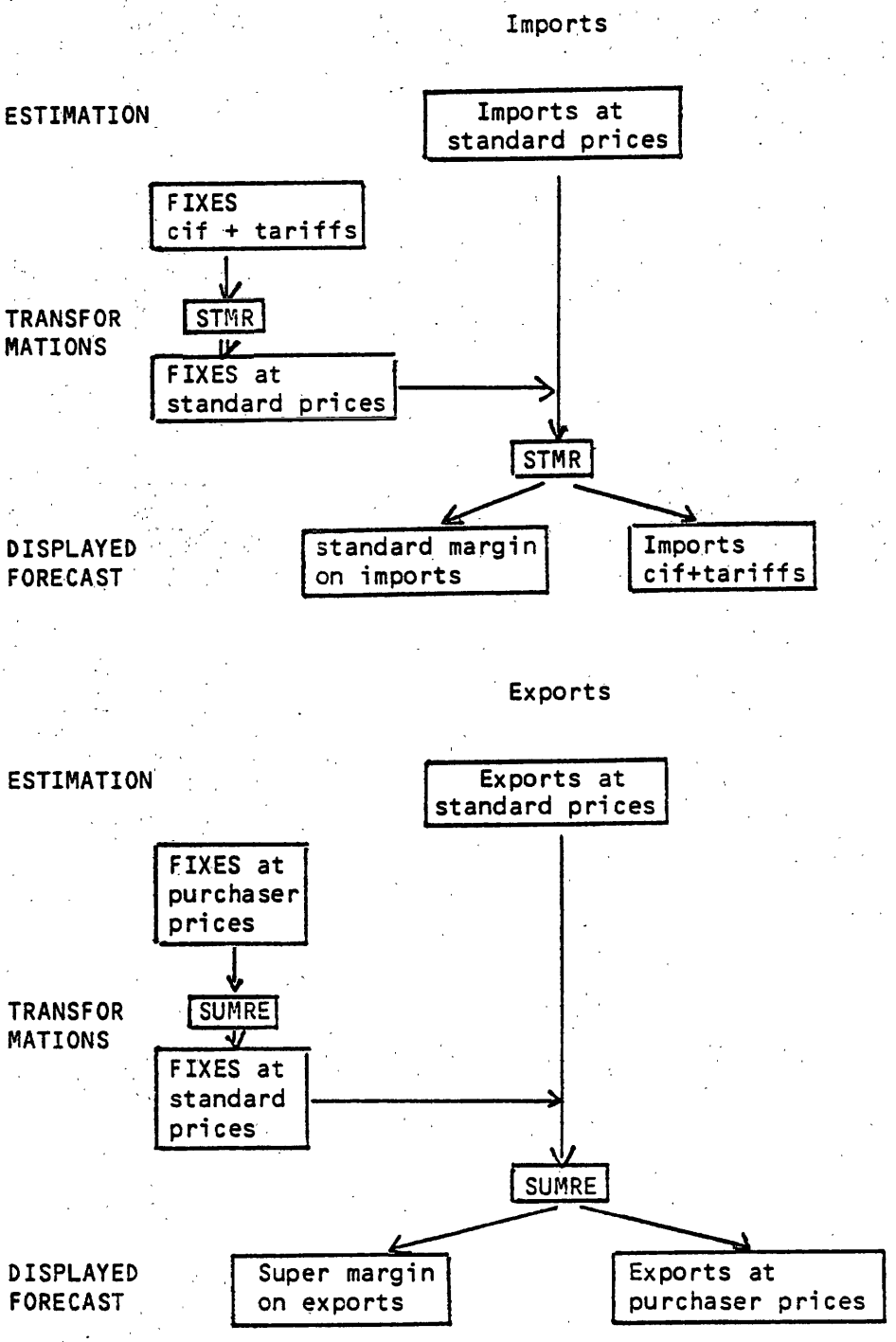


Table 3.2 (continued)



CHAPTER IV

Estimation of the Final Demand Components

4.1 Private Consumption Expenditures
4.2 Exports
4.3 Imports

4.1 The private consumption expenditures equations

This equation[1] was designed to meet a number of requirements, the most significant being:

1) The form must add up, that is the total consumption plus savings must equal income.
2) The function should approximate Slutsky's symmetry: the partial derivative of the (income compensated) demand for product i (such as gas) with respect to the price of product j (such as automobiles) should be about equal to the (income compensated) demand for product j with respect to the price of product i.
3) It must be homogeneous of degree zero in all prices and income: doubling of all prices and income must not affect consumption.

Condition 3 asks for a multiplicative connection between prices and the other determinants of consumption, income and the time trend. The following form is therefore proposed:

$$q_i = (a_i(t) + b_i \frac{y}{\bar{p}}) \prod_{\text{all } k} p_k^{c_{ik}} \qquad [4.1]$$

where

y = current price disposable income per capita

$\bar{p}$ = aggregate price index

$a_i(t)$ = time trend

p_k = price of product k

The conditions

$$\sum_{\text{all } k} b_k = 1 \qquad \sum_{\text{all } k} a_k(t) = 0 \qquad \sum_{\text{all } k} c_{ik} = 0$$

guarantee requirement 1, provided that all prices stay constant or change proportionally. Since relative prices change, another variable such as the absolute change in y/p is needed to guarantee the adding up.

Let us now consider requirement 2. If we assume that the income compensated derivative of q_i with respect to p_j is just the derivative of q_i, considering y/p constant,

$$\left(\frac{\partial q_i}{\partial p_j}\right)_{\frac{y}{p} = \text{constant}} = c_{ij} \times \frac{q_i}{q_j} \qquad [4.2]$$

requirement 2 can be rewritten

$$c_{ij} \frac{q_i}{q_j} = c_{ji} \frac{q_j}{q_i} \qquad [4.3]$$

or

$$\frac{c_{ij}}{c_{ji}} = \frac{p_j}{p_i} \times \frac{q_j}{q_i} = \frac{s_j}{s_i}$$

We now define $l_{ij} = c_{ij}/s_j$. By [4.3] we then see that $l_{ij} = l_{ji}$, thus the l_{ij}, not the c_{ij} are symmetric. To easily impose symmetry constraints on the equations, it is therefore desirable to make l_{ij} the parameters of the equations. With more than 70 products, there would, however, be thousands of pairs of products on which to impose symmetric l's. We cut down the number of such l's by defining groups and

subgroups of related commodities. Each product belongs to a group, and maybe even to a subgroup within its group. A particular product will now have at most 3 l's.

Let us consider a product i (such as gas) belonging to the group G of transportation goods and to the subgroup S of individual transportation goods.

This product will have an l equal to l_o with respect to products not belonging to group G, an l equal to l_G with respect to products belonging to group G, but not to subgroup S and an l equal to l_S with respect to product belonging to subgroup S. Appendix Table 3 gives a list of the groups and subgroups.

This assumption leads to drastic simplifications of [4.1]. Since $l_{ij} = c_{ij}/s_j$, [4.1] becomes for a product i belonging to group G

$$q_i = (a_i(t) + b_i \frac{y}{\bar{p}}) \prod_{\text{all } k} p_k^{l_{ik} s_k} \qquad [4.4]$$

$$= (a_i(t) + b_i \frac{y}{\bar{p}}) p_i^{c_{ii}} \prod_{k \neq i \in G} p_k^{l_{ik} s_k} \prod_{k \notin G} p_k^{l_{ik} s_k}$$

since

$$l_{ik} = l_o \qquad k \notin G$$

$$l_{ik} = l_G \qquad k \in G$$

$$q_i = (a_i(t) + b_i \frac{y}{\bar{p}}) p_i^{c_{ii}} \prod_{k \neq i \in G} p_k^{l_G s_k} \prod_{k \notin G} p_k^{l_o s_k}$$

Let us now define

$$\bar{p} = \prod_{\text{all } k} p_k^{s_k}$$

$$p_G = \left(\prod_{k \in G} p_k^{s_k} \right)^{1/s_G}$$

where

$$s_G = \sum_{k \in G} s_k = \text{budget share of group G}$$

$$l'_G = (l_G - l_o)\, s_G$$

$$c'_{ii} = c_{ii} = l_G\, s_i$$

then

$$q_i = \left(a_i(t) + b_i \frac{y}{\bar{p}}\right) p_i^{c'_{ii}}\, p_G^{l'_G}\, \bar{p}^{\,l_o} \qquad [4.5]$$

the constraint $\sum_{\text{all } k} c_{ik} = 0$ can now be expressed

$$c'_{ii} + l'_G + l_o = 0$$

or

$$c'_{ii} = -l_o - l'_G$$

so that the final expression for [4.4] is

$$q_i = \left(a_i(t) + b_i \frac{y}{\bar{p}}\right) \left(\frac{p_i}{p_G}\right)^{l'_G} \left(\frac{p_i}{\bar{p}}\right)^{-l_o} \qquad [4.6]$$

If the product i had been assigned to a subgroup S within the group G, the expression would have been

$$q_i = \left(a_i(t) + b_i \frac{y}{\bar{p}}\right) \left(\frac{p_i}{p_S}\right)^{l'_S} \left(\frac{p_i}{p_G}\right)^{l'_G} \left(\frac{p_i}{\bar{p}}\right)^{-l_o} \qquad [4.7]$$

where

$l'_S = s_S(l_S - l_G)$

$l'_G = s_G(l_G - l_o)$

s_S = budget share of subgroup S

s_G = budget share of group G.

Elasticities of the demand for product i with respect to price of product j can be computed from the budget shares and the l's by the formulae listed in table 4.1.

The time trend $a_i(t)$ was defined as $a_{i,o} + a_{i,1} \times \text{time}$; it should take into account the evolution of consumer tastes. However, there is a strong colinearity between time and $y/\overline{p}$, so that it is not possible to estimate the time trend coefficient and the disposable income coefficient simultaneously by time series analysis. The way around is to estimate the income coefficient from cross-section, family survey data. We used the income elasticities computed by Young Sun Lee for the previous version of the French model[2]. These elasticities had, of course, been computed in the old classification. For each product of the new classification, we simply picked the most appropriate elasticity computed in the old classification. With the income coefficient in hand, let us consider the estimation of the other coefficients. We will illustrate our discussion with the case of a product i belonging to a group G, so that we have to estimate a_o, a_1, b_2 and l_G of the equation [4.8]. We dropped the i subscript in the non-price component for clarity.

$$q_i = (a_o + a_1 t + b_1 \frac{y}{\overline{p}} + b_2 \Delta \frac{y}{\overline{p}}) \frac{p_i}{p_G}^{-l_G} \frac{p_i}{p}^{-l_o} \qquad [4.8]$$

The parameter l_o was picked and used in all groups. Experiments with other data[3] have shown .5 to be the most acceptable value, we therefore set our l_o to that value.

The estimation is done through an iterative process. We start by setting l_G to zero, then linearize [4.8] by a first order Taylor expansion around this starting value:

$$q_i = (a_o + a_1 t + b_1 \frac{y}{\bar{p}} + b_2 \Delta\frac{y}{\bar{p}}) \left(\frac{p}{\bar{p}}i\right)^{-.5} + \ldots\ldots \qquad [4.9]$$

applying ordinary least-squares regression to this linear form, we get a first estimate of the parameters, a_o^1, a_1^1, b_2^1.

Let

$$A^1 = a_o^1 + a_1^1 t + b_1^1 \frac{y}{\bar{p}} + b_2^1 \Delta\frac{y}{\bar{p}}$$

and q_i^1 be the corresponding predicted value of q_i. Let us linearize [4.8] around $l_G^1 = 0$, using our first estimate of A, A^1.

$$q_i = A^1\left(\frac{p}{\bar{p}}i\right)^{-l_o} + l_G \ln\left(\frac{p_i}{p_G}\right) A^1\left(\frac{p}{p_G}i\right)^{-l_G^1} \left(\frac{p}{\bar{p}}i\right)^{-l_o} + \ldots\ldots \qquad [4.10]$$

$$q_i = A^1\left(\frac{p_i}{\bar{p}}\right)^{-.5} + l_G \ln\left(\frac{p_i}{p_G}\right) q_i^1 + \ldots\ldots \qquad [4.11]$$

We apply again OLS to this form and get a second estimate of A, A^2, along with a new estimate for l_G: l_G^2. From [4.11] we see that the linearized form for q_i around l_G^k, the k^{th} estimate of l_G, is:

$$q_i = A^k\left(\frac{p}{\bar{p}}i\right)^{-.5} + l_G \ln\left(\frac{p_i}{p_G}\right) q_i^k + \ldots\ldots \qquad [4.12]$$

since q_i is readily available from the previous step, the iterative process is easily run. The process is run until the sum of squares of residuals decrease by less than 1% from one iteration to the next.

For some products, the estimation led to such undesirable results as positive or exaggeratedly negative demand elasticies with respect to their own prices. The coefficients were then constrained to obtain acceptable

values. Instead of minimizing SSDY, the sum of square of residuals, we minimize

$$D = 1 - R^2 + r \quad \frac{(l - l^*)^2}{SSDY} \qquad [4.13]$$

where

l^* = desired value for l_G

l = estimated value for l_G

r is a measure of how close to l^* we want l to be.

The problem is of course to give r a sensible value. Intuitively, when l is far from l^*, we will be willing to give up a higher fraction of R^2 to get closer to l^* than when l is already quite close from l^*. Let us express that:

We have a quadratic indifference curve relating R^2 and the difference $(l-l^*)$.

$$\frac{\partial R^2}{\partial l} = 0 \quad \text{at } l = l^* \qquad [4.14]$$

Let us define the first derivative at another point. At a given point l', we will be willing to give up 1% of R^2 to get l 1% closer to l^*.

$$\frac{\partial R^2}{\partial l} = \frac{.01}{.01\ (l' - l^*)} \quad \text{at } l = l' \qquad [4.15]$$

These two conditions define a family of indifference curves. Let these curves have the general form

$$R^2 = f(l) = a\ (l - l^*)^2 + c$$

using condition 2, the derivative at l' is:

$$\frac{\partial f}{\partial l} = 2a\,(l' - l^*) = \frac{.01}{.01\,(l' - l^*)}$$

so that:

$$a = \frac{.01}{2 \times .01\,(l' - l^*)^2}$$

so that, on any point of an indifference curve,

$$\frac{\partial R^2}{\partial l} = \frac{.01\,(l - l^*)}{.01\,(l' - l^*)^2}$$

$$\frac{\partial R^2}{\partial l} = \frac{.01\,(l - l^*)}{.01\,(l' - l^*)^2}$$

In particular, at the point l where D is minimum,

$$\frac{\partial D}{\partial l} = 0$$

$$\frac{\partial D}{\partial l} = -\frac{\partial R^2}{\partial l} + \frac{2\,r\,(l - l^*)}{SSDY} = 0 \qquad [4.16]$$

since the solution (R^2, l') is on an indifference curve,

$$\frac{\partial D}{\partial l} = -\frac{.01\,(l - l^*)}{.01\,(l' - l^*)^2} + \frac{2\,r\,(l - l^*)}{SSDY} = 0$$

excluding the trivial case $l' = l^*$,

$$r = \frac{SSDY}{2\,(l' - l^*)}$$

So that r is defined by our specification of l'. The advantage is that while it was hard to get an intuitive feeling for a value to give to r, it is quite easy to do so for l', as the drawing of table 4.2 illustrates.

Let assume that the relation between the R^2 of the regression and the value of l looks as the dotted line: the OLS estimate of l is the value that maximizes R^2. Of course, an OLS estimate while l is constrained to be l^* would yield a lower R^2. With l', we specify the shape of our indifference curve between R^2 and the difference $(l - l^*)$. Such specification defines a family of quadratic curves symmetric with respect to the vertical line $l = l^*$. The value l that minimizes D of [4.13] is the coordinate of the point where an indifference curve is tangent to the dotted line figuring the R^2/l relationship.

In practice, the handling of these constraints is complicated by the fact that the constraints are imposed on the l's, and not on the elasticities themselves. The elasticities are related to the l's by the formulae listed in table 4.1.

To estimate these equations, we used time series of private consumption expenditures in the new classification (88 products), from 1959 to 1976, in constant and current francs. The INSEE has reconstructed the time series in the new classification from 1959 to 1969. The estimation results are shown in Appendix Table 3.2.

The column labeled "own" displays the elasticity of demand for each commodity with respect to its own price. Health services, reimbursed by

Table 4.1 Relation between the l's and the Price Elasticities.

e_{ij} = elasticity of demand for good i with respect to price j.

For $i \in S \subset G$

$$e_{ii} = - l'_S (1 - s_i / s_S) - l'_G (1 - s_i / s_G) - l_o (1 - s_i)$$

$$e_{ij} = l'_S s_j / s_S + l'_G s_j / s_G + l_o s_j \qquad \text{for } j \in S,\ j \neq i$$

$$e_{ij} = l'_G s_j / s_G + l_o s_j \qquad \text{for } j \in G,\ j \notin S$$

$$e_{ij} = l_o s_j \qquad \text{for } j \notin G$$

For $i \in G$, where G does not include subgroups

$$e_{ii} = - l'_G (1 - s_i / s_G) - l_o (1 - s_i)$$

$$e_{ij} = l'_G s_j / s_G + l_o s_j \qquad \text{for } j \in G,\ j \neq i$$

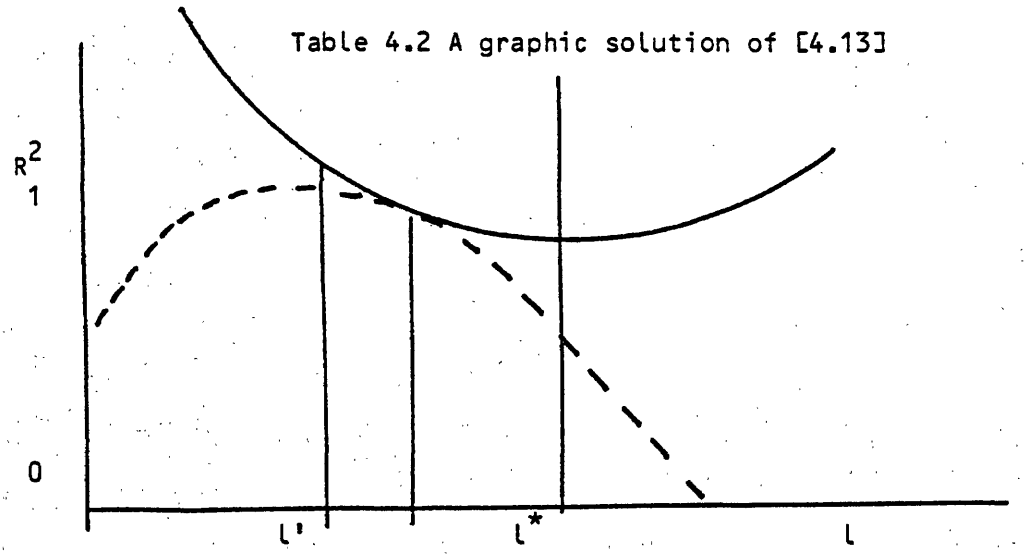
$$e_{ij} = l_o s_j \qquad \text{for } j \notin G$$

For i not belonging to a group

$$e_{ii} = - l_o (1 - s_i)$$

$$e_{ij} = l_o s_j \qquad \text{for } i \neq j$$

Table 4.2 A graphic solution of [4.13]



the Social Security for at least 80 % of the total cost are of course found to have low elasticity with respect to their own price. At the other extreme, Rail Transportation, which has very close substitutes, is found to have a high elasticity with respect to its own price. The next column, labeled "group", shows the elasticity of demand with respect to the price of goods in the same group, but not in the same subgroup, if any. Still in the Transportation group, the positive group elasticity indicates substitution between the subgroup 9, Private Transportation, and the subgroup 10, Public Transportation. The column labeled "subgroup" shows the elasticity of demand with respect to the price of goods in the same subgroup. Negative values indicate complementarity within a subgroup. As expected, complementarity is found between gasoline, automobiles and tires. However, it is not clear why such a strong complementarity was found within subgroup 12, Textiles and Clothing.

The goodness of the fit is measured by the average absolute per cent error, displayed in the column labeled AAPE. The autocorrelation of the residuals is listed under the label "Rho".

4.2 The export equations

The general form of the export equations is

$$EXPS_i^t = (a_i + b_i \, FDEM_i^t) \, (PRE_i^t)^{-l_i} \qquad [4.17]$$

where

$EXPS_{i\_}^{\ t}$ = standard price exports of product i

$FDEM_{i\_}^{\ t}$ = foreign demand index

$$PRE_i^t = \sum_{j=0}^{5} w_j \frac{p_i^{t-j}}{PFORE_i^{t-j}} \quad = \text{relative price index}$$

The construction of FDEM and PFORE has to be discussed. We will first discuss the source of data, then illustrate with an example the construction of the two variables.

Let us consider first the case of merchandise exports, which include the first 67 sectors of the I/O table. FDEM, the foreign demand index is a weighted average of the industrial production indexes of the 8 major trading partners of France: USA, Canada, Japan, Germany, The U.K., Italy, Benelux, The Netherlands, plus the "rest of the world", aggregated into the 9th partner. The weights used are the base year fractions of French exports shipped to each trade partner[3]. In the construction of this aggregate index, industrial production was used as a proxy for demand. Two sets of data were used: for the United States, we had indexes of industrial production in 200 sectors, so that we picked the most appropriate elements to construct series in our 88 sectors classification. For other countries, we used the indexes of industrial production in 13 categories published by the OECD. For each one of the 88 products, the

most appropriate category was picked. The weights were computed from the matrices of international trade flows in 119 commodities published by the OECD. For each I/O sector, the data on the closest commodity was used to compute the weights.

The foreign price index, PFORE, is the result of a two-stage computation. First, for each one of the 9 trading partners of France, an aggregate price index of imports from all countries but France is computed. These price indexes are therefore the price of the imports competing with French production on each one of the 9 national markets. To construct these price indexes, we use for each country the wholesale domestic price indexes, available in 119 commodities from the same OECD source. These price indexes reflect the prices in local currency. Since we are going to compare these prices to the prices of imports from France, we need to adjust these domestic price indexes for changes in the exchange rates. This is done by multiplying each domestic price index by the index of the exchange rate of the local currency with the French franc. Secondly, these 9 price indexes are aggregated. Again, the weights used for the aggregation are the fraction of total French exports shipped to each trading partner. We now have for each product a price index of the exports competing with French exports on the foreign markets.

For the non-merchandise exports, which include 6 transportation sectors and 6 sectors of services, the US output indexes were used as foreign demand indexes, and the US output deflators were used as foreign price indexes. Although this treatment of non-merchandise exports made things simple, and gave reasonable results, it would have been more appropriate to forecast each category of non-merchandise exports by a specific equation. For example, the 200-order Inforum model of the US

economy relates passenger fares to lagged output and the exports of most services to the aggregate merchandise exports.

Let us finally illustrate the computation of FDEM and PFORE with a simple example where the international trade is limited to France and two trading partners, the USA and Japan. The trade flow matrices for a particular product could look like this:

Table 4.3 Trade Flow Matrices

	1973			1974			1975		
from/to	USA	JAP	FR	USA	JAP	FR	USA	JAP	FR
USA		10	20		10	25		10	30
JAP	40		10	50		15	60		20
FR	5	5		10	5		10	5	

Indexes of exchange rates during the period were:

Table 4.4 Relative Exchange Rates

	French franc	Yen	U.S.
1973	1.00	.85	1.10
1974	1.00	.95	1.05
1975	1.00	1.00	1.00

The dollar depreciates and the yen appreciates with respect to the French franc. For the same period, domestic price indexes and domestic production indexes are shown in Table 4.5

Table 4.5 Indexes of Domestic Prices (DP) and Industrial Production (IP)

	France		Japan		U.S.A.	
	IP	DP	IP	DP	IP	DP
1973	100	82	105	95	95	92
1974	110	90	115	97	105	95
1975	100	100	100	100	100	100

Let us compute FDEM, the foreign demand index for the product. From Table 4.3, the base year shares of USA and Japan in French exports are found to be:

USA	JAPAN
.66	.33

Using these shares as weights, the aggregate foreign demand index is found to be:

1973 $105 \times .66 + 95 \times .33 = 100.65$

1974 $115 \times .66 + 105 \times .33 = 110.55$

1975 $100 \times .66 + 100 \times .33 = 100.00$

Now, let us turn to the foreign price index. The domestic price indexes are first corrected for the fluctuations of the exchange rates.

Table 4.6 Corrected National Price Indexes

	Japan	U.S.A.
1973	.85 x 95 = 80.75	1.10 x 92 = 101.20
1974	.92 x 97 = 89.29	1.05 x 95 = 99.75
1975	100.00	100.00

The aggregate price index of competition faced by French exports is finally obtained by weighting these 2 price indexes by the base year shares:

1973 .66 x 80.75 + .33 x 101.2 = 86.69

1974 .66 x 89.24 + .33 x 99.75 = 91.81

1975 .66 x 100.0 + .33 x 100.00 = 100.0

The lag structure for PRE was not estimated, but selected from four candidates after trial runs. The four structures tested were:

W1 = .05 .15 .30 .30 .15 .05

W2 = .10 .15 .25 .25 .15 .10

W3 = .166 .166 .166 .166 .166 .166

W4 = .4 .3 .2 .1 .0 .0

W2 gave the highest number of best results, but was by no means a clear-cut winner.

Equation type [4.17] gave generally good results, however, an alternate formulation was used:

$$\ln (EXPS_i^t) = a_i + b_i\, t + c_i\, PRE_i^t \qquad [4.18]$$

This equation was used when the regular-type equation was yielding unacceptable results, such as a negative coefficient for domestic demand, or a price elasticity too far from our a priori estimate.

This leads us to turn to the estimation method for equations of the first type. The critical point is obviously the estimation of the price elasticity. An unconstrained estimation may give erratic values for l_i. Moreover, the fit is found to be rather insensitive to the value of l_i. One feels therefore justified to specify an a priori value for l_i, l_i^*, and constrain the estimation so that the estimated l_i, will be close to l_i^*. The procedure goes as follows: an a priori l_i^* is picked, and a number of regressions are run for l_i varying step by step from $(l_i^* - a)$ to $(l_i^* + a)$. We select the l_i that gives

the highest value for

$$R^2_{l_i} - .2 \left| \frac{l_i - l_i^*}{l_i^*} \right|$$

where $R^2_{l_i}$ is the R^2 of the regression equation

$$\frac{EXPS_i^t}{(PRE_i^t)^{-l_i}} = a_i - b_i \, FDEM_i^t \qquad [4.19]$$

Results are listed in Appendix Table 4. The column labeled RBARSQ shows $R^2_{l_i}$ for the selected l_i.

For most of the sectors good results are obtained. We used the standard equation for 43 sectors and the linear form for 25 sectors. Due to the world-wide recession, exports of many products dropped in 1975. Equations for sector 19, Glass, and 51,Yarn and Thread, for example, catch very well this drop. Data for these two sectors are displayed in Table 4.7. Linear type equations are chosen for products the exports of which do not seem to respond to variations in foreign demand. Typical of such sectors is sector 32, Electric Equipment,the exports of which have been keeping a smooth upward trend through the 1975 recession. Data for this sector are displayed in Table 4.8.

Unfortunately, we were not able to get acceptable results for a few sectors :

FRENCH EXPORT EQUATIONS

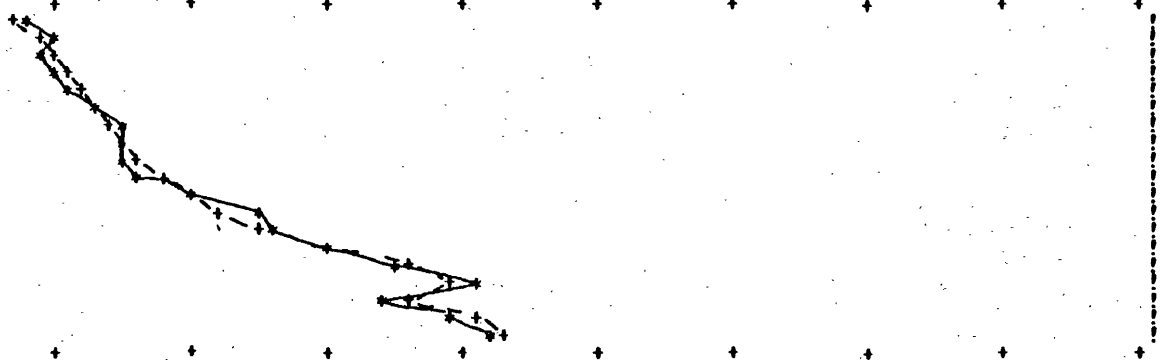
	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, CONK.FF	307.	365.	366.	415.	468.	530.	630.	656.	661.	717.	886.	1118.	1229.	1467.	1784.	2336.
EXPORTS, CONK.FF	2212.	2775.	3399.													
USE FOREIGN PRICE	.434	.437	.445	.451	.455	.468	.475	.478	.488	.490	.519	.598	.652	.656	.669	.857
USE FOREIGN PRICE	.852	1.000	1.119													
FOREIGN DEMAND	45.9	49.8	52.0	54.6	57.9	62.1	65.0	68.9	70.2	75.2	82.1	85.5	87.7	93.1	100.3	99.9
FOREIGN DEMAND	92.8	100.0	102.4													
DOMESTIC DEFLATOR	.516	.523	.551	.553	.584	.588	.596	.603	.611	.635	.633	.635	.670	.696	.723	.806
DOMESTIC DEFLATOR	.921	1.000	1.143													
RELATIVE PRICES	1.155	1.156	1.161	1.168	1.184	1.198	1.212	1.222	1.222	1.228	1.224	1.206	1.171	1.118	1.071	1.030
RELATIVE PRICES	1.015	1.000	.996													

A PRIORI ELASTICITY = -2.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST =-2.00	UTIL = .715	RBARSQ = .916	A= -1593.2	B= 41.2757	UNADJ RBARSQ= .9156
PELS =-1.00	EST =-2.00	UTIL = .874	RBARSQ = .974	A= -1398.0	B= 40.9579	UNADJ RBARSQ= .9640
PELS =-2.00	EST =-2.00	UTIL = .988	RBARSQ = .988	A= -1155.9	B= 40.4328	UNADJ RBARSQ= .9783
PELS =-3.00	EST =-2.00	UTIL = .860	RBARSQ = .960	A= -857.4	B= 39.6527	UNADJ RBARSQ= .9206

EQUATION A= -1155.9 B= 40.4328 ELASTICITY= -2.00 RBARSQ= .9880
(-10.4) (28.4925) RHO = .93 DEMAND ELASTICITY = 1.39

59	525.	596.	
60	642.	698.	
61	703.	665.	
62	771.	751.	
63	846.	601.	
64	944.	902.	
65	1002.	1056.	
66	1091.	1088.	
67	1126.	1082.	
68	1249.	1130.	
69	1445.	1399.	
70	1581.	1760.	
71	1742.	1835.	
72	2087.	2108.	
73	2527.	2467.	
74	2720.	2899.	
75	2519.	2402.	
76	2887.	2775.	
77	3006.	2974.	



TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .14747554+00 RBARSQ = .9709 RSQ = .9725
REGRESSION COEFFICIENTS 7.874532 .095619
(227.097879) (24.510087) (
DURBIN WATSON = 1.191421 RHO = .404

PREDICTION	569.4	626.6	689.4	758.6	834.7	918.5	1010.6	1112.1	1223.6	1346.4	1481.5	1630.2	1793.7	1973.7	2171.8	2389.7
	2629.5	2893.3	3183.6													
ACTUAL	596.2	697.7	665.1	750.8	800.9	902.1	1055.9	1087.6	1082.0	1130.3	1399.0	1760.0	1834.8	2108.5	2467.3	2899.4
	2402.5	2774.7	2973.7													
RESIDUALS	26.8	71.1	-24.3	-7.8	-33.8	-16.4	45.3	-24.5	-141.6	-216.1	-82.5	129.8	41.0	134.8	295.5	509.7
	-227.0	-118.6	-209.9													

3 VAR SSR = .13407832+00 RBARSQ = .9719 RSQ = .9750
REGRESSION COEFFICIENTS 8.364322 .091183 -.455247
(21.509709) (17.545753) (-1.264411) (
DURBIN WATSON = 1.273015 RHO = .363

PREDICTION	589.7	645.8	705.8	770.7	838.2	912.2	993.0	1082.8	1186.0	1295.9	1422.4	1570.5	1748.1	1962.1	2195.8	2451.5
	2703.1	2981.7	3271.7													
ACTUAL	596.2	697.7	665.1	750.8	800.9	902.1	1055.9	1087.6	1082.0	1130.3	1399.0	1760.0	1834.8	2108.5	2467.3	2899.4
	2402.5	2774.7	2973.7													
RESIDUALS	6.5	51.9	-40.7	-19.9	-37.3	-10.1	62.9	4.7	-104.0	-165.5	-23.4	189.4	86.7	146.4	271.4	447.9
	-300.6	-207.0	-298.0													

2 VAR SSR = .73131219-01 RBARSQ = .5735 RSQ = .5972
REGRESSION COEFFICIENTS .015502 -.013792
(.535594) (-5.020215) (

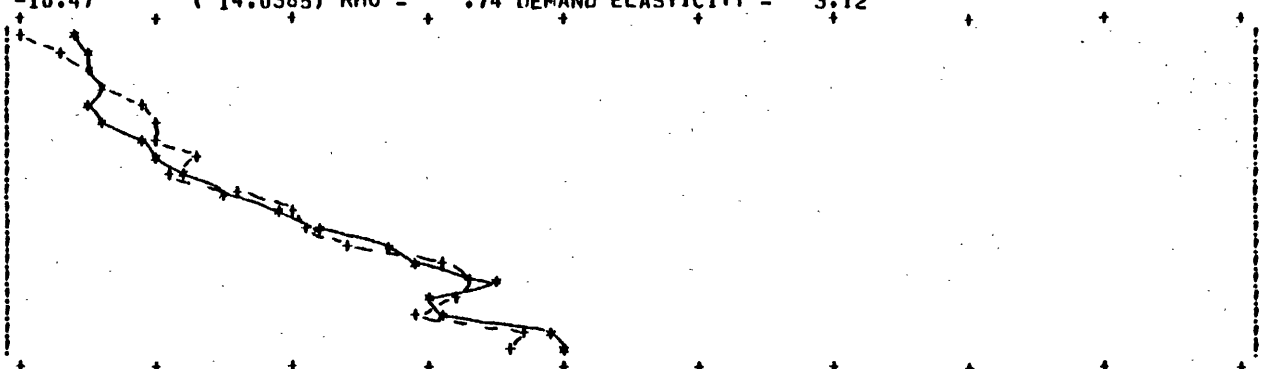
FILS ET FIBRES ARTIFICIELS ET FRENCH EXPORT EQUATIONS

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, COUR.FF	171.	197.	215.	243.	202.	265.	327.	391.	416.	519.	673.	715.	857.	877.	1134.	1376.
EXPORTS, COUR.FF	1144.	1492.	1511.													
USE FOREIGN PRICE	.486	.512	.515	.463	.522	.532	.515	.517	.513	.519	.548	.619	.641	.668	.837	1.035
USE FOREIGN PRICE	.865	1.000	1.122													
FOREIGN DEMAND	68.0	73.0	75.5	77.2	81.5	83.6	83.2	88.2	83.9	90.3	96.3	96.3	98.8	103.8	102.7	99.1
FOREIGN DEMAND	93.7	100.0	98.2													
DOMESTIC DEFLATOR	1.022	1.013	1.060	1.067	1.045	1.043	.972	.957	.927	.890	.907	.867	.835	.803	.854	1.202
DOMESTIC DEFLATOR	.984	1.000	1.008													
RELATIVE PRICES	1.865	1.855	1.846	1.851	1.848	1.860	1.834	1.784	1.731	1.660	1.612	1.540	1.455	1.347	1.223	1.128
RELATIVE PRICES	1.046	1.000	.966													

A PRIORI ELASTICITY = -1.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST =-1.00	UTIL = .500	RBARSQ = .780	A= -2804.7	B= 39.3409	UNADJ RBARSQ= .7895
PELS = -.50	EST =-1.00	UTIL = .802	RBARSQ = .902	A= -2833.6	B= 40.8539	UNADJ RBARSQ= .8627
PELS =-1.00	EST =-1.00	UTIL = .967	RBARSQ = .967	A= -2808.2	B= 42.0744	UNADJ RBARSQ= .9159

EQUATION A= -2808.2 B= 42.0744 ELASTICITY= -1.00 RBARSQ= .9666
(-10.4) (14.0385) RHO = .74 DEMAND ELASTICITY = 3.12



59	28.	167.
60	142.	194.
61	200.	202.
62	238.	228.
63	336.	193.
64	381.	254.
65	377.	337.
66	506.	408.
67	417.	449.
68	597.	583.
69	772.	741.
70	808.	824.
71	927.	1026.
72	1157.	1092.
73	1237.	1328.
74	1207.	1144.
75	1084.	1162.
76	1399.	1492.
77	1371.	1499.

**** 0 25 50 75 100 125 150 175 200 225

TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .45362794+00 RBARSQ = .9576 RSQ = .9599
REGRESSION COEFFICIENTS 7.250763 .138084
(119.229074) (20.181527) (
DURBIN WATSON = .696605 RHO = .652

PREDICTION 154.7 177.6 203.9 234.1 268.7 308.5 354.2 406.7 466.9 536.0 615.4 706.5 811.1 931.2 1069.1 1227.4
1409.2 1617.8 1857.4

ACTUAL 167.0 194.2 202.3 227.9 193.2 254.0 336.7 408.3 448.7 583.4 741.5 824.5 1026.0 1092.4 1328.4 1144.5
1162.2 1492.0 1499.2

RESIDUALS 12.3 16.7 -1.6 -6.2 -75.5 -54.5 -17.6 1.6 -18.2 47.3 126.1 118.0 214.9 161.2 259.3 -82.9
-247.0 -125.8 -358.2

3 VAR SSR = .44024969+00 RBARSQ = .9563 RSQ = .9611
REGRESSION COEFFICIENTS 6.950302 .152535 .259101
(15.966538) (6.978072) (.697285) (
DURBIN WATSON = .719264 RHO = .640

PREDICTION 147.4 171.2 198.9 232.1 270.1 315.5 365.1 419.8 482.3 551.5 634.4 725.3 826.4 936.1 1055.9 1200.0
1368.5 1574.9 1818.1

ACTUAL 167.0 194.2 202.3 227.9 193.2 254.0 336.7 408.3 448.7 583.4 741.5 824.5 1026.0 1092.4 1328.4 1144.5
1162.2 1492.0 1499.2

RESIDUALS 19.6 23.0 3.4 -4.2 -76.9 -61.5 -28.5 -11.5 -33.6 31.8 107.1 99.2 199.6 156.3 272.6 -55.5
-206.3 -82.9 -318.9

2 VAR SSR = .14644392+00 RBARSQ = .9012 RSQ = .9066
REGRESSION COEFFICIENTS -.017352 -.049952
(-.423650) (-12.849401) (
DURBIN WATSON = .805677 RHO = .597

32MATERIEL ELECTRIQUE — FRENCH EXPORT EQUATIONS

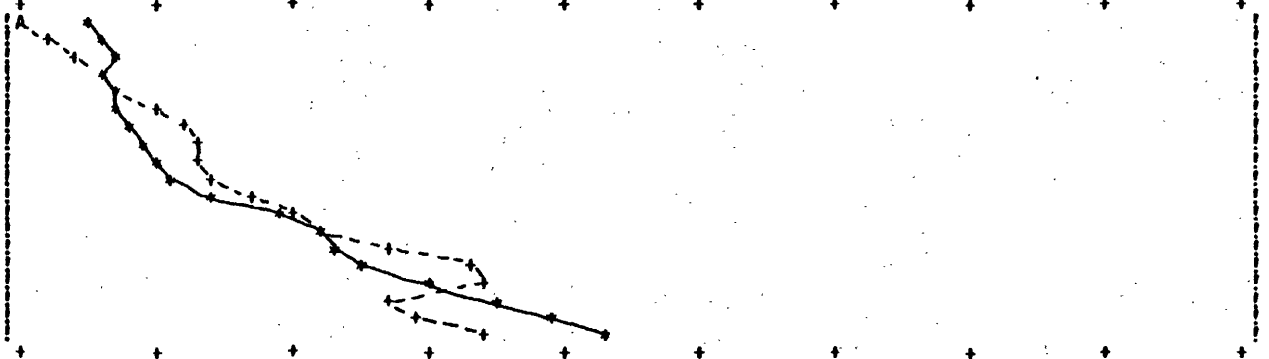
	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, COUR.FF	512.	652.	755.	750.	822.	909.	1045.	1145.	1313.	1446.	1850.	2653.	3013.	3322.	3896.	5568.
EXPORTS, COUR.FF	6739.	8220.	9499.													
USE FOREIGN PRICE	.516	.522	.523	.522	.525	.524	.522	.524	.525	.520	.554	.655	.701	.691	.672	.816
USE FOREIGN PRICE	.918	1.000	1.184													
FOREIGN DEMAND	48.0	52.5	54.5	57.1	60.3	64.7	69.3	73.8	74.7	79.9	88.5	93.0	93.9	98.6	106.1	105.3
FOREIGN DEMAND	95.6	100.0	106.6													
DOMESTIC DEFLATOR	.488	.502	.524	.541	.540	.561	.576	.592	.613	.587	.616	.667	.664	.681	.748	.886
DOMESTIC DEFLATOR	.927	1.000	1.074													
RELATIVE PRICES	.907	.909	.915	.927	.945	.968	.990	1.015	1.042	1.063	1.080	1.076	1.050	1.015	.987	.980
RELATIVE PRICES	.989	1.000	.987													

A PRIORI ELASTICITY = -3.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST =-3.00	UTIL = .554	RBARSQ = .754	A= -5202.1	B=110.1863	UNADJ RBARSQ= .7541
PELS =-1.00	EST =-3.00	UTIL = .650	RBARSQ = .784	A= -5361.7	B=112.2653	UNADJ RBARSQ= .7843
PELS =-2.00	EST =-3.00	UTIL = .738	RBARSQ = .804	A= -5510.6	B=114.2887	UNADJ RBARSQ= .8100
PELS =-3.00	EST =-3.00	UTIL = .818	RBARSQ = .818	A= -5650.2	B=116.2753	UNADJ RBARSQ= .8307

EQUATION A= -5650.2 B= 116.2753 ELASTICITY= -3.00 RBARSQ= .8177
(-5.6) (9.4495) RHO = .73 DEMAND ELASTICITY = 1.84

59	-92.45	1048.40
60	605.41	1298.02
61	897.56	1441.76
62	1240.34	1401.35
63	1614.66	1522.52
64	2067.49	1619.35
65	2478.83	1814.71
66	2806.35	1935.06
67	2881.30	2140.05
68	3026.88	2461.84
69	3678.52	3004.45
70	4148.38	3978.10
71	4550.29	4536.48
72	5561.44	4879.98
73	6954.60	5210.05
74	7009.61	6283.93
75	5649.01	7267.96
76	5977.29	8219.54
77	7016.70	8844.21



**** TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .19785881+00 RBARSQ = .9758 RSQ = .9771
REGRESSION COEFFICIENTS 8.021238 .121715
(219.634310) (26.935636) (
DURBIN WATSON = .427903 RHO = .786

PREDICTION 966.6 1091.7 1233.0 1392.6 1572.9 1776.5 2006.4 2266.1 2559.4 2890.6 3264.8 3687.4 4164.6 4703.6 5312.5 6000.1
6776.6 7653.8 8644.4

ACTUAL 1048.4 1298.0 1441.8 1401.3 1522.5 1619.3 1814.7 1935.1 2140.1 2461.8 3004.4 3978.1 4536.5 4880.0 5210.1 6283.9
7268.0 8219.5 8844.2

RESIDUALS 81.8 206.3 208.7 8.7 -50.4 -157.1 -191.7 -331.0 -419.3 -428.8 -260.3 290.7 371.9 176.3 -102.4 283.9
491.3 565.8 199.8

3 VAR SSR = .13433851+00 RBARSQ = .9825 RSQ = .9845
REGRESSION COEFFICIENTS 10.147582 .120555 -1.289010
(20.991247) (28.109878) (-2.750527) (
DURBIN WATSON = .683163 RHO = .658

PREDICTION 1013.7 1150.5 1298.3 1452.5 1615.2 1783.4 1969.4 2170.7 2382.0 2635.8 2932.2 3355.1 3943.6 4692.1 5531.6 6348.9
7134.3 7999.4 9251.7

ACTUAL 1048.4 1298.0 1441.8 1401.3 1522.5 1619.3 1814.7 1935.1 2140.1 2461.8 3004.4 3978.1 4536.5 4880.0 5210.1 6283.9
7268.0 8219.5 8844.2

RESIDUALS 34.7 147.5 143.4 -51.1 -92.7 -164.0 -154.7 -235.6 -242.0 -173.9 72.3 623.0 592.8 187.8 -321.6 -65.0
133.7 220.1 -407.4

2 VAR SSR = .91582946-01 RBARSQ = -.0556 RSQ = .0030
REGRESSION COEFFICIENTS .030439 -.000697
(.939773) (-.226561) (

Table 4.8 Export Equation for Sector 32 - Electrical Equipment

25YLVICULTURE FRENCH EXPORT EQUATIONS

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, COUR.FF	133.	194.	197.	196.	178.	196.	188.	191.	173.	164.	202.	261.	285.	297.	401.	590.
EXPORTS, COUR.FF	461.	509.	682.													
USE FOREIGN PRICE	.430	.430	.436	.441	.448	.461	.470	.493	.491	.519	.580	.615	.663	.698	.779	.903
USE FOREIGN PRICE	.870	1.000	1.038													
FOREIGN DEMAND	96.9	99.5	64.1	66.9	71.4	70.9	71.2	75.9	75.9	80.1	80.8	89.3	90.7	91.1	93.7	95.6
FOREIGN DEMAND	96.2	100.0	101.0													
DOMESTIC DEFLATOR	.342	.348	.356	.362	.376	.386	.389	.384	.384	.382	.431	.575	.610	.632	.818	1.193
DOMESTIC DEFLATOR	.970	1.000	1.214													
RELATIVE PRICES	.730	.731	.734	.739	.747	.754	.760	.759	.753	.737	.719	.721	.733	.769	.818	.883
RELATIVE PRICES	.947	1.000	1.033													

A PRIORI ELASTICITY = -.50 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00 EST = -.50 UTIL = -.257 RBARSQ = -.057 A= 478.8 B= .1175 UNADJ RBARSQ= -.0574
PELS = -.25 EST = -.50 UTIL = -.412 RBARSQ = -.312 A= 392.5 B= .0454 UNADJ RBARSQ= .0041
PELS = -.50 EST = -.50 UTIL = -.679 RBARSQ = -.679 A= 312.7 B= 1.5158 UNADJ RBARSQ= .0995

EQUATION A= 478.8 B= .1175 ELASTICITY= .00 RBARSQ= -.0574
(7.5) (.1512) RHO = .52 DEMAND ELASTICITY = .02

59	485.	388.
60	486.	558.
61	486.	553.
62	487.	541.
63	467.	474.
64	487.	509.
65	487.	484.
66	488.	497.
67	488.	451.
68	488.	430.
69	488.	469.
70	489.	454.
71	489.	468.
72	490.	469.
73	490.	491.
74	490.	494.
75	490.	476.
76	491.	509.
77	491.	562.

0 25 50 75 100 125 150 175 200 225

TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .15385006+00 RBARSQ = -.0544 RSQ = .0042
REGRESSION COEFFICIENTS 6.194300 .001067
(174.900789) (.267832) (
DURBIN-ATSON = 1.276041 RHO = .362

PREDICTION	481.7	482.2	482.7	483.2	483.7	484.2	484.7	485.3	485.8	486.3	486.8	487.3	487.9	488.4	488.9	489.4
	489.9	490.5	491.0													
ACTUAL	388.4	558.3	553.0	540.5	474.2	509.1	484.0	497.0	450.5	430.0	468.9	453.5	467.8	469.1	490.9	494.3
	475.8	509.4	562.2													
RESIDUALS	-93.3	76.1	70.3	57.3	-9.6	24.9	-.7	11.8	-35.3	-56.3	-17.9	-33.8	-20.1	-19.3	2.0	4.9
	-14.2	19.0	71.2													

3 VAR SSR = .12453056+00 RBARSQ = .0932 RSQ = .1940
REGRESSION COEFFICIENTS 5.640996 -.007121 .625455
(19.657501) (-1.269754) (1.940887) (
DURBIN-ATSON = 1.594239 RHO = .203

PREDICTION	498.4	495.3	492.7	490.7	489.5	488.2	486.6	482.9	477.6	469.6	461.1	458.3	458.5	465.7	476.7	493.0
	509.4	522.9	530.1													
ACTUAL	388.4	558.3	553.0	540.5	474.2	509.1	484.0	497.0	450.5	430.0	468.9	453.5	467.8	469.1	490.9	494.3
	475.8	509.4	562.2													
RESIDUALS	-110.0	62.9	60.3	49.8	-15.3	20.9	-2.6	14.1	-27.1	-39.5	7.8	-4.7	9.3	3.4	14.2	1.4
	-33.6	-13.4	32.2													

2 VAR SSR = .21290267+00 RBARSQ = .5278 RSQ = .5540
REGRESSION COEFFICIENTS .081220 .021539
(1.644651) (4.595190) (
DURBIN-ATSON = .911346 RHO = .544

Table 4.9 Export Equation for Sector 2 - Forestry

14PROD. DE L'ACIER — FRENCH EXPORT EQUATIONS

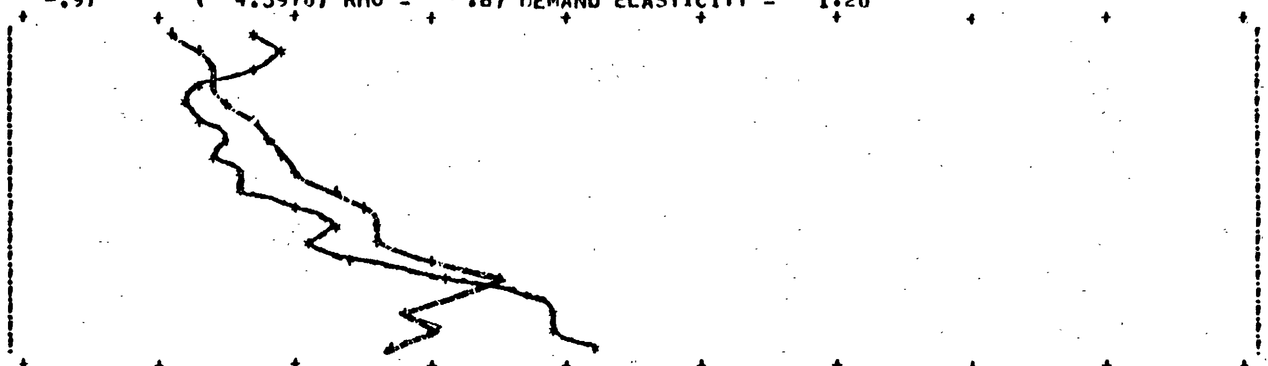
	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, COUR.FF	776.	877.	801.	638.	650.	695.	824.	778.	867.	902.	1170.	1635.	1526.	1723.	2508.	4009.
EXPORTS, COUR.FF	5108.	4928.	5179.													
USE FOREIGN PRICE	.369	.382	.393	.396	.406	.443	.447	.444	.431	.415	.459	.676	.665	.595	.688	.955
USE FOREIGN PRICE	.920	1.000	1.026													
FOREIGN DEMAND	48.2	54.7	56.2	56.1	59.0	66.5	70.5	72.3	75.2	83.6	92.3	95.7	93.3	98.6	106.7	111.4
FOREIGN DEMAND	92.7	100.0	97.3													
DOMESTIC DEFLATOR	.356	.372	.376	.385	.412	.420	.427	.427	.429	.451	.473	.559	.574	.580	.641	.871
DOMESTIC DEFLATOR	1.038	1.000	.985													
RELATIVE PRICES	1.003	1.004	1.004	1.005	1.010	1.010	1.013	1.009	1.007	1.019	1.032	1.036	1.024	.991	.962	.953
RELATIVE PRICES	.975	1.000	1.032													

A PRIORI ELASTICITY = -2.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS	EST	UTIL	RBARSQ	A	B	UNADJ RBARSQ
.00	-2.00	.325	.525	-908.4	46.5538	.5248
-1.00	-2.00	.443	.543	-812.5	45.4028	.5172
-2.00	-2.00	.553	.553	-722.6	44.3488	.5046
-3.00	-2.00	.454	.554	-638.6	43.3896	.4872
-4.00	-2.00	.345	.545	-560.3	42.5234	.4654

EQUATION A= -722.6 B= 44.3488 ELASTICITY= -2.00 RBARSQ= .5531
(-.9) (4.3970) RHO = .87 DEMAND ELASTICITY = 1.20

59	1406.	2182.
60	1689.	2355.
61	1756.	2128.
62	1748.	1658.
63	1858.	1577.
64	2183.	1654.
65	2341.	1930.
66	2438.	1823.
67	2578.	2022.
68	2875.	1999.
69	3166.	2475.
70	3278.	2924.
71	3259.	2660.
72	3714.	2968.
73	4337.	3915.
74	4640.	4605.
75	3564.	4920.
76	3712.	4928.
77	3374.	5258.



****
TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .79728839+00 RBARSQ = .7113 RSQ = .7273
REGRESSION COEFFICIENTS 8.298282 .061078
(102.926878) (6.733422) (
DURBIN WATSON = .359631 RHO = .820

PREDICTION 1511.8 1607.0 1708.2 1815.8 1930.1 2051.7 2180.9 2318.3 2464.3 2619.5 2784.5 2959.9 3146.3 3344.4 3555.1 3779.0
4017.0 4270.0 4538.9

ACTUAL 2181.5 2355.2 2127.6 1658.2 1577.5 1654.0 1930.4 1823.0 2021.9 1998.5 2475.3 2923.8 2660.2 2968.2 3914.7 4604.8
4920.3 4928.4 5258.0

RESIDUALS 669.7 748.2 419.4 -157.6 -352.6 -397.7 -250.5 -495.3 -442.4 -621.0 -309.1 -36.1 -486.0 -376.2 359.7 825.9
903.3 658.4 719.1

3 VAR SSR = .67672671+00 RBARSQ = .7396 RSQ = .7685
REGRESSION COEFFICIENTS 12.091943 .057819 -3.798679
(5.378282) (6.549683) (-1.688333) (
DURBIN WATSON = .447551 RHO = .776

PREDICTION 1566.3 1653.0 1753.4 1849.5 1925.6 2037.9 2130.5 2291.6 2454.8 2481.2 2503.2 2606.6 2899.1 3472.7 4120.4 4502.4
4394.6 4234.8 3975.0

ACTUAL 2181.5 2355.2 2127.6 1658.2 1577.5 1654.0 1930.4 1823.0 2021.9 1998.5 2475.3 2923.8 2660.2 2968.2 3914.7 4604.8
4920.3 4928.4 5258.0

RESIDUALS 615.2 702.2 374.1 -191.3 -348.1 -383.8 -200.2 -468.6 -432.9 -482.7 -27.9 317.1 -238.9 -504.4 -205.7 102.4
525.6 693.6 1283.0

2 VAR SSR = .88957900-01 RBARSQ = -.0588 RSQ = .0000
REGRESSION COEFFICIENTS -.030710 .000062

Table 4.10 Export Equation for Sector 14 - Steel Products

2 Forestry 4 Coal

14 Steel Products 44 Bread and Pastries

58 Clothing

In some cases, we find wide variations in exports while foreign demand and relative prices move quite smoothly. Typical of such cases are sectors 2 and 4. Data for sector 2 are given in Table 4.9. In another case, some other factors are clearly overriding the foreign demand and the relative prices in the determination of the exports: for Steel Products, foreign demand drops sharply in 1975, and resumes in 1976 a slow growth. Relative prices do not experience major changes, but French exports only show a slowdown in 1976, after a sharp increase in 1975. Data for this sector are displayed in Table 4.10. Table 4.11 shows the exogenous values assigned to these sectors. Of course, such exogenous forecasts could be readily changed.

Table 4.11 Exogenous forecasts for exports

Sector	yearly growth rate of exports 1978	1985
2 Forestry	5.0	-3.0
4 Coal	0.0	-7.0
14 Steel Products	4.0	4.0
44 Bread & Pastries	32.0	14.0
58 Clothing	11.0	2.0

We have also kept in the model a few equations, although they fit very poorly the data. Sectors 15, 55 and 79 have low RBARSQ. Among equations of type 2, sectors 3, 17 and 59 fall into the same category. For some sectors, poor fit comes from wide variations in some period of their history ; nevertheless we keep the equation because the actual values seem back on the trend in 1977. Typical of this case is sector 17, Other Minerals. Table 4.12 displays the data for this sector. For sectors 55

and 59, exports are undergoing wide variations, but we still feel that the equations give more reasonable predicted values than any exogenous forecast we can think of. Data for sector 59 are displayed in Table 4.13. We will of course make sure the forecasted values for these goods stay reasonable.

Let us now consider how we get the indexes of foreign demand and foreign prices in the years of forecast. We draw from two sources to construct the foreign demand index, in the same way as we did for the historical data. Forecasts of industrial production for the USA are obtained from the 200-order Inforum model. For the other trading partners, assumptions on the growth of industrial production in the 13 OECD categories were made. The base year weights were used to aggregate the 9 indexes into an aggregate price index.

The forecast of the foreign price index for exports, PFORE, is performed in two steps. The continuation of simple time trends is assumed for the relative price of each product. For each product, we estimate the equation:

$$\ln (PR_i^t) = a_i + b_i \, t \qquad [4.20]$$

Coefficents and statistics are listed in Appendix Table 5. To obtain $PFORE_i$, we need to multiply the estimated relative price, PR_i, by the index of domestic price, P_i. P_i was also assumed to follow the past trend: for each product, we estimated the equation:

$$\ln (P_i^t) = a_i + b_i \, t \qquad [4.21]$$

Coefficients and statistics are listed in Appendix Table 6. Later, we obtained from the GAMA[4] a forecast of the domestic prices, but the forecast of PFORE was not revised.

4.3 The import equations

The import equations are very similar to the export equations. The general form is:

$$IMPS_i^t = (a_i + b_i \, DD_i^t) \, (PRI_i^t)^{-l_i} \qquad [4.22]$$

where

$IMPS_i^t$ = standard-price imports of product i

DD_i^t = domestic demand for product i, evaluated at standard price

$= Q_i - EXPS_i + IMPS_i$

$$PRI_i^t = \sum_{j=0}^{5} w_j \, \frac{PFORI_i^{t-j}}{P_i^{t-j}}$$

$PFORI_i$ is the price index of imports of product i;it is a weighted average of foreign price indexes of product i. The foreign price indexes are the same prices as we used in section 4.2 to compute the foreign price for the export equation, but the weights are now the base year share of each trading partner in French imports.

For non-merchandise imports, the US price indexes were used alone as foreign price indexes. Although it would have been more appropriate to explain non-merchandise imports by specific equations, the standard equations were found to give acceptable results.

Equation type [4.22] gave in general good fits. However, two alternate formulations were used. The first one is similar to the linear form used also for exports:

17 MINERAUX DIVERS FRENCH EXPORT EQUATIONS

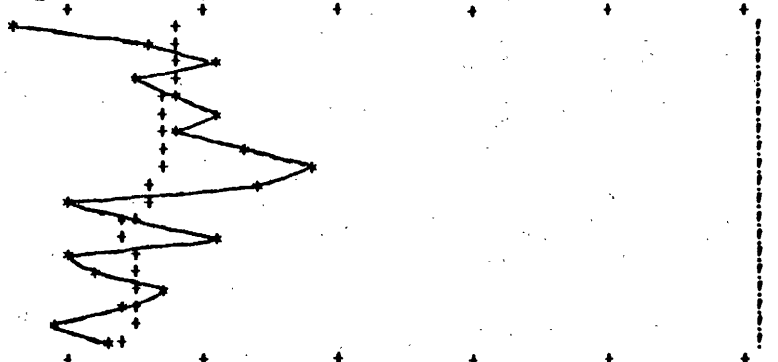
	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, COUR.FF	233.	303.	348.	316.	357.	393.	384.	433.	495.	489.	345.	343.	402.	346.	399.	526.
EXPORTS, COUR.FF	557.	550.	650.													
USE FOREIGN PRICE	.362	.371	.382	.390	.403	.424	.443	.458	.463	.478	.532	.634	.628	.619	.656	1.011
USE FOREIGN PRICE	.905	1.000	1.068													
FOREIGN DEMAND	83.8	85.0	86.4	87.3	87.8	91.6	91.7	90.0	89.7	92.8	95.1	100.3	103.5	101.6	101.1	99.5
FOREIGN DEMAND	98.0	100.0	104.4													
DOMESTIC DEFLATOR	.463	.469	.488	.501	.527	.550	.568	.583	.604	.646	.614	.552	.562	.609	.680	.797
DOMESTIC DEFLATOR	.906	1.000	1.065													
RELATIVE PRICES	1.354	1.353	1.352	1.351	1.355	1.361	1.367	1.369	1.368	1.373	1.362	1.319	1.241	1.137	1.062	1.007
RELATIVE PRICES	1.002	1.000	1.008													

A PRIORI ELASTICITY = -3.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST =-3.00	UTIL = -.201	RBARSQ = -.001	A= 915.7	B= -2.8071	UNADJ RBARSQ= -.0006
PELS =-1.00	EST =-3.00	UTIL = -1.233	RBARSQ = -1.099	A= 2169.6	B=-14.3423	UNADJ RBARSQ= .2703
PELS =-2.00	EST =-3.00	UTIL = -3.707	RBARSQ = -3.640	A= 3923.7	B=-30.5801	UNADJ RBARSQ= .3892
PELS =-3.00	EST =-3.00	UTIL = -8.636	RBARSQ = -8.636	A= 6366.3	B=-53.3058	UNADJ RBARSQ= .4413

EQUATION A= 915.7 B= -2.8071 ELASTICITY= .00 RBARSQ= -.0006
(3.4) (-.9944) RHO = .98 DEMAND ELASTICITY = -.47

59	680.	503.
60	677.	646.
61	673.	714.
62	671.	631.
63	669.	677.
64	659.	713.
65	658.	677.
66	663.	744.
67	664.	819.
68	655.	756.
69	649.	561.
70	634.	621.
71	625.	714.
72	630.	567.
73	632.	586.
74	636.	660.
75	641.	615.
76	635.	558.
77	623.	610.



TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .26251248+00 RBARSQ = -.0185 RSQ = .0381
REGRESSION COEFFICIENTS 6.441839 -.004271
(139.246151) (-.820577) (
DURBIN WATSON = 1.267721 RHO = .366

PREDICTION	671.9	669.1	666.2	663.4	660.6	657.7	654.9	652.2	649.4	646.6	643.8	641.1	638.4	635.7	632.9	630.2
	627.6	624.9	622.2													
ACTUAL	503.3	646.3	714.1	631.5	676.7	713.3	677.2	743.7	819.0	755.9	561.2	620.8	714.0	567.4	586.2	659.6
	615.2	558.3	610.2													
RESIDUALS	-168.6	-22.8	47.9	-31.9	16.1	55.6	22.2	91.5	169.6	109.3	-82.6	-20.3	75.6	-68.3	-46.7	29.3
	-12.4	-66.6	-12.0													

3 VAR SSR = .20646288+00 RBARSQ = .1489 RSQ = .2435
REGRESSION COEFFICIENTS 5.696666 .011745 .686100
(15.822391) (1.299426) (2.084132) (
DURBIN WATSON = 1.602842 RHO = .199

PREDICTION	625.0	631.8	638.9	646.3	655.6	666.1	676.6	685.6	693.4	703.6	706.7	694.1	665.7	627.5	602.8	587.7
	592.2	598.6	608.9													
ACTUAL	503.3	646.3	714.1	631.5	676.7	713.3	677.2	743.7	819.0	755.9	561.2	620.8	714.0	567.4	586.2	659.6
	615.2	558.3	610.2													
RESIDUALS	-121.7	14.5	75.1	-14.8	21.0	47.2	.6	58.1	125.6	52.3	-145.4	-73.3	48.3	-60.1	-16.6	71.9
	23.0	-40.3	1.3													

2 VAR SSR = .21137080+00 RBARSQ = .5583 RSQ = .5829
REGRESSION COEFFICIENTS -.087270 -.022703
(-1.773556) (-4.873776) (

Table 4.12 Export Equation for Sector 17 - Other Minerals

Table 4.13 Export Equation for Sector 59 - Wood Products

59PROD DU BOIS — FRENCH EXPORT EQUATIONS

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
EXPORTS, CONR.FF	328.	400.	387.	366.	390.	406.	425.	409.	392.	405.	453.	623.	775.	975.	1401.	1527.
EXPORTS, CONR.FF	1327.	1715.	2289.													
USE FOREIGN PRICE	.440	.446	.462	.471	.485	.498	.506	.518	.523	.523	.561	.660	.712	.717	.751	.916
USE FOREIGN PRICE	.885	1.000	1.153													
FOREIGN DEMAND	42.4	47.1	49.9	52.7	56.0	60.0	62.4	65.9	68.2	73.9	80.8	85.5	87.6	93.2	99.9	99.9
FOREIGN DEMAND	92.6	100.0	102.8													
DOMESTIC DEFLATOR	.320	.336	.352	.377	.393	.410	.426	.434	.442	.472	.558	.618	.649	.677	.782	.979
DOMESTIC DEFLATOR	.926	1.000	1.139													
RELATIVE PRICES	.716	.718	.723	.734	.749	.767	.786	.801	.814	.827	.849	.874	.900	.918	.931	.950
RELATIVE PRICES	.975	1.000	1.011													

A PRIORI ELASTICITY = -1.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST =-1.00	UTIL = .281	RBARSQ = .481	A= 287.1	B= 12.2886	UNADJ RBARSQ= .4806
PELS = -.50	EST =-1.00	UTIL = .310	RBARSQ = .410	A= 9.8	B= 14.8444	UNADJ RBARSQ= .5842
PELS =-1.00	EST =-1.00	UTIL = .311	RBARSQ = .311	A= -225.1	B= 16.9646	UNADJ RBARSQ= .6479

EQUATION A= -135.8 B= 16.1643 ELASTICITY= -.80 RBARSQ= .3543
(-.0) (5.5811) RHO = .81 DEMAND ELASTICITY = 1.09

59	710.	1024.
60	815.	1192.
61	870.	1099.
62	917.	970.
63	976.	994.
64	1051.	992.
65	1058.	998.
66	1110.	942.
67	1140.	886.
68	1233.	857.
69	1334.	811.
70	1388.	1009.
71	1392.	1194.
72	1468.	1442.
73	1566.	1791.
74	1540.	1559.
75	1389.	1433.
76	1481.	1713.
77	1513.	2010.

TIME EQUATION LN(EXPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .68679738+00 RBARSQ = .4407 RSQ = .4717
REGRESSION COEFFICIENTS 7.288776 .032802
(97.406661) (3.896276) (
DURBIN WATSON = .400478 RHO = .800

PREDICTION 866.0 894.9 924.8 955.6 987.5 1020.4 1054.4 1089.6 1125.9 1163.5 1202.3 1242.4 1283.8 1326.6 1370.8 1416.5
1463.8 1512.6 1563.0

ACTUAL 1024.2 1191.8 1099.1 970.1 993.6 991.9 998.1 941.9 886.4 857.2 810.6 1008.6 1193.9 1441.6 1791.3 1558.7
1432.5 1713.4 2009.7

RESIDUALS 158.2 296.9 174.3 14.5 6.2 -20.5 -56.3 -147.7 -239.6 -306.3 -391.6 -233.8 -89.9 115.0 420.5 142.1
-31.3 200.8 446.6

3 VAR SSR = .33125467+00 RBARSQ = .7134 RSQ = .7452
REGRESSION COEFFICIENTS -4.498196 -.181150 12.186664
(-1.581190) (-3.485039) (4.144049) (
DURBIN WATSON = 1.055772 RHO = .472

PREDICTION 1245.2 1068.1 940.0 897.3 897.0 933.8 986.8 982.3 961.3 940.0 1029.4 1163.8 1339.6 1376.5 1349.5 1429.0
1605.0 1821.3 1732.3

ACTUAL 1024.2 1191.8 1099.1 970.1 993.6 991.9 998.1 941.9 886.4 857.2 810.6 1008.6 1193.9 1441.6 1791.3 1558.7
1432.5 1713.4 2009.7

RESIDUALS -221.0 123.7 159.0 72.9 96.7 58.0 11.3 -40.4 -74.9 -82.9 -218.7 -155.2 -145.8 65.1 441.8 129.7
-172.5 -107.9 277.3

2 VAR SSR = .28065119-01 RBARSQ = .8841 RSQ = .8905
REGRESSION COEFFICIENTS .064397 .020013
(3.591553) (11.759356) (
DURBIN WATSON = 1.136725 RHO = .432

$$\ln (IMPS_i^t) = a_i + b_i\, t + c_i\, PRI_i^t \qquad [4.23]$$

The second one is used for two sectors, Crude Oil and Non-Ferrous Ores. For these two sectors, imports supply more than 80% of the domestic demand. Equation [4.22] would in such case merely regress imports over imports. The base year ratio imports/domestic demand was computed. It is assumed to be constant over time and is used to forecast imports.

Equation [4.22] were estimated by the same procedure as the one described in section 2. Results and statistics are listed in Appendix Table 7.

Fits are generally found to be good. The standard equation was chosen for 49 sectors, and the linear form for 20. Finally, for two sectors where imports provide more than 80 % of the domestic demand, Crude Oil and Non-ferrous Ores, the base year ratio imports / domestic demand was computed and used to forecast imports. In most cases, quite wide variations are found to be well caught by the standard type equation. Particularly good examples are sector 2, Forestry, and sector 3, Fishery. Data for those two sectors are displayed in Table 4.14. As for the exports, some sectors are found to have little sensitivity to the demand term. For example, the standard type equation fitted to sector 14, Steel Products, gives calculated values that amplify the actual variations. In this case, there is clearly an independant upward trend that dampens the variations originating from the domestic demand. The linear model is best adapted to such cases. Table 4.15 shows data for sector 14.

Acceptable results could not be obtained for 3 sectors. Sector 44, Bread and Pastries, shows wide variations but actually has an almost negligible level. One can indeed hardly find why French would import such products.

SPECIFIC FRENCH IMPORT EQUATIONS

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
IMPORTS CUFR	122.	153.	200.	244.	302.	324.	341.	403.	435.	501.	552.	677.	816.	992.	1028.	1239.
	1400.	1748.	2206.													
USE FOREIGN PRICE	.331	.336	.351	.359	.378	.400	.422	.495	.453	.413	.484	.636	.666	.570	.992	.983
	.719	1.000	1.324													
OUTPUT	970.	1110.	1163.	1285.	1364.	1425.	1491.	1633.	1768.	1883.	2006.	2257.	2337.	2879.	3036.	3566.
	3663.	4152.	4956.													
DOMESTIC DEFLATOR	.264	.277	.293	.320	.339	.343	.376	.395	.423	.469	.513	.593	.643	.714	.773	.922
	.948	1.000	1.156													
DOMESTIC DEMAND	3876.	4268.	4409.	4640.	4814.	4955.	4762.	4809.	5116.	5292.	5108.	4921.	4901.	5924.	4879.	5100.
	6009.	5992.	5997.													
IMPORT/DOM DEMAND	.115	.129	.157	.177	.200	.198	.205	.201	.226	.277	.270	.261	.303	.363	.262	.300
	.401	.370	.350													
RELATIVE PRICES	1.222	1.218	1.211	1.191	1.166	1.143	1.120	1.125	1.120	1.103	1.067	1.013	.983	.955	.981	.989
	.994	1.000	.969													

A PRIORI ELASTICITY = -.50 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST = -.50	UTIL = .722	RBARSQ = .922	A= -3367.3	B= .9271	UNADJ RBARSQ= .9220
PELS = -.25	EST = -.50	UTIL = .836	RBARSQ = .936	A= -3244.8	B= .9057	UNADJ RBARSQ= .9297
PELS = -.50	EST = -.50	UTIL = .947	RBARSQ = .947	A= -3118.2	B= .8838	UNADJ RBARSQ= .9369

EQUATION A= -3118.2 B= .8838 ELASTICITY= -.50 RBARSQ= .9469
(-11.4) (16.3724) RHO = .50 DEMAND ELASTICITY = 2.43

59	278.	446.
60	592.	550.
61	707.	691.
62	900.	821.
63	1052.	964.
64	1180.	981.
65	1030.	977.
66	1134.	984.
67	1326.	1159.
68	1404.	1464.
69	1351.	1379.
70	1222.	1286.
71	1224.	1487.
72	2166.	2152.
73	1205.	1280.
74	1397.	1532.
75	2198.	2409.
76	2178.	2217.
77	2216.	2100.

**** TIME EQUATION LN(IMPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .48313746+00 RBARSQ = .8687 RSQ = .8760
REGRESSION COEFFICIENTS 7.622552 .077390
(121.454434) (10.960039) (
DURBIN WATSON = 1.621726 RHO = .189

PREDICTION	592.5	640.1	691.7	747.3	807.4	872.4	942.6	1018.5	1100.4	1188.9	1284.6	1388.0	1499.7	1620.3	1750.7	1891.6
	2043.8	2208.2	2385.9													
ACTUAL	445.9	550.3	690.6	821.0	964.2	980.5	977.2	984.0	1158.8	1464.3	1378.7	1286.5	1487.0	2151.6	1280.5	1532.0
	2408.8	2217.2	2099.7													
RESIDUALS	-146.6	-89.9	-1.0	73.7	156.8	108.1	34.6	-34.4	58.4	275.4	94.1	-101.5	-12.7	531.3	-470.2	-359.6
	365.0	9.0	-286.2													

3 VAR SSR = .48289138+00 RBARSQ = .8606 RSQ = .8761
REGRESSION COEFFICIENTS 7.752573 .075250 -.133941
(5.378628) (3.034874) (-.090298) (
DURBIN WATSON = 1.617535 RHO = .191

PREDICTION	592.8	639.5	690.2	746.0	807.0	872.8	943.9	1017.1	1097.3	1185.8	1284.5	1395.0	1510.1	1634.1	1755.9	1891.1

Table 4.14. Import Equation for Sector 3 - Fishery

IMPRD. DE L'ACIER — FRENCH IMPORT EQUATIONS

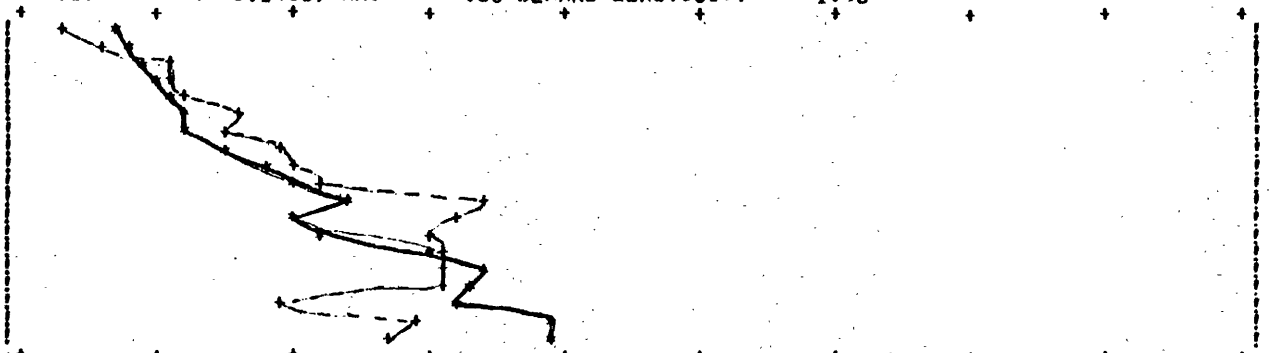
	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
IMPORTS CUFR	192.	225.	256.	299.	315.	376.	397.	471.	543.	579.	787.	991.	1090.	1283.	1679.	2287.
	2210.	2896.	2936.													
USE FOREIGN PRICE	.352	.363	.378	.383	.392	.429	.433	.428	.411	.393	.436	.667	.661	.582	.679	.941
	.936	1.000	1.018													
OUTPUT	2693.	3047.	3350.	3200.	3421.	3844.	3926.	4152.	4226.	4523.	5754.	7052.	6852.	7289.	8813.	12595.
	12473.	13382.	12734.													
DOMESTIC DEFLATOR	.356	.372	.376	.385	.412	.420	.427	.427	.429	.451	.473	.559	.574	.580	.641	.871
	1.038	1.000	.985													
DOMESTIC DEMAND	5954.	6472.	7478.	7474.	7563.	8399.	8216.	9053.	9208.	9558.	11575.	11234.	11005.	11884.	12416.	12395.
	9546.	11472.	10664.													
IMPORT/DOM DEMAND	.095	.100	.094	.109	.111	.109	.116	.127	.150	.161	.162	.138	.156	.193	.208	.204
	.257	.263	.281													
RELATIVE PRICES	.956	.954	.955	.955	.953	.956	.955	.960	.962	.948	.933	.933	.952	.993	1.031	1.040
	1.023	1.000	.973													

A PRIORI ELASTICITY = -2.00 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = .00	EST =-2.00	UTIL = .508	RBARSQ = .708	A= -1693.3	B= .3452	UNADJ RBARSQ= .7078
PELS =-1.00	EST =-2.00	UTIL = .559	RBARSQ = .659	A= -1773.9	B= .3504	UNADJ RBARSQ= .6910
PELS =-2.00	EST =-2.00	UTIL = .593	RBARSQ = .593	A= -1856.0	B= .3560	UNADJ RBARSQ= .6712

EQUATION A= -1856.0 B= .3560 ELASTICITY= -2.00 RBARSQ= .5933
(-3.3) (6.1435) RHO = .80 DEMAND ELASTICITY = 1.96

59	288.	568.
60	491.	645.
61	883.	705.
62	882.	814.
63	921.	838.
64	1241.	911.
65	1172.	955.
66	1461.	1147.
67	1536.	1377.
68	1719.	1534.
69	2601.	1878.
70	2464.	1548.
71	2275.	1718.
72	2410.	2295.
73	2412.	2578.
74	2365.	2532.
75	1473.	2451.
76	2228.	3019.
77	2049.	2994.



TIME EQUATION LN(IMPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .13682318+00 RBARSQ = .9732 RSQ = .9747
REGRESSION COEFFICIENTS 7.919064 .096181
(237.105904) (25.595834) (
DURBIN WATSON = 1.546412 RHO = .227

PREDICTION	590.0	649.6	715.2	787.4	866.9	954.4	1050.7	1156.8	1273.6	1402.2	1543.8	1699.6	1871.2	2060.1	2268.1	2497.1
	2749.2	3026.7	3332.3													
ACTUAL	568.3	644.6	704.9	814.3	837.8	911.5	954.7	1147.1	1377.1	1534.2	1877.9	1547.8	1718.3	2295.0	2577.8	2532.1
	2451.4	3018.7	2993.6													
RESIDUALS	-21.8	-5.0	-10.3	26.9	-29.1	-42.9	-96.0	-9.7	103.5	132.0	334.1	-151.9	-152.9	234.8	309.7	35.0
	-297.8	-8.0	-338.7													

5 VAR SSR = .13600491+00 RBARSQ = .9717 RSQ = .9749
REGRESSION COEFFICIENTS 7.653870 .095269 .266782
(3.947435) (19.632540) (.310264) (
DURBIN WATSON = 1.521796 RHO = .239

PREDICTION	592.7	651.6	716.9	788.5	866.8	954.2	1049.4	1156.0	1272.1	1394.1	1527.2	1679.6	1857.1	2065.0	2294.8	2530.0

Table 4.15 Import Equation for Sector 14 - Steel Products

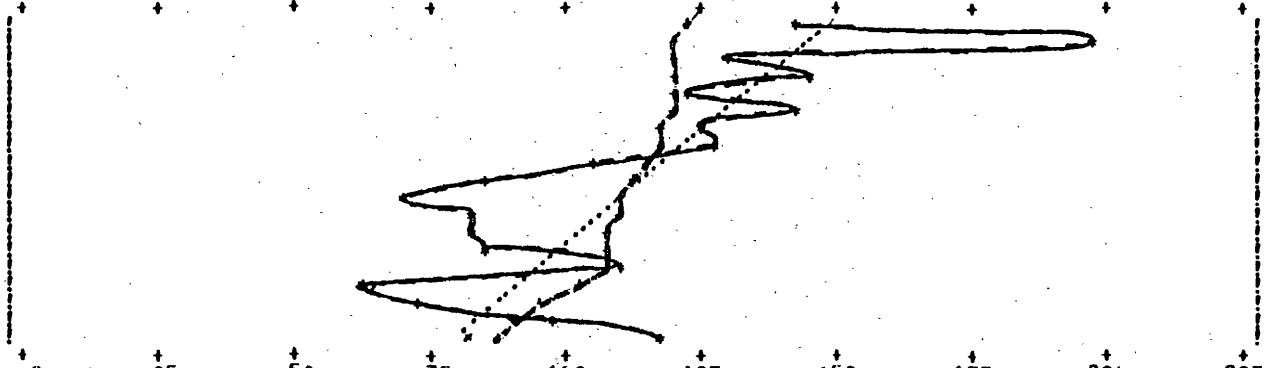
47SUGAR FRENCH IMPORT EQUATIONS

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
IMPORTS CUFR	481.	664.	448.	504.	474.	532.	446.	479.	415.	342.	305.	386.	408.	422.	552.	780.
	1002.	821.	728.													
USE FOREIGN PRICE	.417	.418	.423	.428	.479	.459	.442	.462	.489	.500	.529	.579	.600	.615	.599	1.486
	1.667	1.000	.748													
OUTPUT	1223.	2456.	2230.	1988.	2212.	2666.	2476.	2008.	2178.	2938.	3456.	3409.	4440.	4581.	4575.	4663.
	7179.	6265.	9612.													
DOMESTIC DEFLATOR	.575	.539	.584	.588	.651	.601	.499	.527	.577	.593	.601	.583	.631	.684	.700	.795
	.947	1.000	1.041													
DOMESTIC DEMAND	2730.	5272.	3924.	3806.	3337.	4581.	4652.	3849.	4014.	4874.	5210.	4617.	5525.	4868.	4493.	3493.
	6011.	4133.	6457.													
IMPORT/DOM DEMAND	.433	.309	.276	.317	.304	.260	.222	.276	.217	.144	.113	.148	.126	.144	.205	.150
	.100	.199	.151													
RELATIVE PRICES	.569	.573	.575	.579	.580	.579	.592	.609	.636	.659	.670	.685	.698	.715	.724	.796
	.892	1.000	1.057													

A PRIORI ELASTICITY = -.50 FOREIGN PRICE WEIGHTS (PAST TO CURRENT) .10 .15 .25 .25 .15 .10

PELS = -.00 EST = -.50 UTIL = -.215 RBARSQ = -.015 A= 1193.7 B= -.0605 UNADJ RBARSQ= -.0147
PELS = -.25 EST = -.50 UTIL = .011 RBARSQ = .111 A= 974.7 B= -.0317 UNADJ RBARSQ= -.0412
PELS = -.50 EST = -.50 UTIL = .202 RBARSQ = .202 A= 782.9 B= -.0067 UNADJ RBARSQ= -.0577

EQUATION A= 782.9 B= -.0067 ELASTICITY= -.50 RBARSQ= .2025
(3.3) (-.1323) RHO = .23 DEMAND ELASTICITY = -.06



TIME EQUATION LN(IMPORTS) = A + B(TIME) + C(PRICE)

2 VAR SSR = .7863352E+00 RBARSQ = .4761 RSQ = .5052
REGRESSION COEFFICIENTS 6.520445 -.037531
(81.436989) (-4.166304) (
DURBIN WATSON = 1.316921 RHO = .342

PREDICTION	1237.6	1192.0	1148.1	1105.8	1065.1	1025.9	908.1	951.7	916.6	882.9	850.3	819.0	788.8	759.8	731.8	704.8
	678.9	653.9	629.8													
ACTUAL	1182.9	1627.5	1084.9	1205.7	1014.5	1188.9	1034.3	1063.1	870.3	702.4	591.2	683.8	695.4	702.4	921.6	525.0
	601.1	821.0	973.8													
RESIDUALS	-54.7	435.4	-63.2	99.9	-50.6	163.1	46.2	111.5	-46.3	-180.4	-259.2	-135.2	-93.5	-57.4	189.8	-179.8
	-77.8	167.1	344.0													

3 VAR SSR = .5509814E+00 RBARSQ = .6100 RSQ = .6533
REGRESSION COEFFICIENTS 5.071278 -.076482 1.695262
(9.078295) (-4.551190) (2.614280) (
DURBIN WATSON = 1.885771 RHO = .057

PREDICTION	1420.8	1325.2	1231.6	1149.2	1066.1	986.9	934.5	890.9	864.4	831.7	785.6	746.7	706.1	673.8	633.3	663.0

Table 4.16 Import Equation for Sector 47 - Sugar

The estimation of imports for sector 81, Leasing, and 84, Educational Services, seems to suffer from inaccuracy in foreign demand and foreign price indexes. A specific equation is certainly needed here. As to the imports of Educational Services, they seem totally random. These 3 sectors were kept at their 1978 level. We have kept in the model 2 imports equations which have particularly low RBARSQ : equations for sector 5, Coke, and sector 47, Sugar. As for exports, we did so because we feel like the equations still model the trend of the series, if there is any. Table 4.16 displays the data for sector 47.

1 Clopper Almon, A System of Consumption Functions and Its Estimation for Belgium, Southern Economic Journal, 1979

2 Young Sun Lee, An Econometric Interindustry Forecasting Model of the French Economy, Inforum research report no 21, 1977

3 Clopper Almon, ibid.

4 Groupe d'Analyse Macroéconomique Appliquée, Université Paris-X, Nanterre.

Chapter V

Forecast of the Labor Requirement by Industry.

5.1 Productivity equations
5.2 Forecast of the length of the work week
5.3 Forecast of the total employment by industry

The labor requirement bloc of the model has the critical purpose of checking the consistency of our output projections. The labor requirement corresponding to the forecasted level of output is compared with the exogenous projection of the available labor force, and the rate of unemployment is computed. On one hand, we have to make sure our forecasted output does not have a labor requirement exceeding the projected available labor force. On the other hand, the computed unemployment rate should in some way reflect the currently announced government policy.

The labor requirement is forecasted for 35 sectors that are aggregates of the 88 sectors of the I/O table. Appendix Table 1 gives the titles of these 35 sectors. Most French data on employment applies only to employees, but the self-employed are also included in the labor force. Data on self-employment are available in the same classification as the data on employees, but exist only for the census years, that is, every five years. We therefore proceed in two steps. The labor requirement for employees only is first computed. The total labor requirement is then obtained by multiplying the number of employees by the total labor force/employees ratio specific for each one of the 35 sectors. For each of the 35 sectors, we use the number of employees (EMP_i^t) and the average number of hours worked per week (AHW_i^t) to get an index of the total

number of hours worked (NH_i^t)

$$NH_i^t = EMP_i^t \times AHW_i^t \qquad [5.1]$$

so that EMP_i^t, the variable to be forecasted, is equal to NH_i^t/AHW_i^t.

NH_i^t and AHW_i^t are forecasted separately. There are at least two reasons to forecast employment through those two variables rather than directly.

1. The labor regulation and the strong unionization of several sectors make it difficult for businesses to adjust their labor force to declining output by laying off. The alternative is to reduce the length of the work week. As a result, the estimation of employment through the two variables gives a better fit, mainly in these sectors with inflexible labor forces.
2. The evolution of the number of hours worked per week has two distinctive patterns. In most sectors, a steady decrease is observed, starting in 1968. But in sectors where government enterprises make up a large percentage, the variable drops stepwise: a large drop is followed by stability for 3-4 years. We may want to introduce fixes in the forecasting program to respect that stop-and-go pattern of some sectors. A characteristic example of those patterns is given in Table 5.1.

5.1 Forecast of hours worked by productivity equations.

Three types of productivity equations were tested. The first type is formulated to illustrate technological change and cyclical variations:

Table 5.1 Work Week for Sector 35 - Financial Services

$$\ln (NH_i^t / Q_i^t) = a_i + b_i \times \text{time} + c_i \Delta \ln Q_i^t \qquad [5.2]$$

where Δ stands for the first difference, and Q_i is a wage-weighted index of output in sector i. Output is available and is forecasted in 88 sectors. To aggregate it into 35 sectors, we use as weights the employment in 88 sectors in 1974. The output variable should show that when output decreases, employment is reduced by a lower percentage, so that apparent labor productivity decreases. Conversely, when production increases, employment will be increased, but, in the short term, less than proportionally, so apparent labor productivity increases. Hence, we expect c to be negative. It should however be greater than -1. The problem with c less than -1. is seen by adding $\ln Q_i$ to both sides of [5.2]. That gives:

$$\ln (NH_i^t) = A_i^t + (1 + c_i) \ln Q_i^t - c_i \ln Q_i^{t-1} \qquad [5.3]$$

where

$$A_i^t = a_i + b_i \times \text{time}$$

If $c < -1.$, an increase in Q_i decreases NH_i.

We even need to impose further restrictions on c. Let us consider now 3 periods with production Q^o, Q^1 and Q^2, work NH^o, NH^1, NH^2.

Equation [5.2] gives

$$\ln \left(\frac{NH^1}{Q^1} \right) = A^1 + c \, \Delta \ln Q^1$$

$$\ln \left(\frac{NH^2}{Q^2} \right) = A^2 + c \, \Delta \ln Q^2$$

after a bit of algebra,

$$\ln NH^2 = b + (1+c)\,\Delta \ln Q^2 - c\,\Delta \ln Q^1 \qquad [5.4]$$

This formulation illustrates how $\ln Q_i$ takes into account the cyclical variation of output. If c is less than -.5, an increase in production induces more increase in employment in the following year than in the current year. There may be nothing wrong with this theoretically, but it becomes in this case very hard to adjust the forecasts to a target unemployment rate. In conclusion, we want c to be between -.5 and 0. This requirement is handled in the regression routine as follows: Regression coefficients are first estimated without constraints; if c happens to be less than -.5, or positive, the difference between the estimated value of c and the boundary (0., -.5) is spread over the various coefficients according to the partial derivatives of each coefficient with respect to c. Let b be the vector of regression coefficients, as estimated with no constraints:

$$b = (a, b, c)$$

Let $d = c - c^*$, c^* being 0 if $c > 0$

$-.5$ if $c < -.5$

then the regression coefficient with c set equal to its desired value c* would be

$$a_1 = a - d\,\frac{\partial a}{\partial c}$$

$$b_1 = a - d\,\frac{\partial b}{\partial c}$$

$$c = c^*$$

Results are displayed in Appendix Table 11.

The equation type 2 is a variant of type 1. Here the cyclical term is the level of output, instead of the change in output.

$$\ln (NH_i^t / Q_i^t) = a_i + b_i \times \text{time} + c_i \ln Q_i^t \qquad [5.5]$$

A third type was tested. An alternate formulation for the trend component is specified with a one-period lag of NH_i

$$\ln (NH_i^t / Q_i^t) = a_i + b_i NH_i^{t-1} + c_i \Delta \ln Q_i^t \qquad [5.6]$$

Results for equation types 2 and 3 are displayed in Appendix Tables 12 and 13. As usual with these types of equations, the fits are found to be very good. However, these equations were estimated on short time series. What kind of constraints should be imposed on the coefficients of equation types 2 and 3?

For equation type 2, adding $\ln Q_i$ to both sides of [5.5] gives

$$\ln (NH_i^t) = a_i + b_i \text{ time} + (1+c) \ln Q_i^t$$

We thus want c to be greater than -1., but negative. However, according to this model, the total variation in the number of hours worked originating from a change in output is experienced in the current year. Thus, the adjustment of the forecasts to hit target unemployment rate does not encounter the same problems as with equation type 1, and no further restriction needs to be made on c.

Equation type 3 differs from equation type 1 only by the trend term. The coefficient c is therefore constrained to be between -.5 and 0., for

the same reasons as in equation type 1.

These constraints are actually found to have very little effect on the goodness of the fit. In Appendix Tables 13 and 14 we compare constrained and unconstrained estimates of equation type 3. Equation types 2 and 3 were found to behave quite similarly. Conversely, equation type 1 shows a distinctive feature.

Let us consider sector 5, Petroleum Refining and Natural Gas. Table 5.2 shows the results of the 3 types of equation. The 1975 recession is marked by a 1% reduction in the number of hours worked, while the output falls by almost 9%. The apparent productivity decreases. Since we measure its inverse, our plot shows a jump in 1975. Equation type 1 does not adjust to this change. Conversely equation types 2 and 3 adjust very well to the recession.

Similar results were found for every sector showing an abrupt change in 1974-1975. The model cannot forecast a recession such as the one in 1974-1975. It is however the very purpose of such a model to estimate the foreseeable consequences of these abrupt changes. We therefore want to pick an equation specification that fits closely the variations of apparent productivity linked to a recession. We thus discard equation type 1, but do not find a clear-cut criterion to choose between equation types 2 and 3. For type 3, however, 29 out of 35 equations had their c coefficients constrained, as opposed to 7 out of 35 for equation type 2. We thus decided to use equation type 2.

5.2 Forecast of the work week

For these equations, we are more concerned about identifying the trends rather than fitting short term variations linked to the changes in

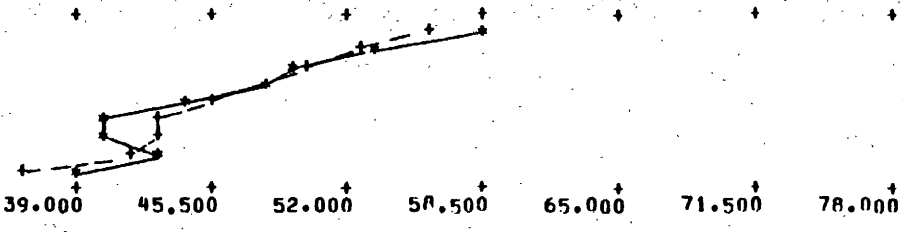
REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

INDUSTRY NAME : 5 PROD. PETROLE ET GAZ NATUREL

EQUATION TYPE 1 : LN(E/Q)= A + B*T + C*DELTALN(Q)

	COEFFICIENT	T - STAT
CONST	3.741	166.744
TIME	-.05109	-7.52006
CHNOUT	-.40452	-1.39286
RBARSQ	.87717	RHO .529

YEAR	PREDICT.(+)	ACTUAL(*)	
68	55.648	58.421	1
69	52.806	53.119	2
70	50.098	49.325	3
71	48.025	47.840	4
72	45.206	44.375	5
73	42.650	40.342	6
74	42.664	40.300	7
75	41.488	43.067	8
76	36.522	38.730	9



EMP	1823.	1835.	1798.	1806.	1853.	1862.	1866.	1809.	1773.	1765.
OUT	29.	31.	34.	37.	39.	42.	46.	45.	41.	46.
EOQ	62.340	58.421	53.119	49.325	47.840	44.375	40.342	40.300	43.067	38.730

Table 5.2 Productivity Equations for Sector 5 - Petroleum Refining

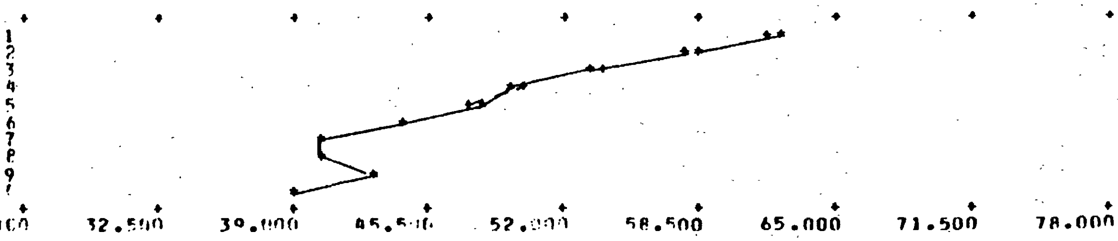
REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

INDUSTRY NAME : 5 PROD. PETROLE ET GAZ NATUREL

EQUATION TYPE 2 : LN(E/Q)= A + B*T + C*LN(Q)

	COEFFICIENT	T - STAT
CONST	6.62201	29.2131
TIME	-.01370	-4.14895
LEVOUT	-.76730	-12.33595
RBARSQ	.99476940	.[illegible]

YEAR	PREDICT.(+)	ACTUAL(*)	
67	62.365	62.301	1
68	57.986	58.421	2
69	53.972	53.119	3
70	50.122	49.325	4
71	47.330	47.940	5
72	43.912	44.375	6
73	43.189	41.342	7
74	41.552	40.300	8
75	42.753	43.067	9
76	38.993	38.730	10



EMP 1923. 1935. 1790. 1876. 1853. 1862. 1866. 1899. 1773. 1765.

OUT 29. 31. 34. 37. 39. 42. 46. 45. 41. 46.

EOO 62.301 58.421 53.119 49.325 47.940 44.375 41.342 40.300 43.067 38.730

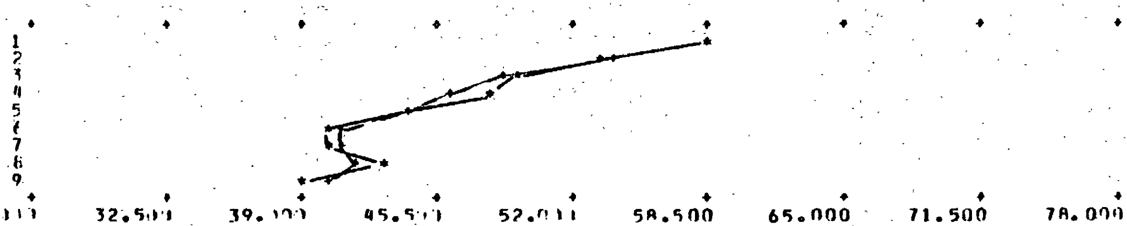
REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

INDUSTRY NAME : 5 PROD. PETROLE ET GAZ NATUREL

EQUATION TYPE 2 : LN(EZO)= B + C*(EZO)(T-1) + D*DELTALN(OUT(T))

	COEFFICIENT	T - STAT
CONST	2.23521	55.19490
EOOLAG	.5197	14.36357
CHNOUT	-.5[illegible]	-7.57019
RSARED	.97456 LHO	-.697

YEAR	PREDICT.(+)	ACTUAL(*)	
68	59.312	58.421	1
69	54.1[illegible]9	53.119	2
7	49.0[illegible]7	49.325	3
71	47.[illegible]50	47.84[illegible]	4
72	44.279	44.375	5
73	41.130	41.342	6
74	4[illegible].657	4[illegible].31[illegible]	7
75	41.8[illegible]	43.367	8
76	4[illegible].[illegible]57	38.731	9



EMP 1923. 1935. 1798. 19[illegible]6. 1353. 1862. 1866. 1809. 1773. 1765.

OUT 29. 31. 34. 37. 39. 42. 46. 45. 41. 46.

EOQ 62.380 58.421 53.119 49.325 47.841 44.375 41.342 43.310 43.367 38.730

output, although the variations of output do have a determinant influence on the variable. We do so because, as we have noticed above, some sectors present a stop-and-go pattern, illustrated in Table 5.1, which is quite hard to model. Since we wanted to keep things simple, we tried to forecast the general trend of each industry, and decided to rely on exogenous controls to shape some specific sectors.

The form of the equation is:

$$\ln (AHW_i^t - ALPHA_i) = a_i + b_i \, time + c_i \ln (AHW_i^{t-1}) \qquad [5.7]$$

where $alpha_i$ is a lower bound for the predicted AHW_i. Table 5.3 shows forecasted values of AHW for a characteristic industry: 15, Electric Equipment. Sector 15 presents a particularly smooth decline, while sector 35 presents the stop-and-go pattern characteristic of highly unionized industries.

5.3 Forecast of the Total Employment

Multiplying the forecasted NH_i by AHW_i, we get a forecast of the number of employees by industry. We next use the base year ratio $EMPR_i$ to get the total employment:

$$EMPR_i^t = \frac{EMP_i^t + SEMP_i^t}{EMP_i^t}$$

where

EMP_i^t = number of employees in industry i, year t.

$SEMP_i^t$ = number of self-employed in industry i, year t.

This method is satisfactory if the number of self-employed is small relative to the number of employees, and if the ratio $EMPR_i$ is stable.

FORCAST OF AHW, NUMBER OF WORK HOURS PER WEEK EQUATION TYPE IS : A+B*TIME+C*ALOG(AHW(T-1))
INDUSTRY NAME : 15 CONSTRUC. ELEC. ET ELECTRON. ALPHA IS : .70.

	COEFFICIENT	T-STAT
CONSTANT	-14.0?48?	-9.51519
ALOG AHW(T-1)	4.41668	11.22136
TIME	-.00517	-1.68695

RBARSQ = .987240 = .261

DATE	YEAR ACTL=*	PREDIC=+	PREDIC(+) MISS=P-A*
61	46.23	46.26	.02
62	46.53	46.31	-.22
63	46.43	46.53	.16
64	46.14	46.41	.27
65	45.70	45.92	.15
66	45.70	45.50	-.20
67	45.55	45.44	-.11
68	45.35	45.17	-.18
69	45.36	44.71	-.15
70	44.66	44.54	-.13
71	44.17	44.12	.01
72	43.29	43.46	.17
73	42.70	42.71	-.1?
74	42.16	42.14	.04
75	41.30	41.61	.31
76	41.20	40.56	-.24
77	.00	40.68	.00A START FORECAST-
78	.00	40.44	.00A
79	.00	40.20	.00A
80	.00	40.06	.00A
81	.00	39.93	.00A
82	.00	39.81	.00A
83	.00	39.71	.00A
84	.00	39.61	.00A
85	.00	39.52	.00A
86	.00	39.44	.00A
DATE	ACTL=*	PREDIC=+	MISS=P-A*

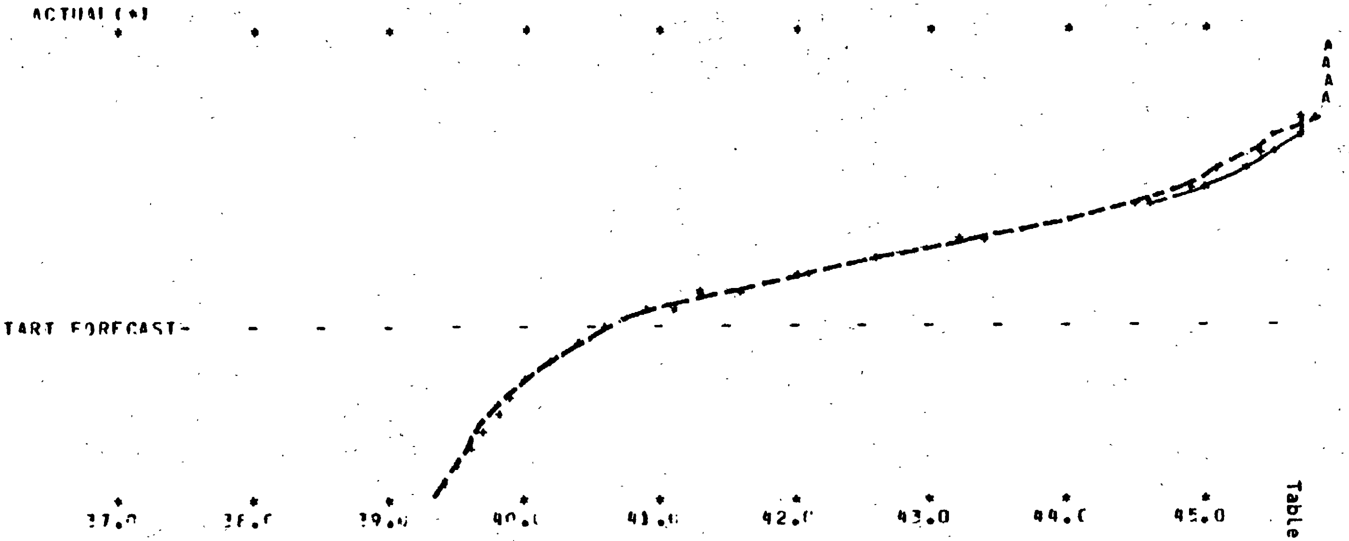


Table 5.3 Work Week for Sector 15 - Electrical Equipment

This is the case for most industries. However, in the sector Agriculture, we find about 4 times as many self-employed as employees. In such case, it is obviously shaky to forecast the total employment by scaling up the forecasted number of employees.

This chapter concludes our discussion of the constant-price model. We now turn to wage-price model.

CHAPTER VI

Description of the Price Model

6.1 Structure of the price model
6.2 Computation of the current-price value added

This chapter provides a description of the price model. In section 1, we discuss the structure of the price model and then concentrate, in section 2, on its key element: the forecast of the current-price value added at the I/O level. The economic content of the price model, that is the behavioral equations for the value-added component, will eventually be incorporated in this element. This chapter concludes our discussion of the model. Later, we will examine directions for further developments.

6.1 Structure of the price model

The price model is based on the identity

$$P_d = P_d \times D + P_f \times M + v \qquad [6.1]$$

where:

P_d= row vector of standard domestic prices

P_f= row vector of foreign prices

v = row vector of unit value added

D = I/O matrix of domestically produced imputs

M = I/O matrix of imported imputs.

The principle of the model is to solve [6.1] for P_d, knowing all the other elements of the identity. For each year of forecast, the price model is run after the constant-price model. In order to run the price model, three main pieces of data are needed:

- price indexes of imported materials

1- The price indexes of imported materials

2- The current year M matrix

3- The constant-price domestic output and the labor productivity indexes.

The need for items 1 and 2 is apparent from inspection of equation [6.1]

The need for item 3 will be justified in section 6.2. The price indexes of imported materials are exogenous variables to the model, and their construction has been discussed in section 3 of chapter 4. Let us now concentrate on items 2 and 3.

6.1.1 Construction of the M matrix.

We have broken down the A matrix used in the constant-price model into the D and the M matrices. In each year of forecast, the D matrix is obtained by difference. Two questions should then be addressed: how do we get the base year M matrix and how do we update it for each year of forecast?

Many European countries publish input-output tables which show for each cell the amount originating from domestic production and the amount originating from imports, so that the D and M matrices are readily available. Unfortunately, this is not the case for France. To construct a base year M matrix, we assume a constant ratio domestic production / imports, $IMPR_i^o$, for all the intermediate and final demand flows of a row i:

$$IMPR_i^o = \frac{IMPS_i^o}{Q_i^o + IMPS_i^o} \qquad [6.2]$$

product i, also evaluated at standard price. Each row of the M matrix is therefore a fraction of the corresponding row of the A matrix:

$$M^o = R^o \times A^o \qquad [6.3]$$

where

R^o = ns x ns diagonal matrix

$r^o_{i,i} = IMPR^o_i$, $i = 1,ns$

$r^o_{i,j} = 0$, $i \neq j$

As long as the M matrix is defined in such a way, to compute M^t would be a simple matter. We would just have to compute $IMPR^t_i$ for each product i by [6.2] and then M^t by [6.3]. The model is however built to accept a M matrix whose rows would not be a simple fraction of the corresponding row in the A matrix. The problem with such an M matrix appears when we want to compute M^t. The following discussion was developed by C. Almon[1].

For every product i, the total imports forecasted in the real side must be equal to the sum of the imported inputs in the intermediate and final demand flows:

$$IMPS^t_i = \sum_{j=1}^{nct} m^t_{i,j} \; Q^t_j \qquad i=1,ns \qquad [6.4]$$

where

nct = nca + nfd

nca = number of columns in the intermediate flows portion of the table.

nfd = number of final demand components, excluding exports

table.

nfd = number of final demand components, excluding imports

$m^t_{i,j}$ = input of imported product i per unit of output in sector j for $j \leq nca$; consumption of imported product i per unit of final demand for $nca < j \leq nct$.

Q_j = domestic output of sector j for $j \leq nca$; total final demand component j-nca for $nca < j \leq nct$.

This is of course an undetermined system of nsxnct unknown $m^t_{i,j}$ for ns equations. However, we can easily find particular solutions. Since, by definition of $m^o_{i,j}$,

$$\sum_{j=1}^{nct} m^o_{i,j} \, Q^o_j = IMPS^o_i \qquad [6.5]$$

The system of equations [6.4] can be rewritten

$$\sum_{j=1}^{nct} m^t_{i,j} \, Q^t_j = \frac{IMPS^t_i}{IMPS^o_i} \sum_{j=1}^{nct} m^o_{i,j} \, Q^o_j \qquad [6.6]$$

so that a particular solution of the system is:

$$m^t_{ij} = m^o_{ij} \, \frac{Q^o_j}{Q^t_j} \, \frac{IMPS^t_i}{IMPS^o_i}$$

Of course, such a solution does not guarantee that the $m^t_{i,j}$ will stay between 0 and 1. Another solution is proposed, which adjusts the $m^t_{i,j}$ coefficients by increasing (decreasing) more the small (large) coefficients than the ones already close to 1 (0), while the null coefficients always stay equal to 0. The solution is

$$m_{ij} = \frac{m^{o}_{ij}}{m^{o}_{ij} + k_i (1 - m^{o}_{ij})} \qquad [6.8]$$

with k_i such that

$$\sum_{j=1}^{nct} m^{t}_{ij} \; Q^{t}_{j} = \sum_{j=1}^{nct} \left(\frac{m^{o}_{ij}}{m^{o}_{ij} + k_i (1 - m^{o}_{ij})} \right) Q^{t}_{j} = IMPS^{t}_{i} \qquad [6.9]$$

The system of equations [6.4] is reduced to ns equations, each in 1 unknown, k_i. Each equation is solved by Newton's method. Once k_i has been found for a row, the $m^{t}_{i,j}$ are computed by [6.8], using the base year value $m^{o}_{i,j}$. We derive with this procedure a M matrix for each year of forecast.

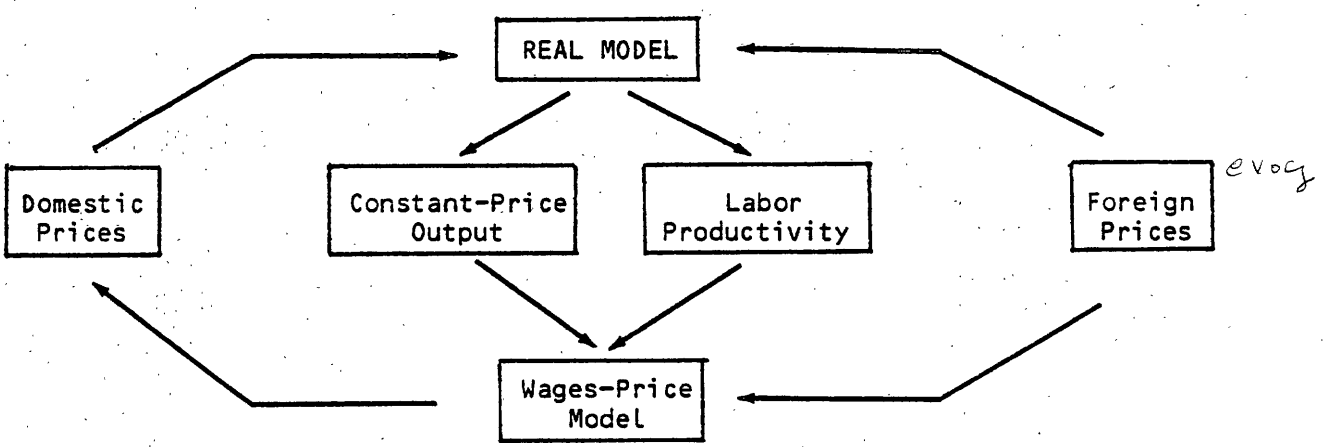
Finally, let us consider the implications of having the constant-price domestic production as an input into the price model.

6.1.2 Simultaneous solution of the constant-price model and of the price model

The constant-price output per industry is used to compute the current-price value-added vector, as will be seen in the next section. On the other hand, the output deflator is an independent variable in the PCE, import and export equations. Table 6.1 illustrates this mutual dependency between the constant-price model and the price model.

This dependency makes it necessary to set an iterative process between the constant-price model and the price model. For a given year, the solution of the model will now be a vector of constant-price output and its corresponding vector of domestic prices. The resolution will take the

Table 6.1



following steps:

1- Take a first guess at the domestic prices vector by assuming, for example, the same change as in the past year.

2- The foreign prices are exogenously specified; solve the constant-price model. The result is a vector of constant-price output corresponding to the current estimate of the domestic prices, and a productivity index by industry.

3- At the first iteration, skip this step. Compute:

$T = \max_i (Q_i - Q_i^*)$

where: Q_i is the current estimate of domestic output in sector i, as computed in step 2.

Q_i^* is the previous estimate of the domestic output in sector i.

4- Execute the price model. The result is a new estimate of the domestic price vector. At the first iteration, go to step 2.

5- Toler is a given convergence criterion. If

$T \geq$ TOLER, go to step 2

T < TOLER, go to step 6

6- A solution has been found for this year; go to step 1 to forecast the following year.

At this point, we have discussed all the components of identity [6.1] but one: v, the vector of unit value added. This element deserves special attention since all the economic content of the price model is incorporated in the determination of this vector. By definition,

$$v_i^t = \frac{V_i^t}{Q_i^t} \qquad [6.10]$$

where

V_i^t = current-price value added by sector i in year t.

v_i^t = unit value added in sector i, year t.

The next section discusses the computation of the vector V.

6.2 Computation of the current-price value added

Value added must be computed at two levels of sectoral detail:

1 The input-output (I/O) level with nca sectors

2 The value-added accounts (VAC) level with nvac sectors.

In the French model, nca = 88, nvac = 35. The real side of the model produces constant-price output, q_i^t, for each I/O sector i. However, the behavioral equations for the wage rates, capital income rates and all the other value-added components work at the nvac level. The two levels have to be combined to get the value-added components forecasted at the nvac level, and the current-price value added per unit of output at the I/O level of detail.

We start our discussion by considering the case where the value added at the VAC level is made of one single component, so that we can forecast a value-added deflator for any VAC level sector by one behavioral equation. However, we consider the possibility that each I/O sector i can contribute to more than one VAC sector k. We develop on that example how to compute $var^t_{\cdot,i}$, the current-price value added of I/O sector i.

Next, we will consider the case where the value added has several components, and we discuss how to construct an aggregate value-added deflator from the deflators computed for each value-added component. Finally, we illustrate this discussion with an example, and write all the steps of the computation in matrix notation.

Let us consider a particular VAC sector k. Having just forecasted D_k^t, the value-added deflator for VAC sector k, the problem is now two-fold:

1 to compute the current-price value added of sector k

2 to compute the contribution of each I/O level sector to the

current-price value added of VAC sector k.

Let

$$VAR_k^t = \sum_{i=1}^{nca} var_{k,i}^t \qquad [6.11]$$

where

VAR_k^t = current-price value added of VAC sector k, year t

$var_{k,i}^t$ = current-price contribution of I/O sector i to the value added of VAC sector k

but

$$VAR_k^t = \sum_{i=1}^{nca} vas_{k,i}^t \; d_{k,i}^t \qquad [6.12]$$

where

$vas_{k,i}^t$ = constant-price contribution of I/O sector i to the value added of VAC sector k, year t

$d_{k,i}^t$ = deflator for the contribution of I/O sector i. or

$$VAR_k^t = \sum_{i=1}^{nca} vas_{k,i}^o \; \frac{q_i^t}{q_i^o} \; d_{k,i}^t \qquad [6.13]$$

where

q_i^t = constant-price output of I/O sector i in year t

vas_i^t = base-year value added of I/O sector i

We assume now that the $d_{k,i}^t$ are constant within a VAC sector k. Since $vas_{k,i}^t$ is zero for all I/O sectors i not contributing to the value added of sector k, [6.13] can be written:

$$VAR_k^t = \sum_{\substack{i=1 \\ i \neq \iota}}^{nca} \left(vas_{k,i}^o \frac{q_i^t}{q_i^o} \right) D_k^t \qquad [6.14]$$

so that all we need in order to compute the current-price value added of VAC sector k in year t is D_k^t, the value-added deflator for VAC sector k and the expression in parentheses. This expression can be computed from the base year value added and the constant-price output, obtained from the real side.

Because we will use the expression in parentheses many times in the next pages, we give it a name. We define the constant-price, value-added weighted output (CONPRIVAWO), C_k^t, for each VAC sector k by:

$$C_k^t = \sum_{i=1}^{nca} vas_{k,i}^o \frac{q_i^t}{q_i^o} \qquad [6.15]$$

Once we computed VAR_k^t, the current-price value added of VAC sector k, we want to compute its breakdown at the I/O level, the $var_{k,i}^t$. By definition of $d_{k,i}^t$,

$$var_{k,i}^t = vas_{k,i}^t \times d_{k,i}^t \qquad [6.16]$$

Since we have assumed that the $d_{k,i}^t$ were constant within one VAC sector k, [6.16] can be written:

$$var_{k,i}^t = vas_{k,i}^t \times D_k^t$$

or

$$var^t_{k,i} = vas^o_{k,i} \times \frac{q^t_i}{q^o_i} \times D^t_k$$

using [6.14] and [6.15], we find

$$var^t_{k,i} = \frac{VAR^t_k \; vas^o_{k,i}}{C^t_k} \; \frac{q^t_i}{q^o_i} \qquad [6.17]$$

So that, in order to compute the current-price contribution of I/O sector i to the value added of VAC sector k, we just need to multiply $VAR^t_{k,i}$ by the ratio

$$\frac{vas^o_{k,i}}{C^t_k} \times \frac{q^t_i}{q^o_i}$$

From [6.15], we see that this ratio is the share of the contribution of I/O sector i to the CONPRIVAWO of VAC sector k.

Remembering our definition of $var^t_{k,i}$ in [6.11], we can compute $var^t_{\cdot,i}$, the current-price value added of I/O sector i, by

$$var^t_{\cdot,i} = \sum_{k=1}^{nvac} var^t_{k,i}$$

We now turn to the second part of our discussion: how do we compute the aggregate value-added deflator at the VAC level when several behavioral equations are involved? Let us assume that the value added is broken down into three components: labor cost, taxes and capital cost. The

current-price value added will now be the sum of three components:

- the current-price labor cost WAR^t
- the current-price taxes TAX^t
- the current-price capital cost KAR^t

dropping the k subscript for clarity,

$$VAR^t = WAR^t + TAR^t + KAR^t \qquad [7.18]$$

From the behavioral equations, we know for each sector k

- DW^t = labor cost index in year t
- DT^t = tax cost index in year t
- DKt = capital cost index in year t, We can therefore rewrite [7.18] as

$$VAR^t = WAS^t \times DW^t + TAS^t \times DT^t + KAS^t \times DK^t \qquad [7.19]$$

where

WAS^t = constant-price labor cost

TAS^t = constant-price tax cost

KAS^t = constant-price capital cost

How do we compute these three elements? Let us consider WAS^t

$$WAS^t = \frac{WAS^t}{VAS^t} \times VAS^t \qquad [6.20]$$

The ratio WAS^t / VAS^t is a coefficient similar to the input-output coefficients in the intermediate portion of the table. We could conceiveably make it evolve to take into account substitutions between factors of production. However, we will at present keep it constant at its base year value. Therefore, [6.20] becomes:

$$WAS^t = \frac{WAS^o}{VAS^o} \times VAS^t \qquad [6.21]$$

similarly,

$$TAS^t = \frac{TAS^o}{VAS^o} \times VAS^t$$

$$KAS^t = \frac{KAS^o}{VAS^o} \times VAS^t$$

But VAS^t, the constant-price value added of VAC sector k, is nothing but our CONPRIVAWO, indeed:

$$VAS_k^t = \sum_{i=1}^{nca} vas_{k,i}^t$$

$$= \sum_{i=1}^{nca} vas_{k,i}^o \frac{q_i^t}{q_i^o}$$

$$= C_k^t$$

To compute WAR^t, TAR^t, KAR^t, the current-price value-added components of VAC sector k, we therefore have:

1 to obtain from behavioral equations DW^t, DT^t and DK^t, the price indexes of the various components.

2 to compute the base year ratios

$$\frac{WAS^o}{VAS^o}, \frac{TAS^o}{VAS^o}, \frac{KAS^o}{VAS^o}$$

3 to compute the CONPRIVAWO, C_k^t

4 to compute the current-price value of each component by

$$WAR^t = \frac{WAS^o}{VAS^o} \times C_k^t \times DW^t$$

$$TAR^t = \frac{TAS^o}{VAS^o} \times C_k^t \times DW^t$$

$$KAR^t = \frac{KAS^o}{VAS^o} \times C_k^t \times DW^t \qquad [7.22]$$

5 to add the three components to obtain the current-price value added of sector k.

We can then use the procedure described in the first part of the section to allocate VAR_k^t between the I/O level sectors.

Let us now implement the procedure step-by-step with an example. As a first step toward computer implementation, we will describe the procedure in matrix notation, denoting by $\hat{r}$ the n x n diagonal matrix made out of the n x 1 vector r, and by 1 a vector made of 1's.

In this example, we consider the general case where the I/O sectors can draw upon several VAC level sectors, and where several behavioral equations are used to forecast the current price value added at the VAC level. Two steps are involved:

1 computation of the current-price value-added at the VAC level

2 update of the bridge table from the VAC to the I/O level, and computation

of the current-price value added at the I/O level.

Let us first consider the base-year bridge table V^o. Each element $vas^o_{k,j}$ is the I/O sector i contribution to the base-year value added of VAC sector k. Table 6.2 presents a V^o matrix.

Table 6.2 V^o matrix: base-year bridge table of value added between the VAC and the I/O level

		I/O level						
		1	2	3	4	5	6	Total
V.A.	1	100	200	80			40	420
sectors	2			170	150		40	360
	3				20	150	40	210
Total		100	200	250	170	150	120	

Each total is actually the sum of three components: labor income, capital income and indirect taxes. The value-added tax has been taken away, so indirect taxes are mainly wage and property taxes. Table 6.3 shows the base-year values of these components.

Table 6.3 G^o matrix: value-added components at the VAC level, base year

VA sectors	1	2	3
Labor	294	252	70
Capital	126	72	70
Taxes	0	36	70
Total	420	360	210

The element $G^t_{i,k}$ of matrix G^t shows the year t contribution of component i to the value added of VAC sector k

it shows WAR^t_k, TAR^t_k and KAR^t_k of [6.22]. We next

convert the elements of matrix G^t into coefficients $h^t_{j,k}$,

$$h^t_{j,k} = G^t_{j,k} / C^t_k \qquad [6.23]$$

$$h^t_{j,k} = \frac{WAS^o}{VAS^o} \times DW^t \qquad [6.24]$$

Table 6.4 Matrix H in base year

Sector	1	2	3
Labor	.7	.7	.33
Capital	.3	.2	.33
Taxes	.0	.1	.33
Total	1.0	1.0	1.0

The base year coefficients are the ratios WAS^o / VAS^o, etc... of equation [6.22]. The behavioral equations forecast DW^t, DT^t and DK^t. In other words, they forecast indexes of the $h^t_{j,k}$ coefficients. Let us assume that from the behavioral equations we learn that between year 0 and year 1 the growth ratios for each $h^t_{j,k}$ will be as shown in Table 6.5.

Table 6.5 Matrix D: growth ratios of $h^t_{j,k}$ between the base year and year 1

Sector	1	2	3
Labor	1.2	1.1	1.15
Capital	1.05	1.07	1.10
Taxes	1.06	1.06	1.06

The $h^1_{i,k}$ are therefore:

Table 6.6 H matrix in year 1

Sector	1	2	3
Labor	.84	.77	.3833
Capital	.31	.21	.3667
Taxes	.0	.106	.3533

So that $H^1 = H^0 \cdot D$, where $\cdot$ stands for dot product.

To compute the current value of each value-added component in year i, we need to multiply, according to equation [6.22], each column of H^1 by the corresponding CONPRIVAWO. The constant-price output at the I/O level has been computed in the real side of the model. Table 6.7 shows the growth ratios and constant-price values of output in year 0 and 1.

Table 6.7 I/O level constant-price output, base year and year1

	I/O sectors					
	1	2	3	4	5	6
Base year	1000	1500	500	300	400	200
Year 1	1500	1650	500	390	600	240
Growth ratios	1.5	1.1	1.0	1.3	1.5	1.2

To obtain the CONPRIVAWO's for year 1, we multiply each column of the V^0 matrix (Table6.2) by the corresponding growth ratio and sum over input-output industries, according to equation [6.15]. Results are shown in Table 6.8.

Table 6.8 CONPRIVAWO's for year 1: V^1 matrix

		I/O level						
		1	2	3	4	5	6	Total
V.A.	1	150	220	80			48	498
sectors	2			170	195		48	413
	3				26	225	48	299

If we denote the column vector of CONPRIVAWO's C^t

$$C^1 = V^1 \times 1'$$

$$= V^o \times \hat{r}^1 \times 1' \qquad [6.25]$$

Where $\hat{r}^1$ denotes the nca x nca diagonal matrix of constant-price output growth ratios from year 0 to year 1.

Where now have all the elements to compute the current-price value added of any VAC sector. First, the G matrix for year 1, G^1, is computed by multiplying the $h^1_{j,k}$ coefficients from Table 6.6 by the CONPRIVAWO's for year 1.

Table 6.9 Matrix G^1: current-price value of the value-added components.

VA sectors	1	2	3
Labor	.84 x 498 = 418	.77 x 413 = 318	.3833 x 299 = 114
Capital	154	86.5	109.5
Taxes	0	43.5x	105 5
Total	572	448	329

$$G^1 = H^1 \times \hat{C}^1 \qquad [6.26]$$

The current-price value added at the VAC level for year 1 is obtained by summing each column of G^1.

$$VA^1 = [\, 1' \times G^1 \,]' = G^{1\prime} \times 1 \qquad [6.27]$$

where VA^1 is the nvac x 1 vector of current-price value added at the VAC level.

The last step is to allocate the value added, computed for the VAC sectors, among the nca I/O sectors. We allocate them according to the contribution of each I/O sector to the CONPRIVAWO of the current year. (equation [6.17]).

This contribution is computed from Table 6.7. The result is the matrix S^1, shown in Table 6.10.

$$s^1_{k,i} = v^o_{k,i} \frac{q^1_i}{q^o_i} / c^1_k$$

$$S^1 = [\, \hat{C}^1 \,]^{-1} \times V^o \times \hat{r}^1 \qquad [6.28]$$

Table 6.10 Matrix S^1

		I/O Sectors 1	2	3	4	5	6	Total
VA	1	.3012	.4418	.1606	.0	.0	.0964	1.
Sectors	2	.0	.0	.4116	.4722	.0	.1162	1.
	3	.0	.0	.0	.0870	.7525	.1605	1.

To get the current-value contribution of VAC sector k to the value added of I/O sector i, we multiply each share by the corresponding current-price value added at the VAC level. Summing over the VAC sectors, we get the

current-price value added per I/O sector in year 1, as shown in Table 6.11.

Table 6.11 Matrix V^1: bridge table between the value added at the VAC level and at the I/O level in year 1.

		I/O Sectors						
		1	2	3	4	5	6	Total
VA	1	172.49	253.01	31.47	.0	.0	55.23	572.70
Sectors	2	.0	.0	184.60	211.78	.0	52.13	448.51
	3	.0	.0	.0	28.69	248.23	52.96	329.88
Total		172.49	253.57	286.57	240.47	248.23	160.32	

$$V^1 = \hat{VA}^1 \times S^1$$

$$va^1 = V^{1\prime} \times 1 \qquad [6.29]$$

where va^1 a nca x 1 vector of current-price value added at the I/O level in year 1.

Let us summarize the steps to compute va^1, the current-price value added by I/O sector.

First, VA^1, current-price value added by VAC sector is computed by

$$VA^1 = G^{1\prime} \times 1$$

$$= H^1 \times \hat{C}^1 \times 1$$

$$= H^o \cdot D \times \hat{C}^1 \times 1 \qquad [6.30]$$

where

H^o = base-year matrix of value-added components per unit of CONPRIVAWO

D = matrix of growth ratios of the value-added component prices

between year 0 and 1

$\hat{C}^1$ = diagonal matrix of CONPRIVAWO's in year 1.

Next, the current-price value added computed at the VAC level is allocated among the nca I/O sectors to obtain va^1, the nca x 1 vector of current-price value added at the I/O level.

$$va^1 = [\ \hat{VA}^1 \times S^1\ ]' \times 1 \qquad [6.31]$$

$$S^1 = [\ C^1\ ]^{-1} \times V^o \times \hat{r}^1 \qquad [6.32]$$

where

V^o = base-year bridge table between the value added at the VAC level and the I/O level

$\hat{r}^1$ = growth ratios of constant-price output at the I/O level

$\hat{C}^1$ = CONPRIVAWO's in year 1.

1 C. Almon, The INFORUM-IIASA International System of Input-Output Models, paper presented at the Seventh International Conference on Input-Output Techniques, Innsbruck, Austria, 1979.

CHAPTER VII

Forecast 1980 - 1985

7.1 Reference forecast
7.2 Alternate forecast

The average annual growth rate of the GNP was 3.5% in 1979. It was even higher in the second half, but this high level was apparently only due to expectations of sharp price increases in 1980. Contrasting with 1979, our forecast predicts a sharp downturn in economic activity for 1980, followed by sluggish years through 1985. Under the assumption that no tax cut will be granted to increase aggregate demand, unemployment is found to reach a post World War II record of 10.37 % by 1985, while the GNP growth rate is down to 1.28 %.

This chapter comments on the forecasts to 1985 obtained with the model. The constant-price model was used alone, exogenous domestic prices and of course exogenous foreign prices being fed into the model.
A reference forecast is presented in section 1. At this point, since the model does not incorporate a feedback through a wage and income side, our results are quite dependent upon the exogenous assumptions. We therefore start by giving a detailed account of the assumptions for the reference forecast. In section 2, we present alternate assumptions and the corresponding forecasts.

7.1 Reference forecast

7.1.1 Assumptions for the reference forecast

This section would not have been very well grounded without the help of the G.A.M.A.[1], and of their macro model of the French economy,

MOGLI. This is a short to mid-term dynamic model; it produces forecasts of output in 10 sectors, and has a comprehensive wage and income side. The results of this model were perfectly fitted for use as inputs into our I/O model. We are now going to discuss in detail the assumptions made, along with the results we have borrowed from the model MOGLI.

For the 1980-85 period, the main results of the model MOGLI are displayed in table 7.1.

Table 7.1 Aggregate results from MOGLI, March 1980 forecast.

	1978	1979	1980	1981	1982	1983	1984	1985
Labor Force (level, 1000)	+114	+214	+174	+204	+186	+192	+21	+113
Product Shipments(%)	+3.17	+3.45	+1.65	+2.24	+1.17	+1.74	+1.68	+0.78
Imports (%)	+5.77	+8.78	+5.10	+6.59	+5.45	+5.17	+2.66	+3.27
P.C.E. (%)	+3.84	+2.81	+1.44	+1.86	+1.20	+1.34	+1.41	+ .39
Bus. Invest. (%)	+2.78	+3.60	+3.62	+1.33	-1.25	+ .35	- .93	+1.88
Exports (%)	+5.72	+8.39	+4.97	+7.29	+7.45	+5.87	+3.66	+3.02
Ch. in Inv. (millions of FF)	-229	+5826	-2067	+3141	+2969	+2680	+3619	-19
Disp. Inc. / cap.(%)	+4.59	+1.91	+2.20	+3.16	+2.18	+2.25	+2.17	+1.55
Prod. Prices (%)	+10.03	+9.41	+9.04	+8.78	+6.72	+7.09	+7.00	+7.35
CPI (%)	+9.11	+10.51	+11.12	+8.92	+7.51	+7.62	+7.65	+7.86
Export Prices (%)	+6.90	+7.99	+10.04	+8.14	+5.14	+6.67	+4.18	+5.65
Import Prices (%)	+1.94	+8.62	+16.22	+5.67	+5.85	+6.88	+5.28	+6.16
Unemployment (level, 1000)	+95	+180	+215	+181	+147	+185	+214	+113

Let us comment on this forecast.

I Disposable income per capita.

Very modest growth is expected. Such a low increase will be due to the conjunction of three factors :

1 - A fall in total employment in 1980.

2 - A further increase in social security taxes paid by households. The increasing deficit of the Social Security Administration makes this hypothetical increase quite likely, but because of the presidential elections in 1981, the measure is believed to be postponed until 1982.

3 - The savings/income ratio was found to be at a low level in 1979 and is likely to increase, considering the soaring unemployment.

II Government expenditures.

The increase in government expenditures comes mainly from an increase in defense spending.

III Investments.

Fixed business investment. The moderate growth of fixed business investments in 1979 is forecasted to continue in 1980. Starting in 1981, the expectation of a decrease in domestic market demand, the high level interest rates and forecasted slowdown of investments by the state-owned corporations in telecommunications and transportation services should lead to a new recession of fixed business investments.

Fixed investment by households. Starting in 1980 a slow decline is forecasted, due to the slowdown of disposable income, high interest rates and high prices for land and new construction.

Fixed government investment. A large budget deficit allows moderate growth.

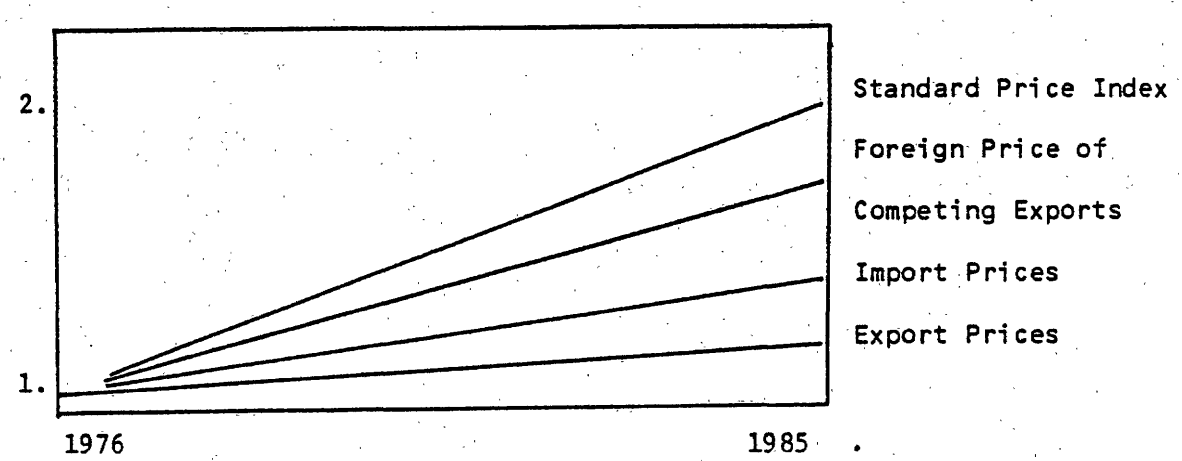
IV EXPORTS

Exports have been the driving force of the economy during the last two years. In 1980 and 81, a lower growth rate is forecasted, which stays, however, above the growth rate of foreign demand. This will be due to two reasons :

1 - French export prices grow slower than both production prices and foreign prices converted into French francs. We indeed can remember from chapter 2 that exports do not include VAT, and very often carry a trade margin substantially lower that the standard margin. For these reasons, export prices should stay under the foreign prices of competing exports in spite of the relative strength of the French franc. Table 7.2 illustrates this point and shows the relative prices as they are seen in the 1980 - 1985 period.

2 - The sluggishness of the domestic market creates an exportable surplus.

Table 7.2 Projection of Relative Prices, 1978 - 1985.



V IMPORTS

The main assumptions concern imported oil. It is assumed that, considering the slow growth rate of output, the tax incentives to conserve energy and the development of nuclear power plants, the volume of imported

oil will decrease slowly, starting in 1981. This assumption makes necessary the only coefficient change we perform in the input-output matrix. This coefficient change is discussed in the next section.

VII COEFFICIENT CHANGES IN THE A MATRIX.

Changes in the A matrix were performed to take into account the above-mentioned factors. We wanted to take into account, even in a simplistic way:

- Energy conservation and substitution oil/electricity in the industry
- Development of nuclear programs, resulting in a decrease in the oil input in electric utilities, and the conversion of some power plants from oil to coal.

Since no data were readily available for use in estimating the coefficient changes, we took a quick look at the Inforum US model and computed three indexes from the reference forecast over the period 1976-1985. The indexes are listed in Table 7.3.

Table 7.3 Energy Consumption / Output Indexes from the Inforum Model of the US Economy

Index of intermediate use of energy per unit of output	1976	1980	1985
Electricity	1.	1.01	1.02
Oil	1.	.95	.84
Electricity + Oil	1.	.99	.95

The third index indicates the energy conservation trend, and the first two illustrate the substitution of electricity for oil. Without natural gas or coal, the picture is of course not complete, but it still gives an idea of how extended the changes can be. We used the indexes as follows: we marked up all the coefficients in row 9, Electric Utilities, and in row

8, Petroleum Refining, by the indexes 1 and 2 of Table 7.3. In 1981, the constant-coefficient reference forecast for the intermediate sales of petroleum products was 73961. These coefficient changes reduced the sales by 11718. The increasing output of the nuclear power plants will reduce substantially the oil input into the Electric Utilities column. It is believed that the oil input will be reduced by 35 % by 1985 with respect to the level it would have had if the 1976 consumption pattern had been kept. The conversion to coal-fired power plants would account for 15% and the development of nuclear power plants for the remaining 20%. The coefficient changes induced a cut of 13733 in the output of the Petroleum Refining sector in 1985, inducing a decrease of 7528, or 4.78% in crude oil imports relative to the constant-coefficient forecast.

VI PRICES

In 1979 the consumer price index grew 10.5%. The oil bill accounted for 1% of the increase, but the price decontrol was the major factor. In 1980, inflation is still on the two digit scale, mainly because of the price of energy, rent and services. In 1981 and 1982, the expected slowdown is mainly a consequence of a favorable hypothesis concerning oil and industrial raw material prices.

This set of assumptions leads to the reference forecast that we review in the next section.

7.1.2 Reference forecast

The reference forecast was run over the period 1979-1985. Table 7.4 shows the main results. Detailed forecasts at the input-output level can be found in Appendix Table 15.

The salient characteristic of this forecast is the steady growth of unemployment, which results from the combination of two factors. On the

FORECAST FOR: REFERENCE FORECAST SERIF: ASSUMPTIONS AND AGGREGATE RESULTS

	SECTOR	1978	1978	1979	1980	1981	1982	1983	1984	1985
	ASSUMPTIONS									
1	POPULATION (MILLIONS	53.00	53.42	53.84	53.85	54.06	54.28	54.49	54.71	54.93
2	DISP. INC. /CAP. (F)	20845.00	22439.00	22861.00	23371.00	24108.00	24835.00	25589.00	25736.00	26135.00
3	LABOR FORCE (1000)	22338.00	22583.00	22798.30	22975.00	23180.00	23368.00	23561.00	23779.00	23892.00
4	GOV. EMPLOY. (1000)	3748.00	3769.00	3803.33	3837.67	3872.00	3891.50	3911.00	3930.50	3949.00
21	STANDARD PRICE INDEX	1.00	1.18	1.29	1.43	1.56	1.68	1.80	1.94	2.09
22	CONSUMER'S PRICE IND	1.00	1.18	1.35	1.49	1.57	1.69	1.82	1.97	2.13
25	EXPORTS PRICE	1.00	1.15	1.26	1.39	1.51	1.60	1.70	1.79	1.90
23	FP OF COMP. EXPORTS	1.00	1.17	1.28	1.42	1.55	1.66	1.78	1.90	2.04
24	FP OF IMPORTS	1.00	1.13	1.25	1.40	1.53	1.63	1.74	1.84	1.97
	AGGREGATE RESULTS									
6	UNEMPLOYMENT (1000)	989.10	1179.81	1348.83	1559.74	1747.68	1884.46	2023.89	2237.97	2397.93
7	UNEMPLOYMENT RATE(%)	4.43	5.22	5.92	6.79	7.54	8.06	8.59	9.41	10.04
11	PRODUC AGRICULT.	1.00	1.11	1.16	1.21	1.26	1.30	1.35	1.37	1.38
12	TIVITY ENERGY	1.00	1.10	1.13	1.19	1.24	1.29	1.35	1.38	1.42
13	INDUSTRY	1.00	1.10	1.16	1.21	1.26	1.31	1.35	1.37	1.40
14	CONSTR.	1.00	1.11	1.16	1.22	1.27	1.33	1.39	1.45	1.52
15	SERVICES	1.00	1.04	1.07	1.08	1.10	1.11	1.12	1.13	1.15
16	EMPLOY AGRICULT.	911.10	904.23	900.28	881.39	870.95	863.18	856.10	861.66	859.23
17	MENT ENERGY	297.70	292.00	291.19	281.53	273.80	266.41	259.80	255.43	251.77
18	INDUSTRY	4989.00	4852.68	4805.49	4725.99	4691.93	4666.32	4639.73	4649.17	4619.08
19	CONSTR.	1576.50	1495.47	1457.76	1425.80	1384.77	1334.78	1293.48	1249.79	1212.38
20	SERVICES	6340.80	6680.75	6772.95	6881.60	6981.52	7110.95	7238.80	7261.96	7292.64

FORECAST FOR:	REFERENCE FORECAST					GROWTH RATES FOR: ASSUMPTIONS AND AGGREGATE RESULTS		
SECTOR	78-79	79-80	80-81	81-82	82-83	83-84	84-85	
ASSUMPTIONS								
1 POPULATION (MILLIONS	.93	.80	.80	.99	.80	.97	.93	.90
2 DISP. INC. /CAP. (F)	3.75	1.91	2.20	3.15	2.19	2.25	2.17	1.55
3 LABOR FORCE (1000)	.61	.95	.78	.89	.81	.83	.93	.98
4 GOV. EMPLOY. (1000)	.28	.91	.90	.89	.50	.50	.50	.97
21 STANDARD PRICE INDEX	8.45	9.50	11.01	9.26	7.32	7.69	7.39	7.75
22 CONSUMER'S PRICE IND	8.73	9.66	10.95	9.19	7.60	8.01	7.96	8.17
25 EXPORTS PRICE	7.40	8.97	10.36	8.87	5.81	6.20	5.55	6.15
23 FP OF COMP. EXPORTS	7.97	9.54	10.97	9.52	6.71	7.29	6.76	7.47
24 FP OF IMPORTS	6.90	10.24	12.21	9.37	6.19	6.81	6.19	6.89
AGGREGATE RESULTS								
6 UNEMPLOYMENT (1000)	9.22	14.33	15.64	12.05	7.83	7.40	10.58	7.15
7 UNEMPLOYMENT RATE(%)	8.55	13.25	14.75	11.06	6.96	6.52	9.56	6.64
11 PRODUC AGRICUL.	5.53	4.39	3.93	4.36	3.29	3.46	1.49	1.32
12 TIVITY ENERGY	5.01	2.18	5.34	4.24	4.54	4.06	2.23	3.00
13 INDUSTRY	4.79	6.08	4.15	3.96	3.59	3.43	1.98	1.92
14 CONSTR.	5.46	4.76	4.56	4.54	4.52	4.61	4.53	4.58
15 SERVICES	2.11	2.90	.85	1.46	.87	.70	1.61	1.26
16 EMPLOY AGRICUL.	-.38	-.44	-2.13	-1.18	-.89	-.82	.65	-.28
17 MENT ENERGY	-.96	-.28	-3.32	-2.74	-2.70	-2.48	-1.68	-1.43
18 INDUSTRY	-1.38	-.97	-1.65	-.72	-.55	-.57	.20	-.65
19 CONSTR.	-2.93	-1.87	-2.19	-2.88	-3.61	-3.09	-3.38	-2.99
20 SERVICES	2.61	1.38	1.60	1.45	1.91	1.74	.32	.92

Table 7.4 continued

FORECAST FOR: REFERENCE FORECAST SERIE: SUMMARY TABLE

SECTOR	1978	1979	1979	1980	1981	1982	1983	1984	1985
TOTAL GNP	1326527.	1415633.	1461859.	1487327.	1523593.	1554954.	1587729.	1611781.	1631530.
GOV. EXPEN.	68367.	68444.	71982.	75521.	78963.	82601.	86749.	90289.	94030.
V.A.T. ON PCE	138494.	144107.	147458.	150078.	153558.	157044.	160539.	164001.	166838.
V.A.T. ON INVESTMENTS	16056.	17016.	16873.	17495.	17730.	17510.	17570.	17468.	17739.
EXPORTS	389459.	369291.	401413.	420916.	452231.	486719.	515680.	539462.	550416.
PCE	918493.	982259.	1004229.	1023108.	1047577.	1069527.	1090587.	1111966.	1130185.
IMPORTS	349231.	369375.	397748.	419757.	450175.	481120.	508424.	532838.	555681.
INVENT. CHANGES	20624.	15580.	23614.	20732.	25105.	29231.	32955.	37988.	37960.
P.D.E.	347870.	349434.	358769.	366806.	369993.	367996.	370182.	369979.	374659.
EMPLOYMENT	14339.	14215.	14228.	14156.	14203.	14246.	14288.	14278.	14235.
NUM. OF HOURS P/WEEK	41.9	41.1	40.7	41.5	40.2	40.0	39.8	39.6	39.5
OUTPUT	2663393.	2829489.	2921550.	2969553.	3038178.	3099310.	3162709.	3207647.	3242852.

Table 7.4 continued

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: SUMMARY TABLE

SECTOR	78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
TOTAL GNP	3.30	3.27	1.74	2.44	2.06	2.11	1.51	1.23
GOV. EXPEN.	3.12	5.17	4.92	4.43	4.74	5.02	4.08	4.14
V.A.T. ON PCE	2.01	2.33	1.78	2.32	2.27	2.22	2.16	1.73
V.A.T. ON INVESTMENTS	3.11	-.84	3.69	1.34	-1.24	.34	-.92	1.90
EXPORTS	7.52	8.59	4.96	7.44	7.63	5.95	3.64	2.99
PCE	3.42	2.24	1.88	2.39	2.10	1.97	1.95	1.64
IMPORTS	3.59	7.68	5.53	7.25	6.87	5.68	4.80	4.29
INVENT. CHANGES	-13.08	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
P.D.E.	.22	2.67	2.24	.87	-.54	.59	-.05	1.26
EMPLOYMENT	.34	.09	-.22	.05	.30	.30	-.07	-.30
NUM. OF HOURS P/WEEK	-.96	-.80	-.70	-.62	-.55	-.48	-.44	-.39
OUTPUT	3.07	3.26	1.64	2.31	2.01	2.05	1.40	1.12

Table 7.4 continued

supply side, the labor force increases steadily by about 200,000 workers per year. In this relatively high figure, we find the tail end of the post-war baby boom and an increasing number of women. On the demand side, steady labor productivity increases and the recession in 1980, plus sluggish growth through the early 80's make the demand for labor fall short to match the supply, as can be seen in Table 7.5.

Table 7.5 Labor Force and Employment Forecast, 1980 - 1985, in 1000

	1978	1979	1980	1981	1982	1983	1984	1985
Labor Force	22583	22798	22975	23180	23368	23561	23779	23892
Change	+137	+215	+177	+205	+188	+198	+218	+113
Total Empl.	21404	21450	21416	21433	21484	21538	21542	21495
Change	+42	+46	-34	+17	+51	+54	+4	-47
Unemployment	1179	1348	1559	1747	1884	2023	2237	2397
Change	+95	+169	+211	+188	+137	+139	+214	+160

These aggregate figures hide, however, sectoral differences. The growth of employment in the service industries, where productivity gains are low, is not sufficient to balance the decrease in employment in the other sectors. Construction, a traditionally labor-intensive industry, has particularly rapid labor productivity gains, resulting in a sharp decrease in employment.

Turning our attention to GNP, we find France to be affected relatively little by the 1980 recession, having perhaps never recovered from the one in 1975. The economy is settling into a low growth path and the forecast to 1985 shows no tendency to depart from that path.

Let us now comment on the sectoral forecasts displayed in Appendix Table 15. Looking at the output forecasts, it is no surprise to find

sector 12, Iron Ore Mining, facing a sharp decline. It corresponds to the progressive discontinuation of ore extraction in the old mines of Lorraine.

Since the domestic demand is found to be very stable over the early 80's, it is largely foreign trade that will determine the fate of the various sectors of the economy. Some sectors are found to have a dramatic increase in imports, and a corresponding reduction in their domestic output. Other sectors, much less numerous, enjoy sharp growth, largely supported by booming exports.

Typical of the first category are some sectors of the electronic and textile industries. Some relevant figures from the forecast are displayed in Table 7.6. Imports supply an increasing share of domestic demand. Output decreases but exports increase. The industry faces strong competition on the domestic market and reschedules its production to compensate by exports for the lost share of the domestic market. The knitting industry offers a perfect example of this strategy.

At the other extreme is sector 30, Ordnance and Ammunitions. As can be seen in Table 7.7, exports are the driving force of this sector. The same can be said of sector 35, Household Equipment, although the exports forecast may look overoptimistic. Our assumptions also include stable business investments. As a result, sectors such as 27, Machine Tools, and 28, Non-electrical Industrial Machinery, stagnate throughout the whole forecast, even more so as foreign competition becomes more fierce. Sector 29, Construction Equipment, is forecasted to have a higher rate of growth, due as usual to increasing exports. A more sophisticated model might have yielded an even more optimistic forecast. From Table 7.4 we find the construction industry to have strong labor productivity gains. Such gains are likely to correspond to a substitution of capital for labor, and should

Table 7.6 Forecast for Selected Sectors 1980 - 1985

Sector 33 Electronic Equipment

	1976	1980	1985
Exports	8359	11604	14267
Imports	8045	15063	31070
Output	27388	27620	18229
Domestic Demand	35433	42683	49299
Exports / Output	.30	.42	.78
Imports / Demand	.22	.35	.63

Sector 53 Knitting

	1976	1980	1985
Exports	2298	2648	3442
Imports	3162	3970	8961
Output	9662	9503	6630
Domestic Demand	12824	13473	15591
Exports / Output	.23	.19	.51
Imports / Demand	.24	.29	.57

be taken into account by increasing the share of the Construction Equipment row in the investment flow matrix. This would of course have resulted in a higher forecast for domestic demand.

In conclusion, two features characterize this reference forecast: the steady growth of unemployment and the stagnation or decline of most industrial sectors. Declining sectors were unable to substitute exports for the reduction of their market share by foreign competition or the sluggishness of the domestic market. This forecast implies a slow growth of tax income. Implicit in our projection of the disposable income was the

Table 7.7 Forecast for Sector 30: Ordnance

	1976	1980	1985
Exports	3795	7429	14810
Imports	446	1066	1601
Output	8824	12326	20784
Domestic Demand	5475	5963	7575
Exports / Output	.43	.60	.71
Imports / Demand	.08	.17	.21

assumption that the government would keep enforcing a strict policy aiming at a balanced budget. However, in view of the results of the reference forecast, one may think that such policy will be eased to allow for stronger growth of the disposable income per capita in the early 80's. Our variant explores this alternate assumption.

7.2 Variant

At the end of 1978, measures were implemented to reduce the deficit of the Social Security Administration. The main point was an increase of the social security payments by individuals. The impact of these measures was evaluated as follows by the GAMA:

- .4 % in domestic output in 1979

-1.77% in domestic output, cumulated effect to 1981

- .65% in domestic consumption in 1979

-1.58% in domestic consumption, cumulated effect to 1981.

In the variant, we assume that no further steps will be taken by the government to balance the Social Security Administration budget. The above figures were used to derive the corresponding new projection of disposable income. In the variant, disposable income per capita will be .65% higher

than in the reference forecast in 1981, 1.9% higher in 1983. This change should also encourage investments. The GAMA evaluated that the 1979 measures induced a .49% drop in business investment in 1979, and a cumulated drop of .69% in the following year. Table 7.8 summarizes the changes in assumptions relative to the reference forecast. Summary results are displayed in Table 7.9. The results at the I/O level can be found in Appendix Table 16.

Table 7.8 Alternate Forecast: Changes in assumptions relative to the Reference Forecast (%)

	1976	1980	1981	1982	1983	1984	1985
Disp. Inc.	0.	0.	+.65	+1.3	+1.9	+2.6	+3.2
Investment	0.	0.	+.70	+.70	+.70	+.70	+.70

The difference in employment between the reference forecast and the variant is found to be almost 200,000 units. Such a decrease corresponds to a stabilization of the unemployment rate. This is, however, likely to be an overestimated impact, for a couple of reasons:

-The model fails to take into account such effects as the price increase resulting from higher wages and a larger budget deficit. This price increase would have two adverse effects on GNP and employment: on one hand it would decrease exports and increase imports due to the change in relative prices, and on the other it would reduce real disposable income and therefore private consumption.

-The model does not relate productivity gains to investments. However, it is likely that part of the investment induced by a tax cut will be devoted to the purchase of labor-saving equipment, which will partly override the unemployment decrease, at least in the short term.

This sketchy variant underlines, however, that the budget deficit and the policy implemented to reduce it should be a major issue influencing French economic growth in the early 80's. This variant also suggests needed additions to the model in order to get a more realistic picture of the economy. As a matter of conclusion, we will present in the next chapter some directions for further work on the model.

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FORECAST FOR: SOC. SEC. TAX CUT IN 1981 SERIES: ASSUMPTIONS AND AGGREGATE RESULTS

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
ASSUMPTIONS									
1	POPULATION (MILLIONS	53.00	53.42	53.84	53.85	54.26	54.28	54.49	54.71	54.93
2	DISP. INC. /CAP. (F)	20445.00	22439.00	22867.00	23371.00	24264.00	24995.00	25682.00	26412.00	26995.00
3	LABOR FORCE (1000)	22368.00	22583.00	22758.00	22975.00	23180.00	23368.00	23561.00	23779.00	23892.00
4	GOV. EMPLOY. (1000)	3748.10	3769.00	3803.33	3837.67	3872.00	3891.50	3911.00	3931.50	3949.00
AGGREGATE RESULTS									
6	UNEMPLOYMENT (1000)	989.10	1179.81	1348.83	1553.32	1716.11	1814.58	1911.87	2082.86	2200.02
7	UNEMPLOYMENT RATE(%)	4.43	5.22	5.92	6.76	7.40	7.77	8.11	8.76	9.21
11	PRODUC	AGRICULT.	1.08	1.11	1.16	1.21	1.26	1.30	1.35	1.37	1.39
12	TIVITY	ENERGY	1.10	1.11	1.13	1.19	1.24	1.29	1.35	1.38	1.42
13		INDUSTRY	1.13	1.16	1.16	1.21	1.26	1.31	1.35	1.37	1.40
14		CONSTR.	1.08	1.11	1.16	1.22	1.27	1.33	1.39	1.45	1.52
15		SERVICES	1.00	1.04	1.07	1.08	1.13	1.11	1.12	1.14	1.15
16	EMPLOY	AGRICULT.	911.10	904.23	909.28	881.37	872.07	866.16	861.95	858.51	858.08
17	MENT	ENERGY	297.70	292.00	291.19	281.60	279.00	277.03	281.04	281.33	284.34
18		INDUSTRY	4989.00	4852.68	4806.49	4729.37	4703.81	4686.18	4666.75	4683.97	4661.89
19		CONSTR.	1576.50	1485.47	1451.76	1427.78	1390.00	1340.57	1299.71	1256.40	1219.45
20		SERVICES	6744.80	6681.75	6772.95	6882.01	6989.58	7142.46	7299.71	7336.32	7389.99

FORECAST FOR:	SOC. SEC. TAX CUT IN 1981					GROWTH RATES FOR:		ASSUMPTIONS
SECTOR	78-79	79-80	80-81	81-82	82-83	83-84	84-85	
ASSUMPTIONS								
1 POPULATION (MILLIONS	.97	.90	.93	.93	.90	.90	.91	.90
2 DISP. INC. /CAP. (F)	3.75	1.91	2.2	3.82	2.85	2.91	2.89	2.21
3 LABOR FORCE (1000)	.81	.95	.78	.89	.81	.83	.93	.98
4 GOV. EMPLOY. (1000)	.28	.91	.92	.89	.50	.50	.51	.97
AGGREGATE RESULTS								
6 UNEMPLOYMENT (1000)	9.22	14.33	15.16	10.48	5.74	5.36	8.94	5.63
7 UNEMPLOYMENT RATE(%)	8.55	13.25	14.27	9.51	4.89	4.50	7.95	5.13
11 PRODUC AGRICULT.	5.53	4.39	3.93	4.44	3.29	3.46	1.44	1.32
12 TIVITY ENERGY	5.81	2.18	5.35	4.26	4.63	4.07	2.24	3.10
13 INDUSTRY	4.79	6.08	4.18	3.98	3.56	3.93	1.48	1.92
14 CONSTR.	5.46	4.70	4.57	4.54	4.51	4.61	4.53	4.58
15 SERVICES	2.11	2.95	.87	1.56	.92	.71	1.62	1.29
16 EMPLOY AGRICULT.	-.38	-.98	-2.10	-1.05	-.68	-.69	.88	-.95
17 MENT ENERGY	-.96	-.28	-3.29	-2.76	-2.54	-2.24	-1.42	-1.16
18 INDUSTRY	-1.38	-.97	-1.58	-.54	-.37	-.41	.37	-.47
19 CONSTR.	-2.93	-1.87	-2.06	-2.65	-3.56	-3.05	-3.33	-2.94
20 SERVICES	2.41	1.38	1.61	1.54	2.19	2.06	.64	.73

Table 7.9 continued

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 SERIES: SUMMARY TABLE

SECTOR	1976	1978	1979	1980	1981	1982	1983	1984	1985
TOTAL GNP	1376527.	1415633.	1461855.	1488122.	1528163.	1563251.	16[illegible]76.	1628416.	1652629.
GOV. EXPEN.	64367.	68444.	71382.	75521.	76873.	826[illegible]1.	86749.	91289.	94030.
V.A.T. ON PCE	138474.	144107.	147958.	150078.	153968.	158136.	162143.	166268.	167779.
V.A.T. ON INVESTMENTS	16[illegible]6.	17[illegible]16.	16813.	17582.	17931.	177[illegible]8.	17771.	17666.	17940.
EXPORTS	319454.	369291.	401113.	420916.	452231.	486719.	515681.	534462.	550416.
PCE	918443.	982259.	1[illegible]4225.	1023168.	1050886.	10775[illegible].	1113637.	1135296.	1154039.
IMPORTS	344231.	369775.	397748.	42[illegible]11.	451411.	483263.	511542.	536991.	560913.
INVENT. CHANGES	26624.	1558[illegible].	23614.	2[illegible]732.	25105.	29231.	32955.	37988.	37960.
P.D.F.	34787[illegible].	349434.	358769.	367845.	372427.	379403.	372597.	372371.	377096.
EMPLOYMENT	14119.	14215.	14229.	14212.	14229.	14332.	14378.	14403.	14394.
NUM. OF HOURS P/WEEK	41.9	41.1	40.7	40.5	40.2	40.[illegible]	39.8	39.6	39.5
OUTPUT	2643393.	2829484.	2921593.	2971224.	3046786.	3114828.	3185637.	3237792.	3281737.

Table 7.9 continued

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 GROWTH RATES FOR: SUMMARY TABLE

SECTOR	77-78	78-79	79-8	81-81	81-82	82-83	83-84	84-85
TOTAL GNP	3.3	3.27	1.8	2.69	2.30	2.54	1.77	1.49
GOV. EXPEN.	3.12	5.17	4.92	4.93	4.14	5.12	4.68	4.14
V.A.T. ON PCE	2.1	2.33	1.78	2.59	2.64	2.61	2.54	2.11
V.A.T. ON INVESTMENTS	3.11	-.84	4.2	1.99	-1.25	.36	-.93	1.91
EXPORTS	7.52	8.59	4.96	7.44	7.63	5.95	3.64	2.99
PCE	4.42	3.24	1.88	2.72	2.54	2.42	2.42	2.11
IMPORTS	3.59	7.68	5.59	7.48	7.16	5.85	4.37	4.45
INVENT. CHANGES	-13.18	51.56	-12.21	21.39	16.44	12.74	15.27	-.17
P.D.F.	.22	2.67	2.53	1.25	-.54	.59	-.76	1.27
EMPLOYMENT	.34	.09	-.18	.19	.51	.53	.17	-.16
NUM. OF HOURS P/WEEK	-.36	-.83	-.73	-.62	-.55	-.48	-.44	-.39
OUTPUT	3.7	3.26	1.71	2.58	2.23	2.27	1.64	1.36

Table 7.9 continued

Chapter VIII

Further Developments of the Model

8.1 Developments of the constant-price model
8.2 Developments of the wage-price model

We will first consider improvements to be made to the real side model, then discuss more thoroughly an aspect of the price model.

8.1 Developments of the constant-price model

The running of the real side has revealed several shortcomings of the model. Behavioral equations for changes in inventories and investments are of course needed. They will cut down the lengthy list of assumptions we had to make and will add to the model some dynamic of its own. Also, a full-scale investment flow matrix should be used to convert the investment forecasted by industry into demand for investment goods at the I/O level. To take advantage of the time series of input-output tables from 1970 to 1978, coefficient changes should be estimated for the main inputs: energy and raw materials. The labor productivity should somehow be related to investment, since we have seen that a sizeable part of investment spending is devoted to labor-saving equipment. Finally, the equations forecasting the length of the work week, which only include a time trend, should be given some economic content.

8.2 Developments to the wage-price model

Much work is obviously needed here, since the price model is for now an empty framework, totally deprived of economic content. We do not intend to present a full discussion of the behavioral equations to include in it, but will rather concentrate on a single point: the forecast of the labor

cost. In the first part, we consider the computation of the wage rate. This section draws extensively from Professor Raymond Courbis' work[1]. The forecast of the other labor cost components is then presented.

Forecast of the wage indexes by industry

With respect to the wage level, one can distinguish two groups of industries[2]:

A first group includes such industries as textiles, clothing, wood products and construction. Such industries are characterized by abundant, rather unskilled manpower. Wages are below average and unionization light. We expect the job market situation to have a short-term influence on the wage level in such industries.

A second group includes heavily concentrated industries. Wages are higher than average, the work force is skilled and rather stable, unionization is high. The job market is expected to have little short-term influence on wages in this group. Steel products, glass and chemical manufacturing belong to this group.

Of course, this classification is only valid for short-term effects. In the mid-term, wages in a particular sector are dependent upon wages in the other sectors. J. Sylvestre[3] studied the 'wage cycles' and showed that the long-term structure of interindustry relative wages is stable. Within a wage cycle, after a rapid growth of wages and widening of the range of wages, low-wage industries tend to make up for the difference while high-wage industries slow down the growth of their wage rates. The unenployment rate therefore influences the wage rate in both groups: directly in group 1 (unemployment -> wages), indirectly in group 2 (unemployment -> wages in group 1 -> average wage -> wages in group 2).

What variable should be used as a measure of the job market situation?

In his study, Sylvestre used:

$$U = \frac{D - O}{N} \qquad [8.1]$$

where

D = number of registered unemployed

O = job vacancies

N = labor force

According to Keynes, the relationship between the wage level and the rate of unemployment is non-linear in the vicinity of full employment. Phillips' empirical work suggested that this relationship was non-linear at any point. Courbis reproduced Sylvestre's study using a non-linear unemploymemt variable:

$$d = \frac{D - O}{O} \qquad [8.2]$$

With the variable d, the job market is still found to be a short-term significant variable only in some industies. However the classification happens to be different from Sylvestre's: namely, such industries as glass and machine tool manufacturing are now found to belong to the first group, where the influence of the job market situation is a significant variable. The variable d is not readily available from the real side of the model. From the employment bloc of the model, we know:

$$U = \frac{EMPT}{N} \qquad [8.3]$$

where

EMPT = total employment

N = labor force

We do not know D or O. Salais[4] showed that there is a very good

fit between D and U:

$$D_t = a + b\,U_t \qquad [8.4]$$

If we assume that the job vacancies, O, and the unemployment rate, U, are negatively correlated:

$$O_t = c + e\,U_t \qquad e < 0$$

then

$$d = \frac{D - O}{O} = \frac{a - c + (b - e)\,U}{c + e\,U} \qquad [8.5]$$

so that d is estimated as a non-linear function of U. Courbis uses d as the unemployment variable in Phillips type equations.

Computation of the labor cost

From Chapter 6, section 2, we remember that the labor cost is computed by multiplying the labor cost index by the current year CONPRIVAWO. In this section we describe how a labor cost index by industry could be computed.

The labor cost is made up of two components: the labor cost of wage earners and the one of non-wage earners. The first component is by large the most important. The labor cost of wage earners can be forecasted in three steps, following the method used by the INSEE in its annual survey of labor costs.[5]

1. Estimation of hourly cost of workers paid by the hour and estimation of monthly cost of worker paid by the month
2. Adjustment of the hourly cost for change in the length of the work week
3. Computation of an index of labor cost of wage earners by weighting the two costs.

The next two steps then lead to the aggregate labor cost index:

4. Computation of the labor cost index of non-wage earners and aggregation of the two indexes
5. Adjustment of the aggregate labor cost index for productivity gains.

Let us comment on step 1:

To compute the hourly cost of workers paid by the hour, we must first estimate an index of the wage rate, then incorporate supplements and the employer's contribution to social security. We use for the wage rate the index of hourly wage rates for workers 18 and above. Supplements include exceptional bonuses and paid holidays.

Exceptional bonuses were 5% of the basic wage rate in 1972 and 1977; lacking more information, they can be assumed to keep this proportion over time.

Paid holiday payments were 13% of the basic wage in 1977. Since the work week gets shorter, these payments are spread over fewer working hours. This ratio should therefore be adjusted for changes in the work week.

The employer's contribution for social security makes up 75% of the other labor costs. They could be forecasted all together as a simple function of the basic wage.

This description was intended to illustrate how behavioral equations for value-added components would fit into the price model framework. This framework is indeed general enough to accomodate many specific cases. As we mentioned in beginning this study, the SLIMFORP program is intended to serve as a starting point for associated institutes constructing models of their own economies. The present study has developed two features that make the system fit a variety of cases:

- In the real side, the method of accounting for the trade margins can be used to derive a homogeneous table from any table in producer prices,

using exclusively information found in the table itself.

- In the price model, by allowing the value added at the I/O level to draw from various value-added account categories, we have built into the model a way to deal with accounting differences between the two classifications. In the French and the US case, and certainly in many others, the I/O accounts are in a product base, while the value-added accounts are in an industry base. The structure of the price model enables one to carry all the value-added computations in the original classification, so that forecasts are directly comparable to published historical data. Then the necessary reallocations are made in order to get the value added by I/O sector on a product base.

In April 1980, this model was transfered to the GAMA, in Paris, who will undertake further development of the model.

1 Raymond Courbis, Compétitivité et Croissance en Economie Concurrencée, Dunod, 1975, Chapter 3, 'Détermination des Salaires'.

2 J. Sylvestre, La Dynamique des Salaires Nominaux en France, Etude Sectorielle, Revue Economique Vol. XXII, no. 3, 1971.

3 J. Sylvestre, ibid.

4 Salais, Mesure de l'Influence du Niveau des Demandes d'Emploi Non Satisfaites sur le Rapport entre Population Active à la Recherche d'un Emploi et Demande d'Emploi Non Satisfaites, INSEE, 1970.

5 N. Borel, Evolution Récente des Couts Salariaux, Economie et Statistique, no 85, 1977.

Appendix Table 1

Input-Output Sector Titles

1	Agriculture	Agriculture
2	Sylviculture	Forestry
3	Pèche	Fishery
4	Houille, Lignite	Coal
5	Cokefaction	Coke
6	Pétrole Brut	Crude Oil
7	Gaz Naturel	Natural Gas
8	Pétrole Raffiné	Petroleum Refining
9	Electricité Distribuée	Electric Utilities
10	Gaz Distribué	Gas Utilities
11	Eau et Chauffage Urbain	Water and Heating Services
12	Minerai de Fer	Iron Ore
13	Siderurgie	Steel
14	Produits de l'Acier	Steel Products
15	Minerais Non Ferreux	Non-Ferrous Ores
16	Métaux Non Ferreux	Non-Ferrous Ores
17	Minéraux Divers	Miscellaneous Metals
18	Matériaux de Construction	Construction Materials
19	Verre	Glass
20	Chimie Minerale	Non Organic Chemicals
21	Chimie Organique	Organic Chemicals
22	Parachimie	Miscellaneous Chemical Products
23	Produits Pharmaceutiques	Drugs
24	Fonderie	Casting

25	Travail des Métaux	Metal Stamping
26	Machines Agricoles	Agricultural Machinery
27	Machines Outils	Machine Tools
28	Equipement Industriel	Industrial Equipment
29	Matériel Travaux Public	Construction Equipment
30	Matériel d'Armement	Ordnance
31	Machines de Bureaux	Office Equipment
32	Matériel Electrique	Electrical Equipment
33	Matériel Electronique Professionnel	Industrial Electronic Equipment
34	Matériel Electronique Ménager	Household Electronic Equipment
35	Equipement Ménager	Household Appliances
36	Vehicules Automobiles	Automobiles
37	Matériel Ferroviaire	Railroad Equipment
38	Construction Navale	Ship Building
39	Construction Aeronautique	Aircrafts
40	Instruments & Matériel de Precision	Measuring Instruments
41	Viandes	Meat
42	Lait & Produits Laitiers	Milk and Dairy Products
43	Conserves	Canned Food
44	Pain et Patisserie	Bread and Pastries
45	Produits du Grain	Cereals
46	Corps Gras Alimentaires	Fats and Oils
47	Sucre	Sugar
48	Autres Produits Alimentaires	Miscellaneous Food Products
49	Boissons et Alcools	Beverages
50	Tabac	Tobacco
51	Fils et Fibres Artificiels	Artifical Yarn

52	Fils et Filés	Thread
53	Bonneterie	Knitting
54	Ouvrages en Filés	Miscellaneous Textiles
55	Cuirs et Peaux	Skins and Leathers
56	Articles en Cuir	Leather Products
57	Chaussures	Shoes
58	Habillement	Apparel
59	Produits du Bois	Wood Products
60	Meubles	Furniture
61	Papier, Carton	Paper and Cardboard
62	Presse, Imprimerie, Edition	Printing and Publishing
63	Pneumatiques	Tires
64	Produits en Plastique	Plastic Products
65	Industries Diverses	Miscellaneous Industries
66	Batiment et Genie Civil	Construction
67	Récupération	Scraps
68	Commerce	Commerce
69	Réparation Automobile	Auto Repair
70	Réparation Diverses	Miscellaneous Repairs
71	Hotels, Cafés et Restaurants	Hotels, Eating and Drinking Places
72	Transports Ferroviaires	Railroad Transportation
73	Transports Routiers de Marchandises	Trucking
74	Autres Transports Terrestres	Other Land Transportation
75	Navigation Intérieure	Waterway Transportation
76	Transports Maritimes	Sea Transportation
77	Transports Aeriens	Air Transportation

78	Services Auxiliaires des Transports	Miscellaneous Transportation Services
79	Télécommunications	Telecommunications
80	Services aux Entreprises	Business Services
81	Location et Crédit-Bail	Renting and Leasing
82	Logement	Housing
83	Crédit-Bail Immobilier	Housing Loans
84	Enseignement	Education Services
85	Santé	Health Services
86	Autres Services Marchands	Other Services
87	Assurance	Insurance
88	Services Financiers	Banking Services

Employment and Value-Added Industries

1	Agriculture, Sylviculture	Agriculture,Forestry
	Pèche	Fishery
2	Viandes, Produits Laitiers	Meat, Dairy Products
3	Autres Produits	Other Food Products
	Alimentaires	
4	Combustibles Minéraux	Coal, Coke
	Solides	
5	Pétrole, Gas	Crude Oil, Natural Gas
6	Electricité, Gaz, Eau	Public Utilities
7	Minéraux et Métaux Ferreux	Ferrous Ores and Metals
8	Minéraux et Métaux	Non-Ferrous Ores and Metals
	Non-Ferreux	
9	Matériaux de Construction	Construction Materials
10	Verre	Glass
11	Chimie de Base	Chemicals
12	Parachimie	Miscellaneous Chemicals
13	Fonderie	Casting
14	Construction Mécanique	Mechanical Constuction
15	Matériel Electrique	Industrial Electrical Equipment
16	Equipement Ménager	Household Equipment
17	Automobiles	Automobiles
18	Construction Navale	Ship Building
19	Textile	Textile
20	Cuir	Leather Products
21	Bois, Meubles	Wood and Furniture

22	Papier, Carton	Paper and Cardboard
23	Presse, Edition	Printing and Publishing
24	Caoutchouc, Plastique	Plastic and Rubber Products
25	Batiment	Construction
26	Commerce	Commerce
27	Réparation Automobile	Auto Repair
28	Hotels, Cafés, Restaurants	Hotels, Eating and Drinking Places
29	Transports	Transportation
30	Télécommunications	Telecommunications
31	Services aux Entreprises	Business Services
32	Services aux Particuliers	Personal Services
33	Location, Crédit-Bail Immobilier	Renting and Leasing
34	Assurances	Insurance
35	Services Financiers	Banking Services

VALUE ADDED TAX EQUATION

	TITLE	HIGH RATE	LOW RATE	RSQ	1978 VALUE	CONSTRAINED
1	AGRICULTURE	.176	.054	.485	1979.	
2	SYLVICULTURE	.[illegible]	.[illegible]	.862	5.	*
3	PECHE	.153	.[illegible]	.837	229.	
4	HOUILLE,LIGNITE, AGGLOMERES	.159	.[illegible]	.992	247.	
5	COKEFACTION	.192	.[illegible]	.963	13.	
6	PETROLE BRUT	.[illegible]	.[illegible]	.[illegible]	0.	
7	GAZ NATUREL	.[illegible]	.[illegible]	.[illegible]	0.	
8	PETROLE RAFFINE	.228	.[illegible]	.818	6462.	
9	ELECTRICITE DISTRIBUEE	.175	.[illegible]	.962	2749.	
10	GAZ DISTRIBUE	.157	.[illegible]	.994	771.	
11	EAU ET CHAUFFAGE URBAIN	.155	.[illegible]	.998	241.	
12	MINERAI DE FER	.[illegible]	.[illegible]	.[illegible]	0.	
13	SIDERURGIE	AVERAGE VALUE FOR HIGH AND LOW RATE, RESIDUAL ALLOCATED TO GOV. EXP.				
14	PROD. DE L'ACIER	AVERAGE VALUE FOR HIGH AND LOW RATE, RESIDUAL ALLOCATED TO GOV. EXP.				
15	MINERAIS NON FERREUX	.[illegible]	.[illegible]	.[illegible]	0.	
16	METAUX NON FERREUX	.218	.[illegible]	.873	133.	
17	MINERAUX DIVERS	.245	.[illegible]	.935	41.	
18	MATER. DE CONTRUCTION	.194	.[illegible]	.975	483.	*
19	VERRE	.169	.[illegible]	.948	262.	
20	CHIMIE MINERALE	AVERAGE VALUE FOR HIGH AND LOW RATE, RESIDUAL ALLOCATED TO GOV. EXP.				
21	CHIMIE ORGANIQUE	.349	.[illegible]	.936	120.	
22	PARACHIMIE	.162	.[illegible]	.997	2165.	
23	PRODUITS PHARMACEUTIQUES	.169	.[illegible]	.987	3764.	
24	FONDERIES	.193	.[illegible]	.994	41.	
25	TRAVAIL DES METAUX	.198	.[illegible]	.849	916.	
26	MACHINES AGRICOLES	.179	.[illegible]	.990	676.	*
27	MACHINES OUTILS	.165	.[illegible]	.923	75.	
28	EQUIPMENT INDUSTRIEL	.167	.[illegible]	.734	215.	*
29	MATERIEL MTPS	.142	.[illegible]	.775	304.	*
30	MATERIEL D'ARMEMENT	.[illegible]	.[illegible]	.[illegible]	0.	
31	MACHINES DE BUREAU	.161	.[illegible]	.997	1217.	
32	MATERIEL ELECTRIQUE	.243	.[illegible]	.971	832.	
33	MATERIEL ELECTRONIQUE PROFESSI	.238	.[illegible]	.974	1868.	*
34	MATERIEL ELECTRONIQUE MENAGER	.231	.[illegible]	.997	2540.	*
35	EQUIPEMENT MENAGER	.146	.[illegible]	.983	1569.	
36	VEHICULES AUTOMOBILES	.211	.[illegible]	.998	7017.	
37	MATERIEL FERROVIAIRE ROULANT	.[illegible]	.[illegible]	.[illegible]	0.	
38	CONSTRUCTION NAVALE	.179	.[illegible]	.969	164.	
39	CONSTR. AERONAUTIQUE	.191	.[illegible]	.822	253.	
40	INSTRUMENTS ET MATERIEL DE PRE	.179	.[illegible]	.999	1315.	
41	VIANDES	.153	.[illegible]	.835	2484.	
42	LAIT ET PRODUITS LAITIERS	.158	.[illegible]	.967	1217.	
43	CONSERVES	.156	.[illegible]	.990	374.	
44	PAIN ET PATISSERIE	.176	.[illegible]	.636	722.	
45	PRODUITS DU GRAIN	.165	.[illegible]	.965	935.	
46	CORPS GRAS ALIMENTAIRES	.168	.[illegible]	.968	177.	
47	SUCRE	.166	.[illegible]	.867	94.	
48	AUTRES PROD. ALIMENTAIRES	.146	.[illegible]	.956	1163.	
49	BOISSONS ET ALCOOLS	.119	.[illegible]	.995	1390.	
51	TABACS ET PROD.	.168	.[illegible]	1.[illegible]	585.	
51	FILS ET FIBRES ARTIFICIELS ET	.[illegible]	.[illegible]	.[illegible]	0.	
52	FILS ET FILES	.137	.[illegible]	.878	114.	
53	BONNETERIE	.144	.[illegible]	.655	1411.	
54	OUVRAGE EN FILES	.159	.[illegible]	.982	1210.	
55	CUIRS ET PEAUX	.[illegible]	.[illegible]	.[illegible]	0.	
56	ARTICLES EN CUIR	.142	.[illegible]	.987	473.	
57	CHAUSSURES	.143	.[illegible]	.817	1061.	
58	HABILLEMENT	.147	.[illegible]	.786	3952.	
59	PROD DU BOIS	.[illegible]	.[illegible]	.[illegible]	679.	
61	MEUBLES	.147	.[illegible]	.973	3461.	*
61	PAPIER, CARTON	.267	.[illegible]	.579	835.	
62	PRESSE,IMPRIMERIE,EDITION	.152	.[illegible]	.[illegible]	1862.	
63	PNEUMATIQUES	.[illegible]	.[illegible]	.993	610.	
64	PROD. PLASTIQUES	.143	.[illegible]	.984	846.	
65	INDUSTRIES DIVERSES	.182	.[illegible]	.997	3656.	*
66	BATIMENT ET GENIE CIVIL	.129	.[illegible]	.998	15531.	
67	RECUPERATION	.[illegible]	.[illegible]	.[illegible]	0.	
68	COMMERCE	.[illegible]	.[illegible]	.[illegible]	0.	
69	REPARATION AUTOMOBILE	.169	.[illegible]	.998	7866.	*
71	REPARATION DIVERSES	.[illegible]	.[illegible]	.645	258.	
71	HOTELS,CAFES,RESTAURANT	.[illegible]	.[illegible]	.997	2[illegible]	
72	TRANSP FERROVIAIRES	.[illegible]	.[illegible]	.673	965.	

73	TRANSP ROUTIERS DE MARCHANDISE	AVERAGE VALUE FOR HIGH AND LOW RATE,			RESIDUAL ALLOCATED TO GOV. EXP.
74	AUTRES TRANSP TERRESTRES	.146	.[illegible]	.996	992.
75	NAVIGATION INTERIEURE	AVERAGE VALUE FOR HIGH AND LOW RATE,			RESIDUAL ALLOCATED TO GOV. EXP.
76	TRANSPORTS MARITIMES	.[illegible]19	.[illegible]00	.920	5.
77	TRANSPORTS AERIENS	.187	.[illegible]00	.918	312.
78	SERVICES AUXILIAIRES DE TRANSP	.229	.[illegible]00	.954	371.
79	TELECOMMUNICATIONS	.[illegible]11	.[illegible]15	.711	2.
81	SERVICE AUX ENTREPRISES	.241	.[illegible]59	.983	3691.
81	LOCATION ET CREDIT-BAIL MOBILI	AVERAGE VALUE FOR HIGH AND LOW RATE,			RESIDUAL ALLOCATED TO GOV. EXP.
82	LOGEMENT	.102	.[illegible]19	1.110	186.
83	CREDIT-BAIL IMMOBILIER	AVERAGE VALUE FOR HIGH AND LOW RATE,			RESIDUAL ALLOCATED TO GOV. EXP.
84	ENSEIGNEMENT (MARCHAND)	.123	.[illegible]31	.379	762.
85	SANTE	.[illegible]12	.[illegible]00	.991	770.
86	AUTRES SERVICES MARCHANDS	.[illegible]75	.[illegible]19	.961	1472.
87	ASSURANCES	.[illegible]00	.[illegible]00	.[illegible]00	0.

Appendix Table 3

Groups and Subgroups for the Private Consumption Expenditures Equations

Group	Subgroup	Commodity	
Food	Protein	3	Sea Food
		41	Meat
		42	Dairy Products
		43	Canned Products
	Non-Protein	1	Fruits, Vegetables
		44	Bread, Pastries
		45	Grain
		46	Fats and Oils
		47	Sugar
		48	Other Food Products
Beverage		59	Beverages
and Tobacco		60	Tobacco
Energy		61	Coal
		5	Coke
		69	Electricity
		10	Natural Gas
Ceramics		18	Building Material
and Glassware		19	Glass
Household		31	Office Equipment
Machinery		32	Electrical Equipment
		34	Electronic Equipment
		35	Household Equipment
		40	Scales, Measuring Instruments

Transportation	Private Transportation	8	Refined Petroleum Products
		36	Automobiles
		63	Tires
		69	Car Repair
		79	Other Road Transportation
	Public Transportation	72	Rail Transportation
		76	Sea Transportation
		77	Air Transportation
		78	Auxiliary Services
Fiber and Clothes	Textile	52	Yarn and Thread
		53	Knitting
		54	Woven Materials
	Leather and Apparel	56	Leather Products
		57	Shoes
		58	Apparel
Wood, Furniture and Other Materials		2	Lumber
		14	Steel Products
		16	Non-Ferrous Metals
		17	Other Minerals
		20	Non-Organic Chemicals
		21	Other Chemicals
		25	Forging
		26	Farm Machinery
		59	Wood Products
		60	Furniture
		64	Plastics

Paper and Printing	61 Paper and Cardboard
	62 Printing and Publishing
Health Services	23 Drugs
	85 Health Services
Miscellaneous	11 Public Utilities
	65 Miscellaneous Manufacturing
	66 Construction
	67 Scraps
	70 Repair Services
	71 Hotels and Restaurants
	79 Telecommunications
	80 Business Services
	81 Leasing
	82 Housing Services
	84 Education Services
	86 Other Services
	87 Insurance Services
	88 Finance Services

FOOD

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
1	1	AGRICULTURE	.574	-.8	-.6[illegible]	.042	.021	.015	1.8	.57
2	2	PECHE	.877	-.6	-.274	.119	-.014	.003	2.9	.20
41	2	VIANDES	.678	-.3	-.41[illegible]	.1[illegible]1	-.144	.035	1.4	.78
42	2	LAIT ET PRODUITS LAITIERS	.528	.6	-.331	.047	-.[illegible]69	.016	1.7	.61
43	2	CONSERVES	.722	.9	-.284	-.[illegible]15	-.[illegible]22	.005	1.6	.20
44	2	PAIN ET PATISSERIE	.722	-.8	-.619	.122	.011	.007	2.5	.68
45	2	PRODUITS DU GRAIN	.	1.4	-.624	.[illegible]12	.[illegible]6	.004	1.3	.19
47	2	CORPS GRAS ALIMENTAIRES	.426	-.7	-.627	.[illegible]16	.[illegible]23	.002	3.6	.47
47	2	SUCRE	.238	-.4	-.628	.[illegible]04	.[illegible]42	.001	1.6	.42
48	2	AUTRES PROD. ALIMENTAIRES	.722	-.2	-.617	.[illegible]26	.[illegible]13	.009	1.6	.63

BEVERAGES AND TOBACCO

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
43		BOISSONS ET ALCOOLS	.781	.5	-.439	-.062		.010	1.9	.15
5[illegible]		TABACS ET PROD.	.768	-.8	-.422	-.045		.007	2.0	.75

ENERGY

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
4		HOUILLE+LIGNITE+ AGGLOMERES	.471	-9.7	-.321	-.017		.001	6.3	.39
5		COKEFACTION	.	-24.8	-.3[illegible]4	-.[illegible]61		.000	21.4	.03
9		ELECTRICITE DISTRIBUEE	.633	1.7	-.42[illegible]	-.117		.007	10.5	.81
1[illegible]		GAZ DISTRIBUE	1.214	.4	-.355	-.[illegible]52		.003	4.1	.42

CERAMICS AND GLASSWARE

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
18		MATER. DE CONSTRUCTION	1.287	-.7	-.[illegible]21	-.[illegible]37		.002	2.1	.27
19		VERRE	1.[illegible]87	-.8	-.19[illegible]	-.196		.001	1.3	.30

HOUSEHOLD MACHINERY

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
71		MACHINES DE BUREAU	.241	-1.8	-.[illegible]1[illegible]	.[illegible]12		.000	9.1	-.17
72		MATERIEL ELECTRIQUE	.887	1.5	-.[illegible]74	.[illegible]26		.001	5.2	.54
74		MATERIEL ELECTRONIQUE MENAGER	.241	.4	-.753	.149		.008	9.2	.58
75		EQUIPEMENT MENAGER	.722	.4	-.7[illegible]2	.149		.009	5.8	.69
8[illegible]		INSTRUMENTS ET MATERIEL DE PRE	1.[illegible]31	-.1	-.822	.[illegible]8[illegible]		.004	2.[illegible]	.31

TRANSPORTATION

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
[illegible]	9	PETROLE RAFFINE	.9[illegible]	1.3	-.296	.563	-.172	.021	8.6	.15
76	9	VEHICULES AUTOMOBILES	1.27[illegible]	.1	-.256	.434	-.132	.016	5.1	.06
77	9	MOTOCYCLES	1.27[illegible]	.2	-.182	.[illegible]	-.[illegible]	.002	2.7	.21
78	9	REPARATION AUTOMOBILE	1.27[illegible]	-.2	-.21[illegible]	.281	-.[illegible]	.011	2.2	.46
79	11	TRANSP FERROVIAIRES	.[illegible]	-.[illegible]	-1.353	.179	-.[illegible]	.003	8.7	.86
74	9	AUTRES TRANSP TERRESTRES	.[illegible]	-.5	-.166	.138	-.042	.005	3.4	.74
76	11	TRANSPORTS MARITIMES	.[illegible]	-2.5	-.59[illegible]	.174	-.041	.000	13.6	.63
77	11	TRANSPORTS AERIENS	2.293	-2.	-.793	.[illegible]24	-.244	.001	8.7	.86
78	11	SERVICES AUXILIAIRES DE TRANSP	2.293	-1.4	-.826	.127	-.277	.001	10.0	.83

FIBERS AND CLOTHES

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
52	12	FILS ET FILES	1.17[illegible]	-1.2	-.228	.[illegible]28	-.[illegible]7P	.001	3.8	.23
53	12	BONNETERIE	.968	-.1	-.[illegible]99	.276	-.753	.008	7.9	.77
54	12	DEVRAGE EN FILES	.957	-1.[illegible]	-.721	.211	-.575	.006	2.6	.85
56	13	ARTICLES EN CUIR	.[illegible]83	.6	-.91[illegible]	.[illegible]87	-.[illegible]05	.002	2.6	.40
57	13	CHAUSSURES	.[illegible]P3	-.	-.91P	.22[illegible]	-.[illegible]13	.006	1.7	.25
58	13	HABILLEMENT	1.17[illegible]	-1.[illegible]	-.952	.791	-.[illegible]47	.022	2.7	.69

WOOD, FURN. AND OTHER MAT.

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
3		SYLVICULTURE	.574	-7.7	-.25[illegible]	-.[illegible]		.000	1.9	.44
14		PROD. DE L'ACIER	1.58[illegible]	-1.[illegible]	-.251	-.[illegible]1		.000	3.9	-.05
16		METAUX NON FERREUX	1.58[illegible]	-1.3	-.251	-.[illegible]1		.000	5.9	-.11
17		MINERAUX DIVERS	1.58[illegible]	-2.4	-.251	-.[illegible]1		.000	2.1	.69
21		CHIMIE MINERALE	.574	1.1	-.25[illegible]	-.[illegible]		.000	3.9	.16
22		PARACHIMIE	.574	1.5	-.[illegible]13	-.[illegible]63		.010	2.4	.48
25		TRAVAIL DES METAUX	1.17	-.2	-.274	-.[illegible]24		.004	4.1	.51
26		MACHINES AGRICOLES	1.17[illegible]	.3	-.25[illegible]	-.[illegible]1[illegible]		.000	11.4	.63
56		PRODUITS DU BOIS	[illegible]	1.4	-.[illegible]53	-.[illegible]63		.000	3.8	-.01
47		MEUBLES	1.320	.4	-.[illegible]61	-.[illegible]11		.017	5.8	.76
48		PROD. PLASTIQUES	.653	1.5	-.243	-.[illegible]13		.002	4.8	.25

PAPER AND PRINTING

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
51		PAPIER, CARTON	1.[illegible]25	-.[illegible]	-.[illegible]7	-.[illegible]66		.002	6.6	.40
52		PRESSE,IMPRIMERIE,EDITION	1.[illegible]25	-.9	-.424	-.227		.008	3.8	.79

HEALTH

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
23		PRODUITS PHARMACEUTIQUES	.747	[illegible].[illegible]	-.159	-.1[illegible]		.015	8.0	.72
85		SANTE	.717	.6	-.337	-.284		.041	2.1	.85

MISCELLANEOUS COM.

SECTOR	SUBGROUP	COMMODITY	INCOME ELASTICITY	TIME IN % OF LAST YR.	OWN	PRICE ELASTICITIES GROUP	SUBGROUP	GENERAL	AAPE	RHO
11		EAU ET CANALISATION URBAIN	1.091	.2	-.525	.[illegible]		.003	6.6	.77
65		INDUSTRIES DIVERSES	1.233	.9	-.514	.215		.013	3.2	.41
66		BATIMENT ET GENIE CIVIL	1.[illegible]	-.3	-.523	.[illegible]		.005	5.4	.56
67		RECUPERATION	1.[illegible]	-.1	-.528	.[illegible]		.001	****	.29
70		PREPARATIONS DIVERSES	1.107	-.9	-.524	.[illegible]		.002	3.8	.61
71		HOTELS,CAFES,RESTAURANT	.918	-.8	-.494	.135		.029	1.1	.53
73		TELECOMMUNICATIONS	2.293	-1.9	-.524	.[illegible]5		.004	3.2	.38
8		SERVICE AUX ENTREPRISES	1.289	-1.6	-.525	.[illegible]4		.004	7.3	.18
81		LOCATION ET CREDIT-BAIL MOBILI	1.107	.7	-.528	.[illegible]1		.001	8.5	.19
83		LOGEMENT	1.[illegible]55	.6	-.447	.082		.051	2.1	.37
88		ENSEIGEMENT (MARCHAND)	1.[illegible]55	.2	-.524	.[illegible]3		.002	2.8	.54
9A		AUTRES SERVICES MARCHANDS	1.291	-2.2	-.514	.215		.012	4.3	.72
97		ASSURANCES	.918	.4	-.518	.[illegible]1		.009	3.0	.10
99		FINANCE	.918	.1	-.529	.[illegible]1		.001	5.9	.26

TABLE 1. SUMMARY EXPORT REGRESSION RESULTS — FRENCH EXPORT EQUATIONS

T COEFFICIENTS ARE IN PARENTHESES

SECTOR,	PRICE ELASTICITIES ESTIMATE	A PRIORI	CONSTANT(A)	DEMAND(B)	RBARSQ	1977 EXPORTS
1AGRICULTURE	-.50	-.50	-14071.0	334.961	.967	18639.
			(-12.70)	(23.50)		
7GAZ NATUREL	-.50	-.50	-57.2	.992	.791	63.
			(-6.44)	(8.28)		
8PETROLE RAFFINE	-1.00	-1.00	991.0	62.154	.786	10269.
			(1.86)	(8.05)		
13SIDERUGIE	-2.00	-2.00	-1411.2	126.919	.786	14235.
			(-1.17)	(9.00)		
15MINERAIS NON FERREUX	.00	-2.00	-39.3	1.025	.439	79.
			(-1.72)	(3.89)		
19VERRE	-2.00	-2.00	-1155.9	40.433	.988	3399.
			(-10.40)	(28.49)		
20CHIMIE MINERALE	-2.00	-2.00	258.2	34.583	.926	3956.
			(1.38)	(13.07)		
21CHIMIE ORGANIQUE	-2.00	-2.00	-6555.6	215.466	.940	19511.
			(-6.71)	(15.89)		
22PARACHIMIE	-2.00	-2.00	-2234.5	82.673	.956	7639.
			(-7.92)	(21.11)		
23PRODUITS PHARMACEUTIQUES	-2.00	-2.00	-149.5	50.821	.982	3519.
			(-1.64)	(23.44)		
25TRAVAIL DES METAUX	-2.00	-2.00	-5105.8	127.827	.937	10297.
			(-7.42)	(14.70)		
26MACHINES AGRICOLES	-3.00	-3.00	-1385.9	55.643	.903	2798.
			(-6.17)	(12.09)		
27MACHINES OUTILS	-3.00	-3.00	-2773.8	67.898	.941	4568.
			(-4.92)	(10.42)		
28EQUIPMENT INDUSTRIEL	-3.00	-3.00	-11678.4	297.469	.903	21215.
			(-3.96)	(8.46)		
31MACHINES DE BUREAU	-2.00	-3.00	-2332.0	66.330	.970	5262.
			(-7.20)	(15.95)		
33MATERIEL ELECTRONIQUE PROFESSI	-2.00	-2.00	-4938.7	117.170	.879	10141.
			(-5.30)	(9.79)		
36VEHICULES AUTOMOBILES	-3.00	-3.00	-26017.5	594.648	.871	45166.
			(-6.66)	(11.74)		
38CONSTRUCTION NAVALE	-3.00	-3.00	-1482.5	45.407	.791	4556.
			(-3.49)	(7.57)		
42LAIT ET PRODUITS LAITIERS	-.50	-.50	-5542.5	123.980	.900	8808.
			(-7.22)	(12.73)		
43CONSERVES	-.50	-.50	-912.2	22.050	.870	1500.
			(-5.68)	(10.79)		
45PRODUITS DU GRAIN	-.50	-.50	-4946.0	88.694	.955	4620.
			(-14.11)	(20.22)		
46CORPS GRAS ALIMENTAIRES	-1.00	-1.00	-371.4	15.690	.608	1479.
			(-1.50)	(4.90)		
47SUCRE	-.50	-.50	-1988.3	49.892	.807	3902.
			(-3.62)	(7.173)		
48AUTRES PROD. ALIMENTAIRES	-.50	-.50	-1230.3	26.267	.861	2377.
			(-5.78)	(9.73)		
49BOISSONS ET ALCOOLS	-1.00	-1.00	-3458.3	79.132	.939	5485.
			(-9.19)	(16.83)		
51FILS ET FIBRES ARTIFICIELS ET	-1.00	-1.00	-2808.2	42.074	.967	1511.
			(-10.44)	(14.04)		
52FILS ET FILES	-2.00	-2.00	-350.4	47.253	.826	4930.
			(-.63)	(7.73)		
53BONNETERIE	-1.50	-1.50	-3150.6	55.765	.942	2540.
			(-9.41)	(14.53)		
55CUIRS ET PEAUX	-.40	-.50	-460.6	14.046	.336	941.
			(-2.06)	(5.78)		
57CHAUSSURES	-2.00	-2.00	-1498.6	33.718	.856	1919.
			(-4.72)	(8.98)		
61PAPIER, CARTON	-2.00	-2.00	-2168.0	54.483	.939	3683.
			(-10.21)	(19.63)		
62PRESSE,IMPRIMERIE,EDITION	-1.00	-2.00	-1242.6	33.077	.772	2736.
			(-5.74)	(12.47)		
64PROD. PLASTIQUES	-2.00	-2.00	-904.1	39.495	.924	3913.
			(-5.16)	(15.91)		
65INDUSTRIES DIVERSES	-3.00	-3.00	-775.9	38.178	.969	3388.
			(-5.29)	(20.33)		
67RECUPERATION	-.80	-2.00	-1795.2	49.704	.856	3590.

72TRANSP FERROVIARES	-1.00	-1.00	(-5.06) -581.1 (-3.30)	(11.12) 18.796 (9.23)	.846	1311.
73TRANSP ROUTIERS DE MARCHANDISE	-1.00	-1.00	-492.6 (-.84)	66.610 (8.37)	.833	7385.
75NAVIGATION INTERIEURE	-1.00	-1.00	-22.6 (-.98)	1.564 (5.01)	.604	120.
76TRANSPORTS MARITIMES	-1.00	-1.00	2121.9 (2.84)	98.202 (10.67)	.973	12661.
77TRANSPORTS AERIENS	-1.00	-1.00	1977.5 (13.96)	28.650 (14.85)	.983	5649.
78SERVICES AUXILIAIRES DE TRANSP	-1.00	-1.00	-8880.2 (-7.01)	135.518 (8.80)	.808	5636.
79TELECOMMUNICATIONS	-1.00	-1.00	340.4 (9.11)	-.674 (-1.24)	-.015	373.
80SERVICE AUX ENTREPRISES	-1.00	-1.00	-8538.9 (-7.57)	235.533 (15.71)	.922	18565.

SUMMARY OF TIME EQUATIONS LN(EXPORTS) = A + B*TIME + C*RELATIVE PRICE

SECTOR	PRICE ELASTICITIES	CONSTANT(A)	TIME(B)	RBARSQ	EXPORTS
3PECHE	-2.60	8.3 (4.41)	.051 (2.44)	.275	451.
5COKEFACTION	-1.87	7.6 (3.76)	.244 (3.83)	.706	399.
9ELECTRICITE DISTRIBUEE	-.23	6.0 (2.75)	.092 (3.63)	.573	235.
12MINERAI DE FER	-.99	7.1 (16.54)	-.074 (-3.96)	.757	360.
16METAUX NON FERREUX	-1.42	10.5 (11.25)	.120 (16.20)	.973	10888.
17MINERAUX DIVERS	.00	6.4 (139.25)	-.004 (-.82)	-.018	650.
18MATER. DE CONTRUCTION	-1.11	9.0 (12.60)	.083 (16.53)	.939	3005.
24FONDERIES	-3.87	10.9 (14.98)	.070 (18.49)	.951	1451.
29MATERIEL MTPS	-1.61	10.5 (22.10)	.115 (27.07)	.977	9665.
30MATERIEL D'ARMEMENT	-4.65	12.5 (22.33)	.174 (25.36)	.973	5077.
32MATERIEL ELECTRIQUE	-1.29	10.1 (20.99)	.129 (28.11)	.983	9499.
34MATERIEL ELECTRONIQUE MENAGER	-1.10	7.8 (3.62)	.054 (.94)	.923	1070.
35EQUIPEMENT MENAGER	-.67	8.5 (11.22)	.107 (31.06)	.984	3407.
37MATERIEL FERROVIAIRE ROULANT	-2.99	10.3 (8.11)	.133 (9.66)	.930	1367.
39CONSTR. AERONAUTIQUE	.00	8.8 (177.71)	.114 (20.50)	.959	9136.
40INSTRUMENTS ET MATERIEL DE PRE	-.76	9.0 (11.98)	.118 (23.76)	.972	4876.
41VIANDES	-2.31	10.8 (25.67)	.062 (10.08)	.851	5579.
50TABACS ET PROD.	-4.41	10.0 (6.27)	.124 (10.52)	.959	373.
54OUVRAGE EN FILES	-1.81	10.5 (14.95)	.041 (8.29)	.897	7198.
56ARTICLES EN CUIR	-.25	6.4 (68.29)	.037 (7.57)	.871	605.
59PROD DU BOIS	.00	7.3 (97.41)	.033 (3.90)	.441	2289.
60MEUBLES	-7.25	13.5 (8.46)	.076 (2.25)	.915	659.
81LOCATION ET CREDIT-BAIL MOBILI	-5.42	9.3 (8.37)	.082 (3.79)	.667	49.
84ENSEIGNEMENT (MARCHAND)	-2.76	9.8 (12.44)	.098 (6.49)	.781	1721.
87ASSURANCES	-2.15	8.5 (20.77)	.092 (14.42)	.938	734.

SUMMARY PRICE REGRESSION RESULTS — RELATIVE PRICES FOR THE EXPORTS EQUATIONS

EQUATION TYPE IS : LN(PRICE) = A + B * TIME

	SECTOR	CONSTANT(A)	TIME(B)	RBARSQ	RHO	AVERAGE RATE OF CHANGE
1	AGRICULTURE	-.181	.011	.23[illegible]	.31[illegible]	-.007
2	SYLVICULTURE	.[illegible]91	.021	.529	.54[illegible]	.030
3	PECHE	.145	.005	.11[illegible]	-.[illegible]7[illegible]	.010
4	HOUILLE,LIGNITE, AGGLOMERES	.[illegible]88	.003	.05[illegible]	.49[illegible]	.012
5	COKEFACTION	.[illegible]11	.[illegible]11	.[illegible]0[illegible]	.[illegible]0[illegible]	.000
6	PETROLE BRUT	.[illegible]00	.000	.[illegible]0[illegible]	.[illegible]00	.000
7	GAZ NATUREL	-.171	-.[illegible]01	.045	.169	-.009
8	PETROLE RAFFINE	.[illegible]38	-.005	.270	.660	-.002
9	ELECTRICITE DISTRIBUEE	.156	-.013	.533	.530	-.008
10	GAZ DISTRIBUE	.[illegible]00	.[illegible]00	.[illegible]00	.[illegible]00	.000
11	EAU ET CHAUFFAGE URBAIN	.[illegible]11	.[illegible]11	.[illegible]0[illegible]	.[illegible]11	.000
12	MINERAI DE FER	-.[illegible]82	-.035	.860	.299	-.043
13	SIDERURGIE	.[illegible]07	.[illegible]00	.[illegible]30	.[illegible]91	.002
14	PROD. DE L'ACIER	-.030	.000	.058	.162	-.003
15	MINERAIS NON FERREUX	-.124	-.221	.3[illegible]3	.499	-.035
16	METAUX NON FERREUX	-.[illegible]69	.[illegible]91	.48[illegible]	.36[illegible]	-.008
17	MINERAUX DIVERS	-.[illegible]97	-.[illegible]22	.559	.4[illegible]1	-.031
18	MATER. DE CONTRUCTION	-.[illegible]43	-.001	.[illegible]40	.46[illegible]	-.005
19	VERRE	.115	-.[illegible]12	.57[illegible]	.48[illegible]	-.012
20	CHIMIE MINERALE	-.[illegible]35	-.[illegible]07	.15[illegible]	.65[illegible]	.011
21	CHIMIE ORGANIQUE	-.[illegible]49	-.[illegible]08	.17[illegible]	.83[illegible]	-.010
22	PARACHIMIE	.[illegible]23	.001	.[illegible]47	.39[illegible]	.008
23	PRODUITS PHARMACEUTIQUES	-.[illegible]11	-.[illegible]14	.6[illegible]	.53[illegible]	-.180
24	FONDERIES	-.[illegible]09	.[illegible]02	.[illegible]07	.37[illegible]	-.003
25	TRAVAIL DES METAUX	.126	-.[illegible]07	.19[illegible]	.57[illegible]	-.005
26	MACHINES AGRICOLES	-.[illegible]32	-.[illegible]03	.35[illegible]	.48[illegible]	-.003
27	MACHINES OUTILS	-.[illegible]35	-.[illegible]11	.62[illegible]	.57[illegible]	-.015
28	EQUIPMENT INDUSTRIEL	-.[illegible]26	-.[illegible]16	.6[illegible]	.71[illegible]	-.019
29	MATERIEL PTPS	.[illegible]36	-.[illegible]13	.44	.65[illegible]	-.002
30	MATERIEL D'APPOINT	.[illegible]66	.[illegible]01	.[illegible]5	.56[illegible]	.008

SUMMARY PRICE REGRESSION RESULTS DOMESTIC PRICES

EQUATION TYPE IS : LN(PPICE) = A + B * TIME

	SECTOR	CONSTANT(A)	TIME(B)	RHARSQ	RHO	AVERAGE RATE OF CHANGE
1	AGRICULTURE	-.178	.151	.913	.884	.048
2	SYLVICULTURE	.027	.074	.83[illegible]	.73[illegible]	.077
3	PECHE	.177	.183	.987	.77[illegible]	.092
4	HOUILLE,LIGNITE, AGGLOMERES	-.184	.066	.776	.86[illegible]	.048
5	COKEFACTION	-.171	.199	.78[illegible]	.85[illegible]	.083
6	PETROLE BRUT	.[illegible]	.000	.000	.00[illegible]	.000
7	GAZ NATUREL	-.388	.161	.619	.87[illegible]	.027
8	PETROLE RAFFINE	-.217	.051	.620	.85[illegible]	.030
9	ELECTRICITE DISTRIBUEE	-.131	.129	.726	.870	.016
10	GAZ DISTRIBUE	.[illegible]	.000	.000	.00[illegible]	.000
11	EAU ET CHAUFFAGE URBAIN	.[illegible]	.000	.000	.00[illegible]	.000
12	MINERAI DE FER	-.250	.315	.150	.880	-.009
13	SIDERURGIE	-.111	.149	.760	.839	.038
14	PROD. DE L'ACIER	-.[illegible]95	.160	.860	.790	.050
15	MINERAIS NON FERREUX	.[illegible]11	.003	.000	.[illegible]99	.000
16	METAUX NON FERREUX	-.110	.046	.890	.580	.046
17	MINERAUX DIVERS	-.123	.139	.799	.849	.027
18	MATER. DE CONTRUCTION	-.[illegible]68	.[illegible]59	.900	.88[illegible]	.042
19	VERRE	-.182	.135	.831	.870	.029
20	CHIMIE MINERALE	-.142	.138	.69[illegible]	.849	.024
21	CHIMIE ORGANIQUE	-.231	.129	.339	.84[illegible]	.005
22	PARACHIMIE	-.119	.134	.775	.9[illegible]	.023
23	PRODUITS PHARMACEUTIQUES	-.183	.115	.583	.87[illegible]	.008
24	FONDERIES	-.156	.152	.82[illegible]	.89[illegible]	.037
25	TRAVAIL DES METAUX	-.114	.186	.881	.891	.035
26	MACHINES AGRICOLES	-.[illegible]57	.[illegible]59	.89[illegible]	.89[illegible]	.040
27	MACHINES OUTILS	-.188	.151	.893	.89[illegible]	.043
28	EQUIPMENT INDUSTRIEL	-.[illegible]79	.186	.90[illegible]	.87[illegible]	.039
29	MATERIEL MTPS	-.[illegible]43	.184	.91[illegible]	.96[illegible]	.042
31	MATERIEL D'ARMEMENT	-.[illegible]27	.[illegible]45	.95	.8[illegible]	.040

TABLE 1. SUMMARY IMPORT REGRESSION RESULTS — FRENCH IMPORT EQUATIONS
T COEFFICIENTS ARE IN PARENTHESES

SECTOR	PRICE ELASTICITIES ESTIMATE	A PRIORI	CONSTANT(A)	DEMAND(B)	RBARSQ	1977 IMPORTS
2 SYLVICULTURE	-.50	-.50	-216.5	.219	.874	1451.
			(-1.31)	(9.76)		
3 PECHE	-.50	-.50	-3118.2	.884	.947	2206.
			(-11.38)	(16.37)		
5 COKEFACTION	-.55	-.50	-28.0	.237	.434	1083.
			(-.08)	(4.82)		
7 GAZ NATUREL	-.50	-.50	-873.4	.760	.937	4217.
			(-7.66)	(17.92)		
8 PETROLE RAFFINE	-1.00	-1.00	-417.9	.061	.789	6988.
			(-.78)	(8.27)		
13 SIDERURGIE	-2.00	-2.00	-5754.1	.366	.927	11264.
			(-5.95)	(13.96)		
16 METAUX NON FERREUX	-2.00	-2.00	-7867.1	.739	.892	15374.
			(-8.64)	(16.39)		
18 MATER. DE CONTRUCTION	-2.00	-2.00	-842.8	.108	.903	3616.
			(-5.05)	(15.82)		
19 VERRE	-1.60	-2.00	-775.2	.268	.925	1909.
			(-9.13)	(19.20)		
20 CHIMIE MINERALE	-1.60	-2.00	-2790.8	.334	.793	3781.
			(-5.96)	(10.91)		
21 CHIMIE ORGANIQUE	-2.00	-2.00	-2778.2	.598	.981	17720.
			(-7.52)	(34.83)		
22 PARACHIMIE	-2.00	-2.00	-1529.6	.200	.868	5409.
			(-4.13)	(10.86)		
26 MACHINES AGRICOLES	-1.40	-3.00	-422.4	.270	.918	3014.
			(-4.96)	(16.51)		
29 MATERIEL MTPS	-.60	-3.00	-1475.4	.433	.808	4385.
			(-4.45)	(12.72)		
32 MATERIEL ELECTRIQUE	-2.40	-3.00	-1257.7	.190	.913	4493.
			(-6.20)	(16.91)		
34 MATERIEL ELECTRONIQUE MENAGER	-1.60	-2.00	-1250.2	.608	.937	3995.
			(-13.81)	(31.23)		
35 EQUIPEMENT MENAGER	-2.60	-3.00	-1177.5	.384	.890	3770.
			(-6.98)	(17.62)		
36 VEHICULES AUTOMOBILES	-3.00	-3.00	-8483.3	.297	.903	21984.
			(-7.15)	(14.71)		
38 CONSTRUCTION NAVALE	-3.00	-3.00	-1742.3	.309	.804	2151.
			(-6.79)	(10.51)		
40 INSTRUMENTS ET MATERIEL DE PRE	-3.00	-3.00	-1160.4	.454	.936	5871.
			(-4.86)	(16.88)		
41 VIANDES	-.50	-.50	-13592.2	.290	.928	9337.
			(-11.31)	(14.95)		
42 LAIT ET PRODUITS LAITIERS	-.50	-.50	-559.7	.051	.543	1394.
			(-2.10)	(5.04)		
43 CONSERVES	-.50	-.50	-1050.6	.310	.874	2787.
			(-5.39)	(11.09)		
45 PRODUITS DU GRAIN	-.50	-.50	-470.2	.068	.889	2034.
			(-3.98)	(11.78)		
46 CORPS GRAS ALIMENTAIRES	-1.00	-1.00	-410.4	.452	.807	5523.
			(-.46)	(5.09)		
48 AUTRES PROD. ALIMENTAIRES	-.50	-.50	-280.1	.256	.813	3708.
			(-2.90)	(9.49)		
49 BOISSONS ET ALCOOLS	-1.00	-1.00	-71.6	.062	.907	1299.
			(-1.12)	(14.87)		
50 TABACS ET PROD.	-1.00	-1.00	-276.6	.078	.766	730.
			(-3.90)	(8.42)		
52 FILS ET FILES	-2.00	-2.00	-2554.1	.248	.700	2393.
			(-5.26)	(7.32)		
54 OUVRAGE EN FILES	-2.00	-2.00	-6420.4	.509	.902	8479.
			(-7.83)	(12.82)		
55 CUIRS ET PEAUX	-.55	-.50	-115.2	.311	.651	1056.
			(-.43)	(3.37)		
56 ARTICLES EN CUIR	-1.50	-1.50	-966.5	.292	.747	702.
			(-5.70)	(7.88)		
57 CHAUSSURES	-2.00	-2.00	-1989.9	.396	.743	2291.
			(-5.93)	(8.27)		
58 HABILLEMENT	-1.50	-1.50	-3269.5	.202	.847	4108.
			(-6.98)	(10.49)		
59 PROD DU BOIS	-1.00	-1.00	-793.6	.179	.901	3333.

60 MEUBLES	-1.50	-1.50	(-3.16) -916.4 (-11.86)	(11.16) .187 (28.47)	.972	2752.
61 PAPIER, CARTON	-2.00	-2.00	-2193.1 (-4.36)	.258 (15.49)	.956	8301.
62 PRESSE,IMPRIMERIE•EDITION	-2.00	-2.00	-306.2 (-1.87)	.087 (13.98)	.958	2828.
63 PNEUMATIQUES	-2.00	-2.00	-1262.7 (-6.93)	.261 (15.09)	.935	2929.
64 PROD. PLASTIQUES	-2.00	-2.00	-1476.6 (-13.24)	.261 (31.01)	.981	4496.
72 TRANSP FERROVIAIRES	-1.00	-1.00	-253.2 (-6.47)	.040 (15.21)	.925	550.
73 TRANSP ROUTIERS DE MARCHANDISE	-1.00	-1.00	-2599.3 (-6.15)	.331 (13.80)	.906	6614.
75 NAVIGATION INTERIEURE	-1.00	-1.00	-56.5 (-6.49)	.227 (15.71)	.936	106.
76 TRANSPORTS MARITIMES	-.70	-1.00	609.1 (4.29)	1.208 (10.01)	.759	3149.
77 TRANSPORTS AERIENS	-1.00	-1.00	-161.0 (-3.62)	.240 (19.18)	.919	1574.
78 SERVICES AUXILIAIRES DE TRANSP	-1.00	-1.00	-2959.1 (-6.11)	.240 (14.68)	.929	8785.
79 TELECOMMUNICATIONS	-1.00	-1.00	-63.5 (-3.91)	.009 (12.95)	.892	349.
80 SERVICE AUX ENTREPRISES	-1.00	-1.00	-1212.3 (-4.11)	.089 (24.19)	.973	12404.
87 ASSURANCES	-1.00	-1.00	42.1 (1.86)	.045 (21.04)	.959	893.

SUMMARY OF TIME EQUATIONS LN(IMPORTS) = A + B*TIME + C*RELATIVE PRICE

SECTOR	PRICE ELASTICITIES	CONSTANT(A)	TIME(B)	RBARSQ	IMPORTS
1 AGRICULTURE	-3.60	13.4 (21.12)	.016 (3.48)	.765	26591.
4 HOUILLE•LIGNITE• AGGLOMERES	.00	8.3 (142.16)	.026 (3.94)	.446	4879.
9 ELECTRICITE DISTRIBUEE	-3.35	9.1 (2.85)	.098 (3.97)	.585	576.
12 MINERAI DE FER	-1.68	8.8 (10.90)	.164 (6.99)	.949	1463.
14 PROD. DE L'ACIER	.00	7.9 (237.11)	.096 (25.60)	.973	2936.
17 MINERAUX DIVERS	.00	7.5 (150.80)	.042 (7.63)	.760	1784.
23 PRODUITS PHARMACEUTIQUES	.00	5.7 (95.91)	.087 (13.01)	.903	434.
24 FONDERIES	-2.03	8.3 (4.73)	.079 (5.56)	.744	581.
25 TRAVAIL DES METAUX	-2.05	10.8 (25.17)	.126 (23.73)	.977	7805.
27 MACHINES OUTILS	-3.20	11.7 (17.11)	.107 (10.94)	.926	4532.
28 EQUIPMENT INDUSTRIEL	-1.92	11.4 (39.20)	.100 (19.09)	.972	13598.
30 MATERIEL D'ARMEMENT	.00	5.6 (63.68)	.137 (13.76)	.913	546.
31 MACHINES DE BUREAU	-2.23	10.7 (25.69)	.200 (14.47)	.965	7055.
33 MATERIEL ELECTRONIQUE PROFESSI	-3.60	12.5 (8.97)	.219 (7.90)	.953	8946.
37 MATERIEL FERROVIAIRE ROULANT	.00	5.3 (54.68)	.082 (7.53)	.756	134.
39 CONSTR. AERONAUTIQUE	.00	8.4 (86.59)	.100 (9.08)	.819	4583.
47 SUCRE	.00	6.5 (81.44)	-.038 (-4.17)	.476	728.
51 FILS ET FIBRES ARTIFICIELS ET	-3.32	10.3 (13.99)	.219 (11.40)	.935	1464.
53 BONNETERIE	-5.91	13.7 (12.69)	.236 (17.91)	.966	3486.
65 INDUSTRIES DIVERSES	-2.61	11.0 (14.14)	.117 (25.41)	.978	5515.
67 RECUPERATION	.00	7.2	.041	.551	1254.

(93.71) (4.80)

NON COMPETITIVE IMPORTS

SECTOR	IMP/DOM.DEMAND	1977 IMPORTS
6 PETROLE BRUT	.98080	58132.0
15 MINERAIS NON FERREUX	.81374	2427.0

AGGREGATE RELATIVE PRICE ELASTICITY, WEIGHTED BY 1977 IMPORTS FOR THE LISTED SECTORS -1.904

AGGREGATE DEMAND ELASTICITY WEIGHTED BY 1977 IMPORTS AND EVALUATED USING 1977 DEMAND 1.035

AVERAGE RATE OF CHANGE ON RELATIVE PRICES = .002
RELATIVE PRICE CHANGE IN LAST YEAR= .993

AVERAGE RATE OF CHANGE ON DOMESTIC PRICE = .039
CHANGE IN LAST YEAR = 1.088

SUMMARY PRICE REGRESSION RESULTS — RELATIVE PRICES FOR THE IMPORTS EQUATIONS

EQUATION TYPE IS : LN(PRICE) = A + B * TIME

	SECTOR	CONSTANT(A)	TIME(B)	RBARSQ	RHO	AVERAGE RATE OF CHANGE
1	AGRICULTURE	.146	-.001	.005	.81[illegible]	.003
2	SYLVICULTURE	.[illegible]98	-.015	.554	.92[illegible]	-.006
3	PECHE	-.157	-.015	.90[illegible]	.74[illegible]	-.020
4	HOUILLE,LIGNITE, AGGLOMERES	-.139	-.019	.97[illegible]	.71[illegible]	-.022
5	COKEFACTION	.186	-.040	.831	.9[illegible]1	-.035
6	PETROLE BRUT	.1[illegible]1	.000	.[illegible]00	.[illegible]50	.000
7	GAZ NATUREL	.1[illegible]1	.014	.740	.9[illegible]1	.009
8	PETROLE RAFFINE	.058	.004	.300	.920	.010
9	ELECTRICITE DISTRIBUEE	-.114	.006	.59[illegible]	.89[illegible]	.005
10	GAZ DISTRIBUE	.[illegible]50	.000	.[illegible]60	.[illegible]50	.000
11	EAU ET CHAUFFAGE URBAIN	.1[illegible]1	.003	.[illegible]03	.[illegible]0[illegible]	.000
12	MINERAI DE FER	.223	.034	.930	.870	.016
13	SIDERURGIE	-.025	-.003	.773	.86[illegible]	-.006
14	PROD. DE L'ACIER	.1[illegible]0	.003	.320	.750	.003
15	MINERAIS NON FERREUX	.1[illegible]1	.003	.300	.[illegible]00	.009
16	METAUX NON FERREUX	-.[illegible]12	.012	.890	.610	.012
17	MINERAUX DIVERS	-.133	.021	.701	.90[illegible]	.017
18	MATER. DE CONTRUCTION	-.134	.005	.31[illegible]	.87[illegible]	.002
19	VERRE	-.169	.016	.651	.94[illegible]	.009
20	CHIMIE MINERALE	.161	.013	.74[illegible]	.77[illegible]	.019
21	CHIMIE ORGANIQUE	.157	.009	.730	.88[illegible]	.016
22	PARACHIMIE	-.829	-.005	.250	.92[illegible]	-.014
23	PRODUITS PHARMACEUTIQUES	-.119	.011	.56[illegible]	.92[illegible]	.008
24	FONDERIES	-.[illegible]47	-.[illegible]08	.23[illegible]	.87[illegible]	-.009
25	TRAVAIL DES METAUX	-.159	.008	.37[illegible]	.933	.002
26	MACHINES AGRICOLES	-.[illegible]37	.[illegible]03	.[illegible]5[illegible]	.91[illegible]	-.001
27	MACHINES OUTILS	-.121	.013	.75[illegible]	.91[illegible]	.011
28	EQUIPMENT INDUSTRIEL	-.[illegible]08	.[illegible]15	.63[illegible]	.91[illegible]	.001
29	MATERIEL BTPS	-.[illegible]23	.[illegible]02	.[illegible]2[illegible]	.69[illegible]	.000
30	MATERIEL D'ARMEMENT	-.67[illegible]	-.[illegible]06	.17	.93[illegible]	-.013

```
$PREP
FURPUR27R342 08/08/83 21:01
END PREP.

$MAP.I ,MAKTARAHW
MAP29R183 08/08-20:01 MAKTARAHW
START=013712, PROG SIZE(I/D)=5709+/2315
END MAP. ERRORS : NONE     RASE MSEC.

@XQT MAKTARAHW
   EQUATION FOR THE NUMBER OF HOURS WORKED PER WEEK
   EQUATION TYPE IS : LN(AHW-ALPHA) = A + B*TIME + C*LN(AHW(T-1))
```

SECTOR	CONSTANT	TIME	AHW(T-1)	RBARSQ	RHO	ALPHA
1 AGRICULTURE,SYLVICULTURE,PECHE	-16.388	-.065	4.912	.987	-.006	35.000
4 PROD. DE COMBUST. MIN. SOLIDES	-7.965	-.125	2.733	.933	.046	34.000
5 PROD. PETROLE ET GAZ NATUREL	-17.788	-.001	5.238	.989	.297	35.000
6 ELECTRICITE,GAZ,EAU	-11.753	-.024	3.456	.938	.283	35.000
7 MINERAIS ET METAUX FE.	-14.091	-.067	4.309	.945	-.220	35.000
9 PROD. MAT. DE CONSTRUCTION	-13.729	-.009	4.223	.984	-.204	35.000
11 CHIMIE DE BASE, FIBRES	-12.158	-.005	3.846	.981	.289	32.000
13 FONDERIE ET TRAVAIL DES MET.	-10.232	-.004	3.361	.985	-.151	32.000
14 CONSTRUCTION MECA.	-11.467	-.005	3.427	.975	-.127	32.000
15 CONSTRUC. ELEC. ET ELECTRON.	-14.466	-.005	4.417	.987	.061	34.000
16 BIENS EQUIP. MENAGER	-12.196	-.008	3.870	.949	-.018	33.000
17 CONSTRUC. AUTO. ET AUTRES	-10.959	-.005	3.556	.989	.257	32.000
18 CONSTRUC. NAV. ET AERO.	-11.162	-.004	3.607	.993	.191	32.000
19 INDUSTRIE TEXTILE ET HAB.	-6.767	-.018	2.323	.515	.040	37.000
20 INDUST. CUIR ET CHAUSS.	-6.943	-.010	2.489	.799	-.232	33.000
21 BOIS,MEUBLES, IND. DIV.	-7.181	-.008	2.599	.892	-.115	31.000
22 INDUST. PAP. ET CAR.	-10.587	-.006	3.480	.938	-.113	31.000
23 IMPRIMERIE,PRESSE,EDITION	-16.195	-.018	4.819	.864	-.031	36.000
24 CAOUTCHOUC ET MAT. PLAST	-11.771	-.004	3.504	.989	-.059	32.000
25 BAT., GENIE CIVIL	-13.181	-.004	4.089	.968	.266	34.000
26 COMMERCE	-11.416	-.006	4.402	.965	-.424	35.000
27 REPAR. ET COM. DE L'AUTO.	-16.498	-.002	4.935	.992	-.048	35.000
28 HOTELS,CAFES,RESTAU.	-15.418	-.005	4.662	.952	-.044	35.000
29 TRANSPORTS	-8.757	-.017	2.988	.966	.184	32.000
30 TELECOMMUNICATIONS ET POSTES	-14.451	-.007	4.435	.994	-.322	34.000
31 SERVICES MARCH. AUX ENTR.	-15.197	-.017	4.575	.991	.026	35.000
32 SERVICES MARCH. AUX PART.	-19.751	-.017	5.813	.992	-.213	35.000
33 LOCATION, CREDIT-BAIL IMMO.	-16.659	-.011	4.989	.953	.328	35.000

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 1 : LN(E/Q) = A + B*TIME + C*DELTA LN(Q)

	CONST	TIME	CHINO	PRAPSQ	RHO
1 AGRICULTURE,SYLVICULTURE,PECHE	3.83	-.08	-.5	.97	.43
2 INDUSTRIES DE LA VIANDE ET LAIT	3.79	-.02	-.23	.74	.70
3 INDUSTRIES AUTRES PROD. ALIM.	3.79	-.05	-.41	.99	.60
4 PROD. DE COMBUST. MIN. SOLIDES	3.69	-.02	-.45	.81	.40
5 PROD. PETROLE ET GAZ NATUREL	3.74	-.05	-.4	.97	.53
6 ELECTRICITE,GAZ,EAU	3.75	-.09	-.51	.94	.72
7 MINERAIS ET METAUX FE.	3.89	-.03	-.5	.73	.45
8 MIN.,METAUX NON FERREUX	3.87	-.08	-.38	.95	.39
9 PROD. MAT. DE CONSTRUCTION	3.82	-.08	-.59	.95	.57
10 INDUSTRIE DU VERRE	3.85	-.07	-.43	.95	.41
11 CHIMIE DE BASE, FIBRES	3.82	-.07	-.44	.87	.49
12 PARACHIMIE ET IND. PHARM.	3.76	-.07	-.44	.98	.51
13 FONDERIE ET TRAVAIL DES MET.	3.79	-.03	-.32	.80	.71
14 CONSTRUCTION MECA.	3.76	-.06	-.41	.96	.48
15 CONSTRUC. ELEC. ET ELECTRON.	3.75	-.06	-.0	.98	.12
16 BIENS EQUIP. MENAGER	3.83	-.09	-.31	.96	.69
17 CONSTRUC. AUTO. ET AUTRES	3.78	-.05	-.24	.92	.37
18 CONSTRUC. NAV. ET AERO.	3.76	-.07	-.44	.91	.55
19 INDUSTRIE TEXTILE ET HAB.	3.78	-.06	-.20	.96	.24
20 INDUST. CUIR ET CHAUSS.	3.77	-.04	-.21	.97	.30
21 BOIS,MEUBLES, IND. DIV.	3.81	-.07	-.1	.98	.09
22 INDUST. PAP. ET CAR.	3.81	-.05	-.29	.95	.37
23 IMPRIMERIE,PRESSE,EDITION	3.74	-.03	-.32	.93	.14
24 CAOUTCHOUC ET MAT. PLAST	3.83	-.05	-.31	.91	.36
25 BAT., GENIE CIVIL	3.86	-.05	-.07	.98	.06
26 COMMERCE	3.78	-.01	-.48	.45	.67

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 1 : LN(E/O) = A + B*TIME + C*DELTA LN(O)

	CONST	TIME	CHLNO	PRAPSO	RHO
27 REPAR. ET COM. DE L'AUTO.	3.88	-.15	-.29	.95	.59
28 HOTELS,CAFES,RESTAU.	3.81	-.11	-.36	.43	.48
29 TRANSPORTS	3.80	-.16	-.50	.89	.58
31 TELECOMMUNICATIONS ET POSTES	3.72	-.17	-.41	.99	-.14
31 SERVICES MARCH. AUX ENTR.	3.80	-.13	-.59	.70	.37
32 SERVICES MARCH. AUX PART.	3.75	-.11	-.23	.89	.25
33 LOCATION, CREDIT-BAIL IMMO.	3.65	.03	-.59	.65	.67
34 ASSURANCES	3.73	-.05	-.59	.86	.66
35 ORGANISMES FINANCIERS	3.77	-.05	-.49	.81	.12

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 2 : LN(F/Q) = A + B*TIME + C*LN(Q) -1.

	CONST	TIME	LN(Q)	RRAPSQ	RHO
1 AGRICULTURE,SYLVICULTURE,PECHE	9.28	-.06	-.97	.99	.62
2 INDUSTRIES DE LA VIANDE ET LAIT	8.83	.11	-1.07	.89	.66
3 INDUSTRIES AUTRES PROD. ALIM.	6.00	-.04	-.38	.99	-.41
4 PROD. DE COMBUST. MIN. SOLIDES	5.36	-.05	-.37	.82	.53
5 PROD. PETROLE ET GAZ NATUREL	6.62	-.01	-.77	.99	.06
6 ELECTRICITE,GAZ,EAU	8.83	-.01	-1.00	.99	.14
7 MINERAIS ET METAUX FE.	8.18	-.01	-.80	.97	-.01
8 MIN.,METAUX NON FERREUX	7.42	-.02	-.86	.98	.67
9 PROD. MAT. DE CONSTRUCTION	7.68	-.03	-.72	.99	.11
10 INDUSTRIE DU VERRE	6.68	-.02	-.67	.99	-.08
11 CHIMIE DE BASE, FIBRES	7.72	-.02	-.76	.99	.26
12 PARACHIMIE ET IND. PHARM.	6.39	-.03	-.53	.99	.37
13 FONDERIE ET TRAVAIL DES MET.	7.09	-.02	-.53	.99	.05
14 CONSTRUCTION MECA.	6.53	-.03	-.44	.99	-.54
15 CONSTRUC. ELEC. ET ELECTRON.	8.20	-.05	-.07	.99	.20
16 BIENS EQUIP. MENAGER	5.81	-.04	-.43	.96	.74
17 CONSTRUC. AUTO. ET AUTRES	6.21	-.02	-.39	.98	-.21
18 CONSTRUC. NAV. ET AERO.	9.22	.00	-1.00	.99	.60
19 INDUSTRIE TEXTILE ET HAB.	6.09	-.04	-.36	.99	-.51
20 INDUST. CUIR ET CHAUSS.	5.39	-.03	-.34	.99	.25
21 BOIS,MEUBLES, IND. DIV.	8.78	-.06	-.17	.99	-.03
22 INDUST. PAP. ET CAR.	5.81	-.03	-.41	.97	.49
23 IMPRIMERIE,PRESSE,EDITION	5.83	-.01	-.39	.92	.36
24 CAOUTCHOUC ET MAT. PLAST	6.49	-.01	-.51	.98	.16
25 BAT., GENIE CIVIL	8.98	-.04	-.15	.97	.36
26 COMMERCE	11.24	.02	-1.00	.91	.47

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 2 : LN(E/Q) = A + B*TIME + C*LN(Q) -1.

	CONST	TIME	LN(Q)	RBARSQ	RHO
27 REPAR. ET COM. DE L'AUTO.	7.38	-.01	-.63	.99	.39
28 HOTELS,CAFES,RESTAU.	6.61	.01	-.48	.80	.18
29 TRANSPORTS	10.43	-.01	-1.00	.99	.03
30 TELECOMMUNICATIONS ET POSTES	9.71	.01	-1.00	.99	.40
31 SERVICES MARCH. AUX ENTR.	9.96	.03	-.96	.95	.31
32 SERVICES MARCH. AUX PART.	10.40	.05	-.94	.84	.24
33 LOCATION, CREDIT-BAIL IMMO.	3.62	.04	.00	.89	.28
34 ASSURANCES	8.49	.03	-1.00	.99	.24
35 ORGANISMES FINANCIERS	8.65	.04	-.84	.98	.29

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 3 : LN(E/Q) = A + B*(E/Q)(T-1) + C*DELTA

		CONST	EQQLAG	CHLNQ	RRARSQ	RHO
1	AGRICULTURE,SYLVICULTURE,PECHE	2.98	.02	-.50	.99	-.59
2	INDUSTRIES DE LA VIANDE ET LAIT	2.59	.03	-.50	.97	-2.29
3	INDUSTRIES AUTRES PROD. ALIM.	2.89	.02	-.45	.99	.46
4	PROD. DE COMBUST. MIN. SOLIDES	3.03	.02	-.50	.92	-.18
5	PROD. PETROLE ET GAZ NATUREL	2.94	.02	-.50	.97	-.60
6	ELECTRICITE,GAZ,EAU	3.03	.02	-.50	.99	.12
7	MINERAIS ET METAUX FE.	3.15	.01	-.50	.92	-.80
8	MIN.,METAUX NON FERREUX	2.96	.02	-.51	.99	-1.49
9	PROD. MAT. DE CONSTRUCTION	3.00	.02	-.50	.99	-.03
10	INDUSTRIE DU VERRE	3.02	.02	-.50	.98	-.55
11	CHIMIE DE BASE, FIBRES	2.99	.02	-.50	.99	-6.91
12	PARACHIMIE ET IND. PHARM.	2.88	.02	-.50	.99	-.62
13	FONDERIE ET TRAVAIL DES MET.	2.91	.02	-.49	.97	-.18
14	CONSTRUCTION MECA.	2.94	.02	-.35	.97	-.21
15	CONSTRUC. ELEC. ET ELECTRON.	2.87	.02	-.23	.97	.37
16	BIENS EQUIP. MENAGER	2.84	.02	-.50	.98	.41
17	CONSTRUC. AUTO. ET AUTRES	2.84	.02	-.50	.97	-.93
18	CONSTRUC. NAV. ET AERO.	2.72	.02	-.50	.99	-4.25
19	INDUSTRIE TEXTILE ET HAB.	2.93	.02	-.29	.95	-.54
20	INDUST. CUIR ET CHAUSS.	2.82	.02	-.39	.98	-.37
21	BOIS,MEUBLES, IND. DIV.	2.97	.02	.00	.98	-.04
22	INDUST. PAP. ET CAR.	2.82	.02	-.50	.99	-1.20
23	IMPRIMERIE,PRESSE,EDITION	2.71	.02	-.50	.93	.03
24	CAOUTCHOUC ET MAT. PLAST	2.89	.02	-.50	.98	-1.13
25	BAT., GENIE CIVIL	2.87	.02	-.50	.98	-.24
26	COMMERCE	2.93	.02	-.50	.91	-.98

Appendix Table 13 Estimation Results of the Labor Productivity Equations Type III with Constrained Coefficients

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 3 : LN(E/Q) = A + B*(E/Q)(T-1) + C*DELTA

	CONST	EOQLAG	CHLNQ	RBARSQ	RHO
27 REPAR. ET COM. DE L'AUTO.	2.96	.02	-.50	.99	-.34
28 HOTELS,CAFES,RESTAU.	2.87	.02	-.50	.70	-.20
29 TRANSPORTS	3.03	.02	-.50	.98	-.52
30 TELECOMMUNICATIONS ET POSTES	2.82	.02	-.50	.99	-2.32
31 SERVICES MARCH. AUX ENTR.	2.95	.02	-.50	.91	-.86
32 SERVICES MARCH. AUX PART.	2.92	.02	-.50	.79	.00
33 LOCATION, CREDIT-BAIL IMMO.	2.77	.02	.00	.83	.56
34 ASSURANCES	2.58	.03	-.50	.99	-2.63
35 ORGANISMES FINANCIERS	3.02	.02	-.50	.97	-7.54

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 3 : LN(E/Q) = A + B*(E/Q)(T-1) + C*DELTA

	CONST	EQQLAG	CHLNQ	RRARSQ	RHO
1 AGRICULTURE,SYLVICULTURE,PECHE	2.99	.02	-.65	.99	.04
2 INDUSTRIES DE LA VIANDE ET LAIT	2.57	.03	-1.09	.97	-.29
3 INDUSTRIES AUTRES PROD. ALIM.	2.89	.02	-.45	.99	.46
4 PROD. DE COMBUST. MIN. SOLIDES	3.02	.02	-.72	.92	.14
5 PROD. PETROLE ET GAZ NATUREL	2.99	.02	-.74	.97	.24
6 ELECTRICITE,GAZ,EAU	3.04	.02	-.67	.99	.40
7 MINERAIS ET METAUX FF.	3.05	.02	-.77	.92	.23
8 MIN.,METAUX NON FERREUX	2.96	.02	-.82	.99	-.07
9 PROD. MAT. DE CONSTRUCTION	3.00	.02	-.59	.99	.21
10 INDUSTRIE DU VERRE	3.01	.02	-.67	.98	.57
11 CHIMIE DE BASE, FIBRES	2.94	.02	-.80	.99	.22
12 PARACHIMIE ET IND. PHARM.	2.88	.02	-.71	.99	.02
13 FONDERIE ET TRAVAIL DES MET.	2.91	.02	-.49	.97	-.18
14 CONSTRUCTION MECA.	2.94	.02	-.35	.97	-.21
15 CONSTRUC. ELEC. ET ELECTRON.	2.87	.02	-.23	.97	.37
16 BIENS EQUIP. MENAGER	2.84	.02	-.54	.98	.44
17 CONSTRUC. AUTO. ET AUTRES	2.82	.02	-.61	.97	-.62
18 CONSTRUC. NAV. ET AERO.	2.79	.02	-.93	.99	.28
19 INDUSTRIE TEXTILE ET HAB.	2.93	.02	-.29	.95	-.54
20 INDUST. CUIR ET CHAUSS.	2.82	.02	-.39	.98	-.37
21 BOIS,MEUBLES, IND. DIV.	2.98	.02	.08	.98	-.07
22 INDUST. PAP. ET CAR.	2.89	.02	-.61	.99	-.31
23 IMPRIMERIE,PRESSE,EDITION	2.67	.03	-.70	.93	.27
24 CAOUTCHOUC ET MAT. PLAST	2.85	.02	-.67	.98	.19
25 BAT., GENIE CIVIL	2.84	.02	-.73	.98	-.23
26 COMMERCE	2.82	.02	-.93	.91	.23

Appendix Table 14 Estimation results of the Labor Productivity Equations Type III with Unconstrained Coefficients

REGRESSION FOR THE FRENCH PRODUCTIVITY EQUATION

EQUATION TYPE 3 : LN(E/Q) = A + B*(E/Q)(T-1) + C*DELTA

	CONST	EQQLAG	CHLNQ	RBARSQ	RHO
27 REPAR. ET COM. DE L'AUTO.	2.95	.02	-.65	.99	.10
28 HOTELS,CAFES,RESTAU.	2.69	.03	-.83	.70	.07
29 TRANSPORTS	3.02	.02	-.65	.98	-.17
30 TELECOMMUNICATIONS ET POSTES	2.88	.02	-1.12	.99	.06
31 SERVICES MARCH. AUX ENTR.	2.83	.02	-1.06	.91	-.12
32 SERVICES MARCH. AUX PART.	2.88	.02	-.77	.79	.04
33 LOCATION, CREDIT-BAIL IMMO.	2.76	.02	.07	.83	.55
34 ASSURANCES	2.76	.02	-.98	.99	.39
35 ORGANISMES FINANCIERS	2.88	.02	-.98	.97	.55

FORECAST FOR: REFERENCE FORECAST SERIE: GOVERNMENT EXPENDITURES

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	758.	848.	892.	936.	977.	1022.	1075.	1119.	1165.
3	PECHE	125.	125.	131.	138.	144.	151.	158.	165.	172.
4	HOUILLE,LIGNITE, AGG	134.	137.	144.	151.	158.	165.	174.	181.	188.
5	COKEFACTION	3.	3.	3.	3.	3.	4.	4.	4.	4.
8	PETROLE RAFFINE	2591.	2669.	2744.	2879.	3006.	3149.	3307.	3442.	3584.
9	ELECTRICITE DISTRIBU	2112.	2352.	2474.	2595.	2710.	2838.	2981.	3103.	3231.
10	GAZ DISTRIBUE	581.	693.	729.	765.	798.	836.	878.	914.	952.
11	EAU ET CHAUFFAGE URB	862.	947.	996.	1045.	1091.	1143.	1200.	1249.	1301.
13	SIDERURGIE	55.	110.	116.	121.	127.	133.	139.	145.	151.
14	PROD. DE L'ACIER	11.	6.	6.	7.	7.	7.	8.	8.	8.
16	METAUX NON FERREUX	268.	353.	371.	390.	407.	426.	447.	466.	485.
17	MINERAUX DIVERS	57.	78.	82.	86.	90.	94.	99.	103.	107.
18	MATER. DE CONTRUCTIO	32.	35.	37.	39.	40.	42.	44.	46.	48.
19	VERRE	47.	54.	57.	60.	62.	65.	68.	71.	74.
20	CHIMIE MINERALE	98.	70.	74.	77.	81.	84.	89.	92.	96.
21	CHIMIE ORGANIQUE	341.	459.	483.	506.	529.	554.	582.	605.	631.
22	PARACHIMIE	494.	607.	638.	670.	699.	733.	769.	801.	834.
23	PRODUITS PHARMACEUTI	170.	210.	221.	232.	242.	253.	266.	277.	289.
24	FONDERIES	337.	375.	394.	414.	432.	453.	475.	495.	515.
25	TRAVAIL DES METAUX	796.	865.	910.	954.	997.	1044.	1096.	1141.	1188.
29	MATERIEL AGRS	1373.	1511.	1589.	1667.	1741.	1824.	1915.	1993.	2076.
30	MATERIEL D'ARMEMENT	5252.	4968.	5225.	5482.	5724.	5996.	6297.	6554.	6825.
31	MACHINES DE BUREAU	75.	107.	113.	118.	123.	129.	136.	141.	147.
32	MATERIEL ELECTRIQUE	487.	532.	559.	585.	610.	640.	675.	703.	732.
33	MATERIEL ELECTRONIQU	1955.	1820.	1914.	2008.	2097.	2196.	2307.	2401.	2500.
35	EQUIPEMENT MENAGER	52.	65.	68.	72.	75.	78.	82.	86.	89.
36	VEHICULES AUTOMOBILE	590.	508.	534.	561.	585.	613.	644.	670.	698.
38	CONSTRUCTION NAVALE	3222.	2334.	2455.	2575.	2689.	2817.	2958.	3079.	3207.
39	CONSTR. AERONAUTIQUE	2159.	3096.	3256.	3416.	3567.	3736.	3924.	4084.	4253.
40	INSTRUMENTS ET MATER	270.	282.	297.	311.	325.	340.	357.	372.	387.
41	VIANDES	1138.	1219.	1282.	1345.	1405.	1471.	1545.	1608.	1675.
42	LAIT ET PRODUITS LAI	540.	555.	584.	612.	639.	670.	703.	732.	762.
43	CONSERVES	162.	166.	175.	183.	191.	200.	210.	219.	228.
44	PAIN ET PATISSERIE	274.	272.	286.	300.	313.	328.	345.	359.	374.
45	PRODUITS DU GRAIN	122.	132.	139.	146.	152.	159.	167.	174.	181.
46	CORPS GRAS ALIMENTAI	70.	69.	73.	76.	80.	83.	87.	91.	95.
47	SUCRE	45.	47.	49.	52.	54.	57.	60.	62.	65.
48	AUTRES PROD. ALIMENT	266.	245.	258.	270.	282.	296.	311.	323.	337.
49	BOISSONS ET ALCOOLS	253.	279.	293.	308.	321.	337.	354.	368.	383.
53	BONNETERIE	15.	12.	13.	13.	14.	14.	15.	16.	16.
54	OUVRAGE EN FILES	75.	78.	82.	86.	90.	94.	99.	103.	107.
56	ARTICLES EN CUIR	11.	12.	13.	13.	14.	14.	15.	16.	16.
57	CHAUSSURES	128.	131.	138.	145.	151.	158.	166.	173.	180.
58	HABILLEMENT	275.	287.	302.	317.	331.	346.	364.	379.	394.
59	PROD DU BOIS	1638.	1748.	1838.	1929.	2014.	2110.	2215.	2306.	2401.
60	PELAIES	157.	168.	177.	185.	194.	203.	213.	222.	231.
61	PAPIER, CARTON	555.	690.	726.	761.	795.	833.	875.	911.	948.
62	PRESSE,IMPRIMERIE,ED	2296.	2502.	2631.	2761.	2883.	3019.	3171.	3301.	3437.
63	PNEUMATIQUES	107.	119.	125.	131.	137.	144.	151.	157.	163.
64	PROD. PLASTIQUES	37.	40.	42.	44.	46.	48.	51.	53.	55.
65	INDUSTRIES DIVERSES	1146.	1098.	1155.	1212.	1265.	1325.	1392.	1448.	1508.
66	BATIMENT ET GENIE CI	6689.	7146.	7515.	7885.	8234.	8624.	9057.	9427.	9817.
69	REPARATION AUTO.	12.	13.	14.	14.	15.	16.	16.	17.	18.
71	HOTELS,CAFES,RESTAUR	95.	101.	106.	111.	116.	122.	128.	133.	139.
72	TRANSP FERROVIAIRES	1225.	1379.	1451.	1522.	1589.	1664.	1748.	1819.	1895.
73	TRANSP ROUTIERS DE M	168.	199.	209.	220.	229.	241.	252.	263.	273.
74	AUTRES TRANSP TERRES	139.	153.	158.	166.	173.	181.	190.	198.	206.
75	NAVIGATION INTERIEUR	14.	18.	19.	20.	21.	22.	23.	24.	25.
77	TRANSPORTS AERIENS	153.	167.	176.	184.	192.	202.	212.	220.	229.
78	SERVICES AUXILIAIRES	185.	201.	211.	222.	232.	243.	255.	265.	276.
79	TELECOMMUNICATIONS	3193.	3523.	3705.	3887.	4059.	4252.	4465.	4641.	4840.
80	SERVICE AUX ENTREPRI	6183.	6803.	6303.	6624.	6917.	7245.	7608.	7919.	8247.
81	LOCATION ET CREDIT-B	1549.	1765.	1856.	1948.	2034.	2131.	2237.	2328.	2425.
82	CREDIT-BAIL IMMOBILI	1015.	1096.	1153.	1209.	1263.	1323.	1389.	1446.	1506.
84	ENSEIGNEMENT (MARCHA	3969.	4513.	4749.	5046.	5269.	5519.	5796.	6033.	6283.

FORECAST FOR: REFERENCE FORECAST — SERIE: GOVERNMENT EXPENDITURES

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
85	SANTE	1881.	2129.	2239.	2349.	2453.	2569.	2698.	2809.	2925.
86	AUTRES SERVICES MARC	3336.	3643.	3831.	4020.	4198.	4396.	4617.	4816.	5005.
87	ASSURANCES	146.	164.	172.	181.	189.	198.	208.	216.	225.
88	FINANCE	160.	166.	175.	183.	191.	200.	211.	219.	228.
	TOTAL	68367.	68444.	73382.	75521.	78863.	82601.	86749.	90289.	94030.

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: GOVERNMENT EXPENDITURES

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	5.77	5.17	4.92	4.43	4.74	5.02	4.08	4.14
3	PECHE	.00	5.17	4.92	4.43	4.74	5.02	4.08	4.14
4	HOUILLE,LIGNITE, AGG	1.11	5.17	4.92	4.43	4.74	5.02	4.08	4.14
5	COKEFACTION	-29.29	5.17	4.92	4.43	4.74	5.02	4.08	4.14
8	PETROLE RAFFINE	.35	5.17	4.92	4.43	4.74	5.02	4.08	4.14
9	ELECTRICITE DISTRIBU	5.53	5.17	4.92	4.43	4.74	5.02	4.08	4.14
10	GAZ DISTRIBUE	9.21	5.17	4.92	4.43	4.74	5.02	4.08	4.14
11	EAU ET CHAUFFAGE URB	4.81	5.17	4.92	4.43	4.74	5.02	4.08	4.14
13	SIDERURGIE	41.82	5.17	4.92	4.43	4.74	5.02	4.08	4.14
14	PROD. DE L'ACIER	-26.15	5.17	4.92	4.43	4.74	5.02	4.08	4.14
16	METAUX NON FERREUX	14.77	5.17	4.92	4.43	4.74	5.02	4.08	4.14
17	MINERAUX DIVERS	16.98	5.17	4.92	4.43	4.74	5.02	4.08	4.14
18	MATER. DE CONTRUCTIO	4.58	5.17	4.92	4.43	4.74	5.02	4.08	4.14
19	VERRE	7.19	5.17	4.92	4.43	4.74	5.02	4.08	4.14
20	CHIMIE MINERALE	-15.48	5.17	4.92	4.43	4.74	5.02	4.08	4.14
21	CHIMIE ORGANIQUE	16.02	5.17	4.92	4.43	4.74	5.02	4.08	4.14
22	PARACHIMIE	10.85	5.17	4.92	4.43	4.74	5.02	4.08	4.14
23	PRODUITS PHARMACEUTI	11.14	5.17	4.92	4.43	4.74	5.02	4.08	4.14
24	FONDERIES	5.49	5.17	4.92	4.43	4.74	5.02	4.08	4.14
25	TRAVAIL DES METAUX	4.24	5.17	4.92	4.43	4.74	5.02	4.08	4.14
29	MATERIEL MTPS	4.91	5.17	4.92	4.43	4.74	5.02	4.08	4.14
30	MATERIEL D'ARMEMENT	-2.74	5.17	4.92	4.43	4.74	5.02	4.08	4.14
31	MACHINES DE BUREAU	19.44	5.17	4.92	4.43	4.74	5.02	4.08	4.14
32	MATERIEL ELECTRIQUE	12.16	5.17	4.92	4.43	4.74	5.02	4.08	4.14
33	MATERIEL ELECTRONIQU	-3.51	5.17	4.92	4.43	4.74	5.02	4.08	4.14
35	EQUIPEMENT MENAGER	11.80	5.17	4.92	4.43	4.74	5.02	4.08	4.14
36	VEHICULES AUTOMOBILE	-7.21	5.17	4.92	4.43	4.74	5.02	4.08	4.14
38	CONSTRUCTION NAVALE	-14.89	5.17	4.92	4.43	4.74	5.02	4.08	4.14
39	CONSTR. AERONAUTIQUE	19.75	5.17	4.92	4.43	4.74	5.02	4.08	4.14
40	INSTRUMENTS ET MATER	2.20	5.17	4.92	4.43	4.74	5.02	4.08	4.14
41	VIANDES	3.50	5.17	4.92	4.43	4.74	5.02	4.08	4.14
42	LAIT ET PRODUITS LAI	1.38	5.17	4.92	4.43	4.74	5.02	4.08	4.14
43	CONSERVES	1.23	5.17	4.92	4.43	4.74	5.02	4.08	4.14
44	PAIN ET PATISSERIE	-.37	5.17	4.92	4.43	4.74	5.02	4.08	4.14
45	PRODUITS DU GRAIN	4.02	5.17	4.92	4.43	4.74	5.02	4.08	4.14
46	CORPS GRAS ALIMENTAI	-.72	5.17	4.92	4.43	4.74	5.02	4.08	4.14
47	SUCRE	2.20	5.17	4.92	4.43	4.74	5.02	4.08	4.14
48	AUTRES PROD. ALIMENT	-4.03	5.17	4.92	4.43	4.74	5.02	4.08	4.14
49	BOISSONS ET ALCOOLS	5.31	5.17	4.92	4.43	4.74	5.02	4.08	4.14
53	BONNETERIE	9.54	5.17	4.92	4.43	4.74	5.02	4.08	4.14
54	OUVRAGE EN FILES	1.98	5.17	4.92	4.43	4.74	5.02	4.08	4.14
56	ARTICLES EN CUIR	4.45	5.17	4.92	4.43	4.74	5.02	4.08	4.14
57	CHAUSSURES	1.17	5.17	4.92	4.43	4.74	5.02	4.08	4.14
58	HABILLEMENT	2.16	5.17	4.92	4.43	4.74	5.02	4.08	4.14
59	PROD DU BOIS	3.30	5.17	4.92	4.43	4.74	5.02	4.08	4.14
60	MEUBLES	3.44	5.17	4.92	4.43	4.74	5.02	4.08	4.14
61	PAPIER, CARTON	11.50	5.17	4.92	4.43	4.74	5.02	4.08	4.14
62	PRESSE,IMPRIMERIE,ED	4.39	5.17	4.92	4.43	4.74	5.02	4.08	4.14
63	PNEUMATIQUES	5.46	5.17	4.92	4.43	4.74	5.02	4.08	4.14
64	PROD. PLASTIQUES	3.98	5.17	4.92	4.43	4.74	5.02	4.08	4.14

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: GOVERNMENT EXPENDITURES

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
65	INDUSTRIES DIVERSES	2.46	5.17	4.92	4.43	4.74	5.02	4.08	4.14
66	BATIMENT ET GENIE CI	3.36	5.17	4.92	4.43	4.74	5.02	4.08	4.14
69	REPARATION AUTO.	4.08	5.17	4.92	4.43	4.74	5.02	4.08	4.14
71	HOTELS,CAFES,RESTAUR	3.11	5.17	4.92	4.43	4.74	5.02	4.08	4.14
72	TRANSP FERROVIAIRES	6.17	5.17	4.92	4.43	4.74	5.02	4.08	4.14
73	TRANSP ROUTIERS DE M	8.84	5.17	4.92	4.43	4.74	5.02	4.08	4.14
74	AUTRES TRANSP TERRES	3.88	5.17	4.92	4.43	4.74	5.02	4.08	4.14
75	NAVIGATION INTERIEUR	13.39	5.17	4.92	4.43	4.74	5.02	4.08	4.14
77	TRANSPORTS AERIENS	4.46	5.17	4.92	4.43	4.74	5.02	4.08	4.14
78	SERVICES AUXILIAIRES	4.23	5.17	4.92	4.43	4.74	5.02	4.08	4.14
79	TELECOMMUNICATIONS	5.04	5.17	4.92	4.43	4.74	5.02	4.08	4.14
80	SERVICE AUX ENTREPRI	-.82	5.17	4.92	4.43	4.74	5.02	4.08	4.14
81	LOCATION ET CREDIT-B	6.74	5.17	4.92	4.43	4.74	5.02	4.08	4.14
83	CREDIT-BAIL IMMOBILI	3.91	5.17	4.92	4.43	4.74	5.02	4.08	4.14
84	ENSEIGNEMENT (MARCHA	8.72	5.17	4.92	4.43	4.74	5.02	4.08	4.14
85	SANTE	6.39	5.17	4.92	4.43	4.74	5.02	4.08	4.14
86	AUTRES SERVICES MARC	4.50	5.17	4.92	4.43	4.74	5.02	4.08	4.14
87	ASSURANCES	5.99	5.17	4.92	4.43	4.74	5.02	4.08	4.14
88	FINANCE	1.86	5.17	4.92	4.43	4.74	5.02	4.08	4.14
	TOTAL	3.12	5.17	4.92	4.43	4.74	5.02	4.08	4.14

FORECAST FOR: REFERENCE FORECAST — SERIE: SUPER MARGIN / EXPORTS

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	359.	375.	387.	404.	423.	445.	467.	490.	513.
2	SYLVICULTURE	3.	4.	4.	4.	4.	4.	4.	4.	4.
3	PECHE	-118.	-121.	-126.	-131.	-136.	-141.	-146.	-151.	-156.
4	HOUILLE,LIGNITE, AGG	-2.	-2.	-2.	-2.	-2.	-2.	-2.	-2.	-2.
5	COKEFACTION	-6.	-6.	-7.	-9.	-12.	-16.	-20.	-25.	-31.
8	PETROLE RAFFINE	389.	444.	455.	468.	484.	502.	520.	540.	560.
13	SIDERURGIE	350.	466.	491.	519.	551.	594.	642.	692.	747.
14	PROD. DE L'ACIER	244.	235.	243.	251.	260.	276.	293.	313.	336.
16	METAUX NON FERREUX	23.	24.	28.	34.	39.	47.	56.	66.	78.
17	MINERAUX DIVERS	30.	32.	32.	32.	32.	32.	32.	32.	31.
18	MATER. DE CONTRUCTIO	92.	111.	121.	133.	145.	158.	172.	187.	204.
19	VERRE	235.	281.	293.	309.	328.	346.	366.	386.	406.
20	CHIMIE MINERALE	264.	335.	349.	347.	356.	359.	363.	366.	369.
21	CHIMIE ORGANIQUE	246.	310.	332.	360.	393.	433.	500.	563.	634.
22	PARACHIMIE	592.	743.	765.	847.	915.	1010.	1115.	1227.	1349.
23	PRODUITS PHARMACEUTI	422.	480.	503.	533.	569.	605.	648.	693.	739.
24	FONDERIES	48.	46.	49.	53.	56.	61.	63.	67.	72.
25	TRAVAIL DES METAUX	591.	629.	652.	684.	719.	750.	782.	813.	843.
26	MACHINES AGRICOLES	336.	312.	321.	350.	389.	446.	499.	555.	617.
27	MACHINES OUTILS	570.	662.	723.	766.	830.	921.	1031.	1111.	1218.
28	EQUIPMENT INDUSTRIEL	2727.	2975.	3226.	3472.	3776.	4200.	4653.	5133.	5636.
29	MATERIEL MIPS	502.	509.	494.	569.	666.	785.	922.	1079.	1259.
31	MACHINES DE BUREAU	223.	259.	275.	286.	306.	326.	348.	371.	394.
32	MATERIEL ELECTRIQUE	336.	371.	428.	492.	565.	647.	740.	846.	965.
33	MATERIEL ELECTRONIQU	422.	519.	552.	577.	615.	659.	705.	749.	791.
34	MATERIEL ELECTRONIQU	273.	323.	338.	355.	373.	395.	418.	444.	471.
35	EQUIPEMENT MENAGER	491.	482.	624.	796.	1003.	1253.	1554.	1916.	2353.
36	VEHICULES AUTOMOBILE	1745.	2110.	2056.	2206.	2372.	2528.	2674.	2835.	2991.
40	INSTRUMENTS ET MATER	242.	282.	325.	374.	429.	492.	564.	645.	736.
41	VIANDES	739.	719.	725.	771.	803.	819.	834.	848.	862.
42	LAIT ET PRODUITS LAI	1244.	1402.	1463.	1538.	1631.	1737.	1847.	1962.	2082.
43	CONSERVES	131.	130.	136.	143.	151.	162.	174.	186.	198.
45	PRODUITS DU GRAIN	481.	611.	627.	658.	693.	731.	772.	814.	856.
46	CORPS GRAS ALIMENTAI	-13.	-15.	-15.	-15.	-16.	-17.	-17.	-18.	-18.
47	SUCRE	248.	416.	424.	435.	449.	465.	482.	499.	518.

FORECAST FOR: REFERENCE FORECAST SERIE: SUPER MARGIN / EXPORTS

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
48	AUTRES PROD. ALIMENT	39.	58.	56.	61.	63.	66.	69.	73.	76.
49	BOISSONS ET ALCOOLS	994.	667.	682.	703.	729.	752.	776.	800.	825.
52	FILS ET FILES	8.	8.	8.	8.	9.	9.	9.	10.	10.
53	BONNETERIE	-35.	-36.	-37.	-40.	-44.	-47.	-50.	-54.	-58.
54	OUVRAGE EN FILES	692.	754.	780.	807.	835.	859.	883.	908.	933.
55	CUIRS ET PEAUX	5.	4.	4.	5.	5.	5.	5.	5.	5.
56	ARTICLES EN CUIR	85.	99.	103.	106.	110.	113.	116.	120.	123.
57	CHAUSSURES	217.	267.	212.	223.	236.	248.	262.	275.	290.
58	HABILLEMENT	918.	992.	992.	992.	992.	992.	992.	992.	992.
59	PROD DU BOIS	-117.	-128.	-132.	-136.	-140.	-144.	-148.	-152.	-157.
60	MEUBLES	-170.	-208.	-224.	-242.	-262.	-295.	-333.	-376.	-423.
61	PAPIER, CARTON	-517.	-665.	-695.	-733.	-779.	-832.	-885.	-942.	-1000.
62	PRESSE,IMPRIMERIE,ED	-30.	-34.	-34.	-35.	-36.	-37.	-37.	-38.	-38.
63	PNEUMATIQUES	319.	364.	377.	401.	425.	450.	474.	499.	524.
64	PROD. PLASTIQUES	66.	78.	82.	86.	90.	95.	99.	103.	107.
65	INDUSTRIES DIVERSES	-651.	-826.	-846.	-872.	-904.	-942.	-974.	-1007.	-1038.
66	COMMERCE	-15643.	-17567.	-18676.	-19945.	-21477.	-23314.	-25291.	-27453.	-29798.
	TOTAL	0.	0.	0.	0.	0.	0.	0.	0.	0.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: SUPER MARGIN / EXPORTS

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	2.69	3.26	4.47	4.84	5.04	4.96	4.88	4.78
2	SYLVICULTURE	5.00	.00	.00	.00	.00	.00	.00	.00
3	PECHE	4.08	3.86	3.86	3.92	3.52	3.51	3.55	3.53
4	HOUILLE,LIGNITE, AGG	-4.68	.00	.00	.00	.00	.00	.00	.00
5	COKEFACTION	-10.93	47.97	41.24	35.58	28.15	26.35	24.97	23.90
6	PETROLE RAFFINE	6.90	2.26	2.96	3.33	3.71	3.74	3.75	3.78
13	SIDERURGIE	15.37	4.98	6.09	6.00	7.89	8.01	7.89	7.97
14	PROD. DE L'ACIER	7.25	2.27	3.51	3.74	5.88	6.35	6.82	7.30
16	METAUX NON FERREUX	2.45	18.97	18.23	17.66	19.30	18.72	18.23	17.81
17	MINERAUX DIVERS	4.17	-.43	-.43	-.43	-.43	-.43	-.43	-.43
18	MATER. DE CONTRUCTIO	9.84	9.33	9.25	9.18	9.02	8.97	8.92	8.89
19	VERRE	9.32	4.43	5.43	5.91	5.78	5.65	5.45	5.19
20	CHIMIE MINERALE	12.57	1.49	2.16	2.43	1.02	.94	.89	.79
21	CHIMIE ORGANIQUE	12.35	7.09	8.33	9.14	12.82	12.84	12.69	12.52
22	PARACHIMIE	12.06	6.18	7.32	8.08	10.40	10.38	10.09	9.87
23	PRODUITS PHARMACEUTI	6.58	4.91	5.85	5.93	7.11	7.14	6.94	6.70
24	FONDERIES	2.95	6.76	6.71	6.71	6.30	6.32	6.38	6.39
25	TRAVAIL DES METAUX	3.17	3.62	4.88	5.18	4.38	4.23	3.91	3.71
26	MACHINES AGRICOLES	-3.72	2.91	10.29	9.86	10.47	12.12	11.28	11.22
27	MACHINES OUTILS	7.77	9.18	6.00	8.33	11.01	9.75	9.98	9.56
28	EQUIPMENT INDUSTRIEL	4.45	8.45	7.61	8.75	11.25	10.78	10.31	9.81
29	MATERIEL MINES	-9.69	18.30	17.53	16.92	18.00	17.45	17.12	16.64
31	MACHINES DE BUREAU	7.78	6.11	4.11	6.98	6.67	6.53	6.58	6.29
32	MATERIEL ELECTRIQUE	6.04	15.20	15.00	14.81	14.53	14.40	14.28	14.18
33	MATERIEL ELECTRONIQU	10.92	6.36	4.60	6.59	7.18	7.01	6.13	5.66
34	MATERIEL ELECTRONIQU	8.83	4.80	4.88	4.95	5.96	6.12	6.09	6.16
35	EQUIPEMENT MENAGER	5.67	29.60	27.52	26.01	24.88	24.01	23.33	22.80
36	VEHICULES AUTOMOBILE	7.36	4.49	5.56	7.56	6.57	6.77	6.03	5.50
40	INSTRUMENTS ET MATER	8.01	15.32	14.97	14.69	14.77	14.58	14.36	14.19
41	VIANDES	-2.08	4.36	4.27	4.29	1.91	1.82	1.73	1.65
42	LAIT ET PRODUITS LAI	6.18	4.36	5.16	6.07	6.48	6.33	6.23	6.13
43	CONSERVES	-.33	3.88	5.12	6.15	7.18	7.03	6.99	6.95
45	PRODUITS DU GRAIN	12.74	2.73	4.88	5.36	5.45	5.65	5.41	5.12
46	CORPS GRAS ALIMENTAI	7.12	2.44	4.12	3.56	3.14	3.18	3.04	2.84
47	SUCRE	29.51	1.81	2.74	3.15	3.61	3.62	3.64	3.67
48	AUTRES PROD. ALIMENT	21.82	2.58	3.31	3.84	4.69	4.74	4.78	4.83
49	BOISSONS ET ALCOOLS	16.24	2.23	3.04	3.63	3.27	3.16	3.14	3.10

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: SUPER MARGIN / EXPORTS

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
52	FILS ET FILES	-1.57	3.57	4.36	4.92	5.41	5.38	5.36	5.20
53	BONNETERIE	.97	4.86	6.27	9.41	7.66	7.43	7.54	6.47
54	OUVRAGE EN FILES	7.55	3.45	3.46	3.45	2.83	2.81	2.82	2.82
55	CUIRS ET PEAUX	-6.83	1.00	4.50	5.41	2.73	2.33	2.45	1.88
56	ARTICLES EN CUIR	8.05	3.39	3.39	3.38	2.97	2.95	2.93	2.90
57	CHAUSSURES	-3.34	4.85	5.11	5.65	5.32	5.27	5.24	5.16
58	HABILLEMENT	3.97	.00	.00	.00	.00	.00	.00	.00
59	PROD DU BOIS	4.93	2.85	2.87	2.88	2.89	2.91	2.92	2.93
60	MEUBLES	10.52	8.01	1.98	8.02	12.87	12.80	12.75	12.70
61	PAPIER, CARTON	13.34	8.61	5.40	6.29	6.75	6.48	6.43	6.16
62	PRESSE,IMPRIMERIE,ED	5.69	.73	2.02	4.21	1.78	1.14	1.23	.93
63	PNEUMATIQUES	6.81	4.21	5.60	6.15	5.69	5.41	5.28	4.99
64	PROD. PLASTIQUES	8.66	4.02	5.21	5.35	4.56	4.32	4.06	3.81
65	INDUSTRIES DIVERSES	12.65	2.39	3.15	4.29	3.57	3.40	3.34	3.12
68	COMMERCE	5.97	6.31	6.79	7.68	8.55	8.48	8.55	8.54
	TOTAL	.00	.00	.00	.00	.00	.00	.00	.00

FORECAST FOR: REFERENCE FORECAST — SERIE: SUPER MARGIN / PCE

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	-20308.	-20028.	-20059.	-20294.	-20524.	-20553.	-20660.	-20727.	-20705.
2	SYLVICULTURE	-49.	-45.	-42.	-39.	-35.	-32.	-28.	-24.	-21.
3	PECHE	-3370.	-3612.	-3630.	-3671.	-3731.	-3753.	-3792.	-3826.	-3838.
4	HOUILLE,LIGNITE, AGG	-589.	-623.	-593.	-526.	-452.	-414.	-357.	-304.	-261.
5	COKEFACTION	-18.	-19.	-19.	-18.	-7.	-5.	-1.	3.	6.
8	PETROLE RAFFINE	-3179.	-3369.	-3364.	-3447.	-3605.	-3675.	-3785.	-3888.	-3945.
14	PROD. DE L'ACIER	-94.	-95.	-100.	-101.	-103.	-106.	-108.	-111.	-113.
16	METAUX NON FERREUX	-69.	-79.	-65.	-86.	-88.	-93.	-95.	-97.	-100.
17	MINERAUX DIVERS	-37.	-38.	-39.	-39.	-39.	-40.	-40.	-40.	-41.
18	MATER. DE CONTRUCTIO	-1406.	-1614.	-1647.	-1688.	-1744.	-1787.	-1831.	-1871.	-1896.
19	VERRE	-1018.	-1069.	-1104.	-1127.	-1150.	-1190.	-1216.	-1242.	-1263.
20	CHIMIE MINERALE	-28.	-31.	-32.	-33.	-33.	-34.	-35.	-36.	-37.
22	PARACHIMIE	-4679.	-4893.	-5027.	-5227.	-5462.	-5647.	-5851.	-6049.	-6201.
23	PRODUITS PHARMACEUTI	-6814.	-7405.	-7746.	-8026.	-8442.	-8763.	-9089.	-9412.	-9718.
25	TRAVAIL DES METAUX	-2392.	-2318.	-2372.	-2442.	-2535.	-2610.	-2684.	-2756.	-2804.
26	MACHINES AGRICOLES	-22.	-25.	-25.	-26.	-27.	-27.	-28.	-29.	-29.
31	MACHINES DE BUREAU	-17.	-18.	-21.	-22.	-22.	-24.	-25.	-26.	-28.
32	MATERIEL ELECTRIQUE	-973.	-1015.	-1060.	-1102.	-1149.	-1194.	-1234.	-1272.	-1305.
34	MATERIEL ELECTRONIQU	-1860.	-2268.	-2491.	-2563.	-2602.	-2795.	-2901.	-3023.	-3172.
35	EQUIPEMENT MENAGER	-2908.	-2930.	-3059.	-3164.	-3184.	-3375.	-3472.	-3586.	-3733.
36	VEHICULES AUTOMOBILE	-905.	-915.	-938.	-952.	-979.	-1008.	-1034.	-1061.	-1081.
40	INSTRUMENTS ET MATER	-3028.	-3319.	-3474.	-3583.	-3704.	-3851.	-3958.	-4060.	-4147.
41	VIANDES	-14754.	-15716.	-16034.	-16218.	-16410.	-16657.	-16874.	-17090.	-17280.
42	LAIT ET PRODUITS LAI	-5400.	-5586.	-5694.	-5806.	-5937.	-6041.	-6165.	-6286.	-6383.
43	CONSERVES	-2049.	-2102.	-2119.	-2231.	-2281.	-2349.	-2408.	-2468.	-2527.
44	PAIN ET PATISSERIE	-1000.	-1030.	-1045.	-1050.	-1054.	-1065.	-1079.	-1083.	-1092.
45	PRODUITS DU GRAIN	-1289.	-1298.	-1322.	-1351.	-1378.	-1406.	-1436.	-1464.	-1495.
46	CORPS GRAS ALIMENTAI	-929.	-1018.	-1045.	-1016.	-1038.	-1032.	-1041.	-1048.	-1043.
47	SUCRE	-130.	-131.	-132.	-133.	-134.	-134.	-136.	-137.	-138.
48	AUTRES PROD. ALIMENT	-3277.	-3226.	-3272.	-3326.	-3395.	-3443.	-3503.	-3561.	-3601.
49	BOISSONS ET ALCOOLS	-4567.	-4580.	-4654.	-4819.	-4968.	-5084.	-5216.	-5341.	-5440.
50	TABACS ET PROD.	-823.	-862.	-878.	-887.	-906.	-918.	-934.	-949.	-959.
52	FILS ET FILES	-643.	-620.	-634.	-643.	-657.	-667.	-675.	-682.	-684.
53	BONNETERIE	-5296.	-5453.	-5584.	-5743.	-5959.	-6075.	-6216.	-6337.	-6396.
54	OUVRAGE EN FILES	-314.	-3198.	-3320.	-3360.	-3395.	-3476.	-3516.	-3554.	-3590.
56	ARTICLES EN CUIR	-1337.	-1384.	-1424.	-1459.	-1493.	-1547.	-1589.	-1635.	-1678.
57	CHAUSSURES	-4135.	-4129.	-4215.	-4256.	-4393.	-4491.	-4581.	-4672.	-4741.
58	HABILLEMENT	-10133.	-10145.	-10284.	-10270.	-10549.	-10758.	-10987.	-11222.	-11349.
59	PROD DU BOIS	-331.	-326.	-329.	-339.	-349.	-356.	-364.	-372.	-377.

FORECAST FOR: REFERENCE FORECAST SERIE: SUPER MARGIN / PCE

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
60	MEUBLES	-12363.	-12676.	-13376.	-13778.	-14152.	-14835.	-15299.	-15779.	-16266.
61	PAPIER- CARTON	-1377.	-1529.	-1638.	-1682.	-1719.	-1818.	-1876.	-1938.	-2006.
62	PRESSE-IMPRIMERIE-ED	-3670.	-3915.	-3967.	-4048.	-4166.	-4250.	-4342.	-4432.	-4484.
63	PNEUMATIQUES	-1455.	-1538.	-1577.	-1599.	-1641.	-1690.	-1738.	-1771.	-1805.
64	PROD. PLASTIQUES	-1226.	-1360.	-1322.	-1378.	-1448.	-1489.	-1544.	-1595.	-1629.
65	INDUSTRIES DIVERSES	-7761.	-8472.	-8788.	-9051.	-9346.	-9694.	-9990.	-10288.	-10542.
67	RECUPERATION	-1526.	-1253.	-1332.	-1383.	-1436.	-1512.	-1558.	-1599.	-1637.
68	COMMERCE	142153.	147187.	150819.	154095.	157819.	161759.	165278.	168742.	171573.
	TOTAL	0.	0.	0.	0.	0.	0.	0.	0.	0.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: SUPER MARGIN / PCE

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	-.69	.13	1.20	1.13	.14	.52	.32	-.10
2	SYLVICULTURE	-8.15	-6.80	-8.43	-9.79	-9.36	-11.67	-13.22	-14.88
3	PECHE	3.52	.51	1.11	1.64	.60	1.64	.88	.32
4	HOUILLE-LIGNITE- AGG	2.89	-4.79	-11.41	-13.98	-8.42	-13.72	-14.95	-14.02
5	COKEFACTION	4.08	-2.87	-25.36	-47.29	-28.98	-84.52	.00	81.37
8	PETROLE RAFFINE	3.10	.43	1.86	4.58	1.97	2.98	2.72	1.46
14	PROD. DE L'ACIER	.65	4.22	1.54	1.48	3.69	1.92	2.00	1.96
16	METAUX NON FERREUX	7.20	6.68	2.04	1.73	5.25	2.48	2.59	2.75
17	MINERAUX DIVERS	1.20	1.24	.47	1.14	1.48	.60	.83	.18
18	MATER. DE CONTRUCTIO	7.16	2.01	2.49	3.35	2.47	2.40	2.23	1.35
19	VERRE	2.46	3.29	2.06	2.40	3.12	2.19	2.14	1.72
20	CHIMIE MINERALE	5.41	3.86	2.12	1.58	3.32	2.15	2.18	2.39
22	PARACHIMIE	2.27	2.73	3.99	4.89	3.39	3.60	3.40	2.56
23	PRODUITS PHARMACEUTI	8.25	4.60	4.39	4.39	3.81	3.72	3.55	3.25
25	TRAVAIL DES METAUX	-1.55	2.31	2.97	3.78	2.97	2.85	2.68	1.74
26	MACHINES AGRICOLES	5.53	.93	2.77	3.70	1.95	2.59	2.40	1.35
31	MACHINES DE BUREAU	4.51	16.52	2.40	.84	10.87	4.15	4.86	5.18
32	MATERIEL ELECTRIQUE	2.16	4.39	4.00	4.20	3.92	3.41	3.08	2.55
34	MATERIEL ELECTRONIQU	10.41	9.86	2.88	1.58	7.39	5.81	4.20	4.94
35	EQUIPEMENT MENAGER	.39	5.76	2.09	.63	6.01	2.68	3.27	4.10
36	VEHICULES AUTOMOBILE	.56	2.51	1.51	2.80	3.01	2.56	2.57	1.93
40	INSTRUMENTS ET MATER	4.76	4.69	3.12	3.39	3.93	2.82	2.58	2.13
41	VIANDES	3.38	2.02	1.15	1.18	1.50	1.31	1.28	1.11
42	LAIT ET PRODUITS LAI	1.70	1.86	2.04	2.26	1.35	2.07	1.95	1.55
43	CONSERVES	1.29	3.65	2.39	2.27	2.96	2.53	2.49	2.39
44	PAIN ET PATISSERIE	1.50	1.47	.46	.38	1.06	.82	.87	.85
45	PRODUITS DU GRAIN	3.27	2.49	2.18	1.89	2.08	2.18	2.10	2.01
46	CORPS GRAS ALIMENTAI	4.69	-1.31	1.14	2.10	-.56	.89	.64	-.42
47	SUCRE	-3.28	.98	.54	.83	.66	.82	.81	.68
48	AUTRES PROD. ALIMENT	-.78	1.41	1.67	2.06	1.41	1.76	1.65	1.14
49	BOISSONS ET ALCOOLS	.14	2.48	2.68	3.08	2.34	2.60	2.40	1.85
50	TABACS ET PROD.	2.37	1.36	1.53	2.07	1.34	1.75	1.63	.97
52	FILS ET FILES	-4.71	2.27	1.48	2.17	1.53	1.24	1.01	.27
53	BONNETERIE	1.47	2.39	2.86	3.75	1.95	2.32	1.95	.93
54	OUVRAGE EN FILES	1.45	3.81	1.18	1.05	2.38	1.16	1.09	1.01
56	ARTICLES EN CUIR	1.01	4.35	2.46	2.35	3.62	2.73	2.86	2.61
57	CHAUSSURES	-.06	2.07	1.92	2.26	2.22	2.12	1.99	1.48
58	HABILLEMENT	-.56	-.60	1.84	2.71	1.98	2.13	2.14	1.13
59	PROD DU BOIS	-.80	1.15	2.81	3.09	1.83	2.34	2.09	1.46
60	MEUBLES	1.26	5.52	3.00	2.72	4.83	3.12	3.14	3.09
61	PAPIER- CARTON	5.38	7.14	2.69	2.20	5.78	3.17	3.32	3.52
62	PRESSE-IMPRIMERIE-ED	3.29	1.32	2.03	2.91	2.04	2.14	2.08	1.17
63	PNEUMATIQUES	2.68	2.82	1.79	2.52	3.05	2.39	2.38	1.89
64	PROD. PLASTIQUES	2.96	1.71	4.19	5.13	2.82	3.65	3.33	2.12
65	INDUSTRIES DIVERSES	4.48	3.74	2.98	3.27	3.72	3.86	2.98	2.47
67	RECUPERATION	-9.38	6.26	3.84	3.85	5.29	3.45	2.60	2.42

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: SUPER MARGIN / PCE

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
68	COMMERCE	1.76	2.47	2.17	2.42	2.50	2.18	2.11	1.68
	TOTAL	.00	.00	.00	.00	.00	.00	.00	.00

FORECAST FOR: REFERENCE FORECAST — SERIE: SUPER MARGIN / PDE

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	98.	99.	103.	107.	108.	107.	107.	106.	108.
2	SYLVICULTURE	30.	31.	32.	33.	33.	33.	33.	33.	33.
25	TRAVAIL DES METAUX	1143.	1161.	1202.	1244.	1261.	1247.	1252.	1242.	1265.
26	MACHINES AGRICOLES	-1173.	-1192.	-1236.	-1281.	-1298.	-1282.	-1287.	-1275.	-1299.
27	MACHINES OUTILS	256.	253.	262.	271.	274.	271.	273.	271.	276.
28	EQUIPMENT INDUSTRIEL	3015.	3063.	3172.	3285.	3327.	3286.	3301.	3274.	3337.
29	MATERIEL MIPS	-1054.	-1069.	-1105.	-1141.	-1154.	-1141.	-1148.	-1142.	-1164.
31	MACHINES DE BUREAU	-622.	-628.	-644.	-661.	-666.	-659.	-667.	-669.	-683.
32	MATERIEL ELECTRIQUE	51.	52.	54.	56.	57.	56.	56.	56.	57.
33	MATERIEL ELECTRONIQU	629.	632.	649.	663.	667.	661.	670.	674.	687.
34	MATERIEL ELECTRONIQU	-3.	-3.	-3.	-4.	-4.	-4.	-4.	-4.	-4.
35	EQUIPEMENT MENAGER	10.	11.	11.	11.	12.	12.	12.	12.	12.
36	VEHICULES AUTOMOBILE	-791.	-793.	-821.	-848.	-858.	-848.	-853.	-848.	-864.
40	INSTRUMENTS ET MATER	-189.	-192.	-198.	-205.	-207.	-205.	-206.	-205.	-209.
60	MEUBLES	269.	271.	279.	287.	292.	291.	292.	291.	295.
65	INDUSTRIES DIVERSES	3.	3.	3.	3.	3.	3.	3.	3.	3.
67	RECUPERATION	-231.	-229.	-233.	-239.	-246.	-247.	-248.	-248.	-249.
68	COMMERCE	-1444.	-1431.	-1525.	-1580.	-1601.	-1582.	-1587.	-1573.	-1602.
	TOTAL	0.	0.	0.	0.	0.	0.	0.	0.	0.

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: SUPER MARGIN / PDE

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	.83	3.63	3.12	1.36	-1.23	.33	-.92	1.86
2	SYLVICULTURE	.77	3.82	3.68	1.42	-1.40	.35	-.71	1.78
25	TRAVAIL DES METAUX	.79	3.52	3.56	1.37	-1.12	.40	-.81	1.81
26	MACHINES AGRICOLES	.82	3.63	3.65	1.33	-1.23	.37	-.89	1.89
27	MACHINES OUTILS	.76	3.37	3.32	1.24	-1.10	.56	-.61	1.88
28	EQUIPMENT INDUSTRIEL	.80	3.57	3.55	1.27	-1.22	.45	-.89	1.92
29	MATERIEL MIPS	.71	3.42	3.26	1.11	-1.21	.44	-.52	1.98
31	MACHINES DE BUREAU	.47	2.81	2.34	.72	-1.05	1.28	-.34	2.07
32	MATERIEL ELECTRIQUE	.78	3.52	3.56	1.34	-1.14	.39	-.81	1.84
33	MATERIEL ELECTRONIQU	.28	2.65	2.13	.68	-.92	1.37	.52	2.13
34	MATERIEL ELECTRONIQU	1.12	3.48	3.56	1.38	-.68	.23	-.91	1.83
35	EQUIPEMENT MENAGER	4.45	.00	1.67	3.28	1.59	.00	.00	.00
36	VEHICULES AUTOMOBILE	.74	3.47	3.80	1.24	-1.16	.52	-.67	1.90
40	INSTRUMENTS ET MATER	.74	3.45	3.38	1.28	-1.16	.52	-.68	1.88
60	MEUBLES	.38	2.67	2.86	1.72	-.25	.48	-.25	1.13
65	INDUSTRIES DIVERSES	2.25	4.35	.00	4.17	.00	.00	.00	.00
67	RECUPERATION	-.51	2.06	2.60	2.58	.63	.38	-.06	.50
68	COMMERCE	.94	3.61	3.67	1.32	-1.20	.33	-.92	1.85
	TOTAL	.00	.00	.00	.00	.00	.00	.00	.00

FORECAST FOR: REFERENCE FORECAST SERIE: V.A.T. ON PCE

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	3748.	3765.	3812.	3761.	3804.	3813.	3837.	3852.	3852.
2	SYLVICULTURE	19.	15.	16.	15.	13.	12.	11.	9.	8.
3	PECHE	463.	498.	459.	504.	513.	516.	522.	527.	529.
4	HOUILLE+LIGNITE+ AGG	371.	396.	410.	368.	322.	299.	263.	230.	204.
5	COKEFACTION	24.	22.	24.	23.	21.	20.	19.	18.	17.
8	PETROLE RAFFINE	13850.	14739.	14724.	15026.	15713.	16156.	16550.	17015.	17295.
9	ELECTRICITE DISTRIBU	2704.	3280.	3423.	3937.	3503.	3621.	3708.	3797.	3838.
10	GAZ DISTRIBUE	1137.	1368.	1368.	1385.	1422.	1449.	1478.	1501.	1529.
11	EAU ET CHAUFFAGE URB	271.	300.	312.	312.	319.	326.	332.	338.	344.
13	SIDERURGIE	106.	105.	223.	234.	244.	256.	269.	280.	291.
14	PROD. DE L'ACIER	113.	123.	117.	119.	121.	125.	128.	130.	133.
16	METAUX NON FERREUX	119.	152.	159.	166.	172.	180.	188.	195.	202.
17	MINERAUX DIVERS	42.	45.	48.	49.	50.	51.	52.	53.	54.
18	MATER. DE CONTRUCTIO	821.	834.	962.	996.	1019.	1044.	1070.	1094.	1109.
19	VERRE	411.	438.	441.	456.	467.	482.	493.	504.	513.
20	CHIMIE MINERALE	166.	187.	148.	154.	159.	165.	171.	177.	183.
21	CHIMIE ORGANIQUE	161.	199.	228.	239.	250.	262.	275.	286.	298.
22	PARACHIMIE	3003.	3193.	3247.	3377.	3529.	3685.	3788.	3918.	4014.
23	PRODUITS PHARMACEUTI	2365.	2654.	2652.	2810.	2933.	3068.	3159.	3271.	3378.
24	FONDERIES	73.	81.	85.	90.	94.	98.	103.	107.	112.
25	TRAVAIL DES METAUX	878.	884.	885.	912.	945.	973.	1001.	1028.	1047.
26	MACHINES AGRICOLES	22.	26.	23.	23.	24.	24.	25.	25.	25.
27	MACHINES OUTILS	134.	108.	139.	133.	134.	139.	138.	141.	143.
28	EQUIPMENT INDUSTRIEL	246.	243.	243.	241.	238.	237.	246.	255.	262.
29	MATERIEL MPS	342.	357.	374.	384.	393.	404.	428.	442.	459.
31	MACHINES DE BUREAU	323.	422.	326.	326.	326.	324.	337.	349.	359.
32	MATERIEL ELECTRIQUE	809.	905.	898.	933.	969.	1005.	1040.	1072.	1101.
33	MATERIEL ELECTRONIQU	1659.	1623.	1640.	1654.	1670.	1692.	1760.	1824.	1877.
34	MATERIEL ELECTRONIQU	2643.	2527.	2733.	2811.	2854.	3065.	3181.	3314.	3428.
35	EQUIPEMENT MENAGER	2072.	2055.	2210.	2257.	2272.	2408.	2477.	2558.	2662.
36	VEHICULES AUTOMOBILE	8730.	8790.	9001.	9138.	9381.	9650.	9903.	10162.	10363.
38	CONSTRUCTION NAVALE	637.	483.	483.	506.	529.	553.	581.	605.	630.
39	CONSTR. AERONAUTIQUE	282.	447.	419.	439.	457.	479.	502.	522.	540.
40	INSTRUMENTS ET MATER	1405.	1541.	1599.	1648.	1702.	1767.	1818.	1866.	1907.
41	VIANDES	3974.	4211.	4332.	4384.	4439.	4508.	4570.	4631.	4685.
42	LAIT ET PRODUITS LAI	1916.	1983.	2021.	2062.	2109.	2147.	2193.	2236.	2272.
43	CONSERVES	615.	653.	654.	670.	685.	706.	724.	742.	760.
44	PAIN ET PATISSERIE	1051.	1089.	1099.	1104.	1109.	1122.	1132.	1142.	1153.
45	PRODUITS DU GRAIN	595.	637.	651.	665.	678.	693.	708.	723.	738.
46	CORPS GRAS ALIMENTAI	288.	319.	311.	315.	322.	320.	323.	326.	325.
47	SUCRE	174.	167.	167.	168.	169.	170.	171.	173.	174.
48	AUTRES PROD. ALIMENT	1412.	1361.	1469.	1433.	1463.	1485.	1512.	1537.	1555.
49	BOISSONS ET ALCOOLS	2584.	2567.	2661.	2733.	2818.	2885.	2961.	3033.	3091.
50	TABACS ET PROD.	883.	926.	938.	952.	972.	985.	1002.	1019.	1028.
52	FILS ET FILES	245.	207.	228.	231.	236.	239.	242.	245.	246.
53	BONNETERIE	2202.	2247.	2322.	2388.	2478.	2524.	2585.	2635.	2660.
54	OUVRAGE EN FILES	1829.	1882.	1954.	1978.	1999.	2047.	2072.	2095.	2117.
56	ARTICLES EN CUIR	767.	782.	817.	837.	857.	888.	912.	938.	963.
57	CHAUSSURES	2013.	1978.	2053.	2094.	2141.	2189.	2234.	2280.	2314.
58	HABILLEMENT	6549.	6448.	6587.	6710.	6893.	7031.	7183.	7338.	7422.
59	PROD DU BOIS	733.	737.	762.	796.	828.	861.	898.	931.	962.
60	MEUBLES	5017.	5057.	5413.	5571.	5722.	5908.	6169.	6357.	6546.
61	PAPIER. CARTON	1147.	1338.	1366.	1429.	1466.	1548.	1602.	1657.	1717.
62	PRESSE+IMPRIMERIE+ED	2402.	2770.	2615.	2679.	2762.	2823.	2902.	2971.	3019.
63	PNEUMATIQUES	905.	958.	918.	992.	1018.	1049.	1075.	1101.	1123.
64	PROD. PLASTIQUES	659.	695.	657.	695.	720.	740.	767.	793.	810.
65	INDUSTRIES DIVERSES	5358.	5857.	6060.	6246.	6454.	6697.	6917.	7116.	7297.
66	BATIMENT ET GENIE CI	22472.	22827.	22729.	22918.	23102.	23292.	23544.	23830.	23973.
69	REPARATION AUTO.	3673.	3879.	3911.	3943.	4028.	4122.	4206.	4278.	4339.
70	REPARATIONS DIVERSES	553.	567.	561.	563.	558.	561.	557.	554.	552.
71	HOTELS+CAFES+RESTAUR	6212.	6429.	6577.	6568.	6660.	6705.	6759.	6817.	6847.
72	TRANSP FERROVIAIRES	743.	783.	777.	783.	789.	783.	785.	796.	814.
73	TRANSP ROUTIERS DE M	278.	299.	346.	363.	379.	397.	417.	434.	452.
74	AUTRES TRANSP TERRES	903.	951.	973.	970.	972.	991.	999.	1009.	1023.
75	NAVIGATION INTERIEUR	11.	12.	15.	16.	16.	17.	18.	19.	19.

FORECAST FOR: REFERENCE FORECAST SERIE: V.A.T. ON PCE

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
76	TRANSPORTS MARITIMES	5.	5.	5.	5.	5.	4.	4.	4.	4.
77	TRANSPORTS AERIENS	229.	291.	255.	259.	266.	265.	267.	273.	289.
78	SERVICES AUXILIAIRES	584.	643.	659.	669.	684.	683.	690.	704.	741.
79	TELECOMMUNICATIONS	1.	1.	1.	1.	1.	1.	1.	1.	1.
80	SERVICE AUX ENTREPRI	5281.	5511.	5326.	5423.	5524.	5623.	5746.	5862.	5955.
82	LOGEMENT	208.	230.	238.	241.	251.	256.	262.	269.	275.
84	ENSEIGNEMENT (MARCHA	179.	210.	210.	217.	224.	231.	239.	246.	253.
85	SANTE	1419.	1481.	1485.	1717.	1752.	1788.	1821.	1853.	1885.
86	AUTRES SERVICES MARC	3019.	3403.	3352.	3388.	3449.	3491.	3535.	3571.	3598.
	TOTAL	136494.	148107.	141458.	150078.	153558.	157044.	160534.	164001.	166938.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: V.A.T. ON PCE

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	.23	-1.40	1.27	1.20	.23	.62	.40	-.01
2	SYLVICULTURE	-11.15	6.25	-8.43	-9.79	-9.36	-11.67	-13.22	-14.88
3	PECHE	3.71	.10	1.17	1.69	.67	1.11	.94	.40
4	HOUILLE+LIGNITE+ AGG	3.31	3.65	-11.33	-12.56	-7.21	-11.77	-12.60	-11.35
5	COKEFACTION	-4.26	8.46	-5.58	-5.62	-5.63	-5.63	-5.68	-5.69
8	PETROLE RAFFINE	1.93	2.68	2.16	4.57	2.14	3.11	2.81	1.64
9	ELECTRICITE DISTRIBU	10.14	4.37	.40	1.92	3.36	2.42	2.38	2.68
10	GAZ DISTRIBUE	9.69	1.19	.36	2.66	1.99	2.03	1.91	1.51
11	EAU ET CHAUFFAGE URB	5.21	3.94	.14	2.68	2.18	1.91	1.83	1.68
13	SIDERURGIE	-.47	112.34	4.92	4.43	4.78	5.02	4.98	4.14
14	PROD. DE L'ACIER	4.33	-5.02	1.63	1.56	3.72	2.60	2.06	2.62
16	METAUX NON FERREUX	13.02	4.73	4.13	3.70	4.87	4.35	3.69	3.79
17	MINERAUX DIVERS	3.51	6.42	1.91	2.21	2.59	2.27	1.99	1.62
18	MATER. DE CONTRUCTIO	.79	15.30	2.51	3.36	2.49	2.42	2.25	1.38
19	VERRE	3.23	2.00	2.13	2.45	3.16	2.26	2.19	1.79
20	CHIMIE MINERALE	6.14	-20.61	3.63	3.14	4.11	3.76	3.25	3.39
21	CHIMIE ORGANIQUE	11.18	19.53	4.92	4.43	4.79	5.02	4.98	4.14
22	PARACHIMIE	3.11	1.68	4.02	4.49	3.44	3.66	3.42	2.57
23	PRODUITS PHARMACEUTI	5.93	1.42	4.39	4.40	3.82	3.74	3.55	3.26
24	FONDERIES	5.34	5.47	4.92	4.43	4.79	5.02	4.98	4.14
25	TRAVAIL DES METAUX	-4.31	10.11	3.02	3.63	2.97	2.92	2.67	1.89
26	MACHINES AGRICOLES	8.71	-11.72	1.58	1.99	.84	2.34	2.24	1.37
27	MACHINES OUTILS	-10.22	22.75	-.17	.33	.33	2.47	2.41	1.73
28	EQUIPMENT INDUSTRIEL	-.61	.14	-1.13	-1.14	-.51	3.99	3.59	2.63
29	MATERIEL MTPS	2.17	4.71	2.61	2.41	2.97	4.91	4.15	2.79
31	MACHINES DE BUREAU	14.30	-22.24	-.75	-.67	.12	3.90	3.79	2.72
32	MATERIEL ELECTRIQUE	5.77	-.74	3.82	3.92	3.70	3.47	3.10	2.65
33	MATERIEL ELECTRONIQU	-1.39	1.04	.89	.95	1.36	3.99	3.60	2.91
34	MATERIEL ELECTRONIQU	11.44	7.71	2.88	1.54	7.37	3.79	4.19	4.93
35	EQUIPEMENT MENAGER	-.41	7.56	2.10	.67	5.98	2.87	3.26	4.08
36	VEHICULES AUTOMOBILE	.38	2.47	1.45	2.66	2.87	2.62	2.62	1.98
38	CONSTRUCTION NAVALE	-12.65	.00	4.83	4.38	4.70	5.01	4.98	4.14
39	CONSTR. AERONAUTIQUE	25.90	-6.38	4.75	4.31	4.62	4.92	4.88	4.05
40	INSTRUMENTS ET MATER	4.73	3.79	3.03	3.31	3.80	2.91	2.64	2.19
41	VIANDES	3.72	1.42	1.21	1.24	1.56	1.38	1.34	1.17
42	LAIT ET PRODUITS LAI	1.73	1.84	2.09	2.30	1.80	2.12	1.99	1.61
43	CONSERVES	3.04	.17	2.43	2.30	2.99	2.58	2.52	2.42
44	PAIN ET PATISSERIE	1.79	.88	.53	.45	1.12	.89	.93	.92
45	PRODUITS DU GRAIN	3.47	2.17	2.24	1.98	2.19	2.24	2.14	2.05
46	CORPS GRAS ALIMENTAI	5.24	-2.41	1.20	2.15	-.47	.96	.71	-.33
47	SUCRE	-2.59	-.16	.63	.52	.75	.92	.89	.77
48	AUTRES PROD. ALIMENT	-1.82	3.51	1.72	2.18	1.47	1.81	1.69	1.19
49	BOISSONS ET ALCOOLS	-.33	3.66	2.72	3.10	2.38	2.64	2.44	1.89
50	TABACS ET PROD.	2.41	1.28	1.63	2.07	1.34	1.75	1.63	.97
52	FILS ET FILES	-8.08	9.91	1.48	2.17	1.53	1.24	1.01	.27

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: V.A.T. ON PCE

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
53	BONNETERIE	1.02	3.33	2.86	3.75	1.95	2.32	1.96	.93
54	OUVRAGE EN FILES	1.44	3.85	1.21	1.08	2.40	1.19	1.12	1.03
56	ARTICLES EN CUIR	.97	4.85	2.46	2.36	3.63	2.79	2.86	2.61
57	CHAUSSURES	-.87	3.81	1.96	2.28	2.25	2.16	2.02	1.51
58	HABILLEMENT	-.77	2.15	1.87	2.73	2.01	2.15	2.16	1.16
59	PROD DU BOIS	2.39	3.46	4.34	4.07	3.97	4.32	3.57	3.45
60	MEUBLES	.40	7.00	2.95	2.73	4.66	3.83	3.04	2.97
61	PAPIER, CARTON	8.01	3.61	3.08	2.60	5.56	3.50	3.46	3.64
62	PRESSE,IMPRIMERIE,ED	7.43	-5.59	2.43	3.13	2.43	2.57	2.38	1.63
63	PNEUMATIQUES	3.17	2.04	1.49	2.57	3.10	2.46	2.43	1.96
64	PROD. PLASTIQUES	2.91	1.87	4.20	5.12	2.85	3.66	3.34	2.14
65	INDUSTRIES DIVERSES	4.55	3.47	3.16	3.32	3.76	3.14	3.03	2.55
66	BATIMENT ET GENIE CI	-1.60	3.19	.83	.80	.82	1.08	1.21	.60
69	REPARATION AUTO.	2.77	.72	.92	2.15	2.35	1.88	1.87	1.42
70	REPARATIONS DIVERSES	-.54	3.74	-.85	-.75	.56	-.66	-.50	-.30
71	HOTELS,CAFES,RESTAUR	1.66	1.36	.93	1.41	.67	.81	.76	.53
72	TRANSP FERROVIAIRES	2.66	-.74	.13	.74	-.79	.37	1.29	4.78
73	TRANSP ROUTIERS DE M	3.71	15.83	4.92	4.83	4.74	5.02	4.08	4.14
74	AUTRES TRANSP TERRES	2.62	2.30	-.29	.21	1.90	.84	1.02	1.38
75	NAVIGATION INTERIEUR	4.45	23.95	4.92	4.83	4.74	5.02	4.08	4.14
76	TRANSPORTS MARITIMES	.00	-6.48	-.17	1.64	-5.86	-1.77	-1.59	-1.83
77	TRANSPORTS AERIENS	12.73	-12.42	1.50	2.76	-.39	.95	2.13	5.74
78	SERVICES AUXILIAIRES	4.93	2.50	1.46	2.33	-.16	.97	1.99	2.32
79	TELECOMMUNICATIONS	.00	23.64	2.69	3.03	2.91	2.87	2.58	2.21
80	SERVICE AUX ENTREPRI	2.15	-3.32	1.78	1.87	1.78	2.20	2.02	1.58
82	LOGEMENT	5.16	1.55	3.35	4.05	1.92	2.48	2.57	2.24
84	ENSEIGNEMENT (MARCHA	8.31	-.03	3.26	3.14	3.34	3.34	2.87	2.91
85	SANTE	8.84	.28	1.89	2.01	2.11	1.82	1.78	1.70
86	AUTRES SERVICES MARC	6.17	-1.49	1.07	1.80	1.20	1.21	1.08	.75
	TOTAL	2.01	2.33	1.78	2.32	2.27	2.22	2.16	1.73

FORECAST FOR: REFERENCE FORECAST — SERIE: V.A.T. ON INVESTMENTS

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	91.	79.	95.	99.	100.	99.	99.	98.	100.
2	SYLVICULTURE	3.	3.	4.	4.	4.	4.	4.	4.	4.
25	TRAVAIL DES METAUX	653.	687.	665.	714.	724.	715.	717.	711.	724.
26	MACHINES AGRICOLES	577.	612.	608.	631.	639.	631.	633.	627.	639.
27	MACHINES OUTILS	6.	7.	6.	6.	6.	6.	6.	6.	6.
28	EQUIPMENT INDUSTRIEL	160.	152.	169.	175.	177.	175.	176.	174.	178.
29	MATERIEL MTPS	87.	66.	92.	95.	96.	95.	96.	95.	96.
31	MACHINES DE BUREAU	83.	113.	87.	91.	92.	91.	91.	90.	92.
32	MATERIEL ELECTRIQUE	229.	228.	242.	251.	254.	251.	252.	249.	254.
33	MATERIEL ELECTRONIQU	596.	1045.	628.	651.	660.	652.	650.	648.	661.
34	MATERIEL ELECTRONIQU	13.	15.	14.	15.	15.	15.	15.	15.	15.
36	VEHICULES AUTOMOBILE	3965.	4511.	4181.	4335.	4393.	4338.	4354.	4313.	4395.
38	CONSTRUCTION NAVALE	91.	61.	96.	100.	101.	100.	100.	99.	101.
39	CONSTR. AERONAUTIQUE	315.	168.	332.	344.	348.	344.	345.	342.	349.
40	INSTRUMENTS ET MATER	305.	322.	321.	333.	338.	333.	335.	331.	338.
60	MEUBLES	98.	95.	103.	107.	108.	107.	107.	106.	108.
65	INDUSTRIES DIVERSES	1.	0.	1.	1.	1.	1.	1.	1.	1.
66	BATIMENT ET GENIE CI	6845.	6604.	7211.	7483.	7583.	7489.	7515.	7446.	7587.
69	REPARATION AUTO.	145.	154.	153.	159.	161.	159.	159.	158.	161.
80	SERVICE AUX ENTREPRI	136.	145.	131.	142.	144.	142.	141.	141.	144.
81	LOCATION ET CREDIT-A	1379.	1611.	1453.	1507.	1527.	1508.	1513.	1499.	1528.
83	CREDIT-BAIL IMMOBILI	234.	245.	246.	255.	259.	256.	256.	254.	259.
	TOTAL	16066.	17016.	16073.	17455.	17730.	17519.	17570.	17408.	17739.

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: V.A.T. ON INVESTMENTS

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	-6.83	20.79	3.70	1.37	-1.25	.33	-.93	1.88
2	SYLVICULTURE	.00	19.84	3.68	1.42	-1.40	.35	-.71	1.78
25	TRAVAIL DES METAUX	2.57	.27	3.69	1.34	-1.24	.35	-.92	1.90
26	MACHINES AGRICOLES	2.99	-.62	3.69	1.34	-1.24	.35	-.93	1.90
27	MACHINES OUTILS	-29.29	95.44	3.70	1.33	-1.25	.36	-.93	1.90
28	EQUIPMENT INDUSTRIEL	-2.53	11.09	3.69	1.34	-1.24	.35	-.93	1.90
29	MATERIEL MIPS	-12.90	38.95	3.69	1.34	-1.24	.35	-.92	1.89
31	MACHINES DE BUREAU	16.68	-22.59	3.68	1.35	-1.25	.36	-.93	1.90
32	MATERIEL ELECTRIQUE	-.22	5.97	3.69	1.33	-1.23	.34	-.93	1.91
33	MATERIEL ELECTRONIQU	32.41	-39.67	3.69	1.33	-1.24	.34	-.92	1.91
34	MATERIEL ELECTRONIQU	7.42	-6.13	3.74	1.29	-1.02	.26	-1.03	2.07
36	VEHICULES AUTOMOBILE	6.66	-7.32	3.68	1.34	-1.24	.35	-.92	1.90
38	CONSTRUCTION NAVALE	-18.13	58.11	3.68	1.34	-1.24	.34	-.93	1.91
39	CONSTR. AERONAUTIQUE	-27.84	102.19	3.68	1.34	-1.21	.35	-.94	1.91
40	INSTRUMENTS ET MATER	2.75	-.24	3.69	1.36	-1.25	.36	-.93	1.90
60	PEUALES	-1.58	8.59	3.70	1.34	-1.27	.35	-.89	1.89
65	INDUSTRIES DIVERSES	.00	.00	.00	.00	.00	.00	.00	.00
66	BATIMENT ET GENIE CI	-1.78	9.28	3.69	1.34	-1.24	.35	-.93	1.90
69	REPARATION AUTO.	3.06	-.61	3.67	1.35	-1.24	.36	-.94	1.89
80	SERVICE AUX ENTREPRI	5.61	-5.73	3.67	1.34	-1.23	.37	-.94	1.90
81	LOCATION ET CREDIT-B	8.09	-9.81	3.72	1.33	-1.24	.33	-.93	1.93
83	CREDIT-BAIL IMMOBILI	2.32	.41	3.66	1.57	-1.16	.00	-.78	1.97
	TOTAL	3.11	-.84	3.69	1.34	-1.24	.34	-.92	1.90

FORECAST FOR: REFERENCE FORECAST — SERIE: EXPORTS

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	19544.	19328.	20521.	21132.	22164.	23219.	23919.	24083.	24082.
2	SYLVICULTURE	547.	559.	584.	584.	593.	606.	598.	583.	565.
3	PECHE	495.	557.	595.	609.	633.	654.	664.	660.	652.
4	HOUILLE+LIGNITE+ AGG	164.	149.	150.	144.	140.	136.	131.	122.	114.
5	COKEFACTION	392.	311.	336.	349.	367.	384.	396.	400.	401.
6	PETROLE BRUT	1.	12.	12.	12.	12.	12.	11.	11.	11.
7	GAZ NATUREL	50.	54.	57.	59.	62.	65.	67.	68.	69.
8	PETROLE RAFFINE	8025.	9179.	9657.	9831.	10130.	10474.	10667.	10625.	10523.
9	ELECTRICITE DISTRIBU	346.	251.	234.	206.	183.	159.	134.	109.	87.
12	MINERAI DE FER	448.	310.	297.	273.	254.	240.	223.	202.	181.
13	SIDERURGIE	10752.	14310.	15455.	16162.	17135.	18433.	19545.	20245.	20861.
14	PROD. DE L'ACIER	4728.	5938.	5778.	5895.	6117.	6458.	6742.	6915.	7080.
15	MINERAIS NON FERREUX	66.	176.	162.	162.	184.	197.	186.	182.	176.
16	METAUX NON FERREUX	9189.	9645.	10225.	10386.	10705.	10999.	11126.	11007.	10824.
17	MINERAUX DIVERS	529.	579.	588.	577.	575.	571.	558.	533.	506.
18	MATER. DE CONSTRUCTIO	2401.	2897.	3259.	3509.	3833.	4166.	4456.	4665.	4842.
19	VERRE	2547.	3048.	3230.	3359.	3650.	3797.	3938.	3987.	4002.
20	CHIMIE MINERALE	3196.	3950.	4229.	4259.	4363.	4394.	4355.	4218.	4057.
21	CHIMIE ORGANIQUE	16334.	20616.	22113.	24263.	26476.	29784.	32991.	35692.	38328.
22	PARACHIMIE	5528.	6942.	7580.	8019.	8669.	9543.	10336.	10925.	11455.
23	PRODUITS PHARMACEUTI	2466.	2861.	3023.	3154.	3342.	3569.	3754.	3854.	3925.
24	FONDERIES	1336.	1416.	1559.	1635.	1745.	1850.	1931.	1972.	2002.
25	TRAVAIL DES METAUX	7717.	8214.	8757.	9053.	9524.	9912.	10143.	10317.	10013.
26	MACHINES AGRICOLES	1959.	1816.	1922.	2090.	2297.	2421.	2885.	3082.	3212.
27	MACHINES OUTILS	3581.	4159.	4611.	4880.	5288.	5853.	6306.	6656.	6959.
28	EQUIPMENT INDUSTRIEL	16292.	17773.	19829.	21035.	22880.	25361.	27403.	29232.	30632.
29	MATERIEL MIPS	9435.	7695.	8897.	10377.	12053.	14181.	16351.	18370.	20449.
30	MATERIEL D'ARMEMENT	3795.	5527.	6529.	7429.	8417.	10052.	11591.	13122.	14810.
31	MACHINES DE BUREAU	4198.	4917.	5644.	6010.	6665.	7337.	7933.	8384.	8774.
32	MATERIEL ELECTRIQUE	7951.	8884.	10003.	11339.	13022.	14871.	16701.	18323.	19966.
33	MATERIEL ELECTRONIQU	8359.	10284.	11253.	11634.	12371.	13219.	13887.	14149.	14267.
34	MATERIEL ELECTRONIQU	957.	1115.	1254.	1131.	1188.	1255.	1304.	1330.	1347.

FORECAST FOR: REFERENCE FORECAST SERIE: EXPORTS

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
35	EQUIPEMENT MENAGER	2305.	2574.	3089.	3883.	4894.	6093.	7418.	8783.	10292.
36	VEHICULES AUTOMOBILE	34917.	40723.	43623.	44766.	48160.	51175.	53136.	54188.	54459.
37	MATERIEL FERROVIAIRE	1967.	1088.	841.	634.	452.	306.	194.	114.	62.
38	CONSTRUCTION NAVALE	2949.	3035.	3385.	3653.	4022.	4534.	5018.	5402.	5767.
39	CONSTR. AERONAUTIQUE	8799.	11892.	13925.	14550.	16029.	17633.	19126.	20317.	21482.
40	INSTRUMENTS ET MATER	3783.	4813.	5236.	5933.	6806.	7789.	8759.	9617.	10479.
41	VIANDES	4692.	4501.	4830.	4964.	5175.	5259.	5256.	5133.	4980.
42	LAIT ET PRODUITS LAI	4657.	5250.	5634.	5840.	6195.	6578.	6966.	7063.	7092.
43	CONSERVES	1229.	1221.	1305.	1352.	1436.	1534.	1612.	1656.	1687.
44	PAIN ET PATISSERIE	16.	27.	36.	45.	56.	69.	83.	97.	112.
45	PRODUITS DU GRAIN	3299.	4193.	4431.	4581.	4828.	5077.	5265.	5328.	5345.
46	CORPS GRAS ALIMENTAI	1106.	1269.	1337.	1373.	1422.	1462.	1481.	1465.	1437.
47	SUCRE	27.	4537.	4152.	4813.	4966.	5130.	5218.	5192.	5137.
48	AUTRES PROD. ALIMENT	1533.	2275.	2401.	2445.	2539.	2651.	2726.	2742.	2743.
49	BOISSONS ET ALCOOLS	4131.	5555.	5843.	5934.	6151.	6332.	6412.	6350.	6248.
50	TABACS ET PROD.	304.	306.	321.	323.	330.	335.	336.	329.	320.
51	FILS ET FIBRES ARTIF	1492.	1569.	1669.	1807.	2002.	2220.	2413.	2560.	2686.
52	FILS ET FILES	4262.	4129.	4400.	4526.	4749.	4992.	5162.	5222.	5242.
53	BONNETERIE	2298.	2343.	2568.	2698.	2898.	3110.	3280.	3387.	3441.
54	OUVRAGE EN FILES	5383.	6226.	6626.	6758.	6992.	7169.	7236.	7143.	7009.
55	CUIRS ET PEAUX	856.	743.	712.	798.	842.	862.	866.	852.	828.
56	ARTICLES EN CUIR	370.	432.	460.	468.	484.	497.	502.	497.	488.
57	CHAUSSURES	1462.	1366.	1474.	1527.	1613.	1694.	1751.	1769.	1775.
58	HABILLEMENT	4206.	4547.	5066.	5390.	5796.	6191.	6489.	6631.	6714.
59	PROD DU BOIS	1833.	2018.	2135.	2165.	2228.	2286.	2309.	2282.	2241.
60	MEUBLES	778.	877.	934.	1037.	1121.	1261.	1397.	1512.	1626.
61	PAPIER+ CARTON	3560.	4513.	4921.	5113.	5436.	5786.	6048.	6180.	6261.
62	PRESSE+IMPRIMERIE+ED	2430.	2681.	2778.	2798.	2912.	2955.	2934.	2852.	2747.
63	PNEUMATIQUES	4502.	5136.	5566.	5732.	6085.	6413.	6636.	6707.	6721.
64	PROD. PLASTIQUES	3144.	3665.	3922.	4068.	4286.	4469.	4576.	4572.	4530.
65	INDUSTRIES DIVERSES	3539.	4491.	4731.	4810.	5018.	5182.	5244.	5218.	5135.
67	RECUPERATION	3728.	4001.	4310.	4461.	4697.	4914.	5058.	5085.	5074.
72	TRANSP FERROVIARES	1141.	1225.	1290.	1317.	1381.	1427.	1406.	1426.	1389.
73	TRANSP ROUTIERS DE M	5900.	6402.	6704.	6790.	7114.	7355.	7491.	7415.	7257.
75	NAVIGATION INTERIEUR	107.	117.	126.	131.	140.	151.	159.	164.	166.
76	TRANSPORTS MARITIMES	11762.	13268.	14065.	14259.	14879.	15588.	16063.	16154.	16099.
77	TRANSPORTS AERIENS	4870.	5521.	5881.	5974.	6204.	6464.	6623.	6626.	6573.
78	SERVICES AUXILIAIRES	4514.	5220.	5428.	5408.	5468.	5512.	5471.	5312.	5127.
79	TELECOMMUNICATIONS	349.	386.	393.	383.	378.	370.	356.	336.	314.
81	SERVICE AUX ENTREPRI	13626.	20324.	21666.	22167.	23529.	24123.	24581.	24256.	23648.
81	LOCATION ET CREDIT-B	43.	47.	59.	59.	65.	71.	77.	82.	86.
84	ENSEIGNEMENT (MARCHA	1537.	1585.	1641.	1668.	1720.	1687.	1625.	1525.	1418.
87	ASSURANCES	666.	671.	720.	741.	772.	776.	753.	719.	679.
88	FINANCE	716.	822.	898.	940.	998.	1057.	1102.	1123.	1138.
	TOTAL	219454.	269291.	303013.	320918.	352231.	386719.	415688.	434462.	450418.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: EXPORTS

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	6.17	2.98	4.88	4.79	3.04	-.69	-.01
2	SYLVICULTURE	4.44	.06	1.53	1.22	-.35	-2.54	-3.12
3	PECHE	6.85	2.38	3.98	3.22	-.59	-1.62	-1.19
4	HOUILLE+LIGNITE+ AGG	-.34	-3.86	-2.45	-2.15	-4.26	-4.36	-2.92
5	COKEFACTION	8.16	3.63	5.15	4.82	3.20	.93	.33
6	PETROLE BRUT	2.88	-1.43	.02	-.29	-1.83	-3.99	-4.57
7	GAZ NATUREL	6.03	2.69	4.95	5.42	3.56	1.43	.82
8	PETROLE RAFFINE	5.31	1.50	3.35	3.40	1.84	-.40	-.96
9	ELECTRICITE DISTRIBU	-6.91	-11.14	-11.48	-12.88	-15.44	-18.59	-20.46
12	MINERAI DE FER	-4.08	-8.19	-6.97	-5.49	-7.15	-9.39	-10.13

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: EXPORTS

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
13	SIDERURGIE	15.37	8.00	-4.57	6.02	7.58	6.04	3.58	3.04
14	PROD. DE L'ACIER	7.25	6.25	2.03	3.76	5.57	4.40	2.56	2.40
15	MINERAIS NON FERREUX	63.30	3.69	-.44	1.45	1.24	-.23	-2.47	-3.07
16	METAUX NON FERREUX	2.45	6.01	1.58	3.07	2.75	1.16	-1.07	-1.66
17	MINERAUX DIVERS	4.17	2.43	-1.86	-.41	-.72	-2.26	-4.41	-4.98
18	MATER. DE CONSTRUCTIO	9.84	12.48	1.70	9.21	8.70	6.97	4.57	3.91
19	VERRE	9.32	7.44	3.93	5.92	5.41	3.72	1.24	.38
20	CHIMIE MINERALE	12.57	4.42	.70	2.45	.72	-.90	-3.14	-3.81
21	CHIMIE ORGANIQUE	12.35	10.17	6.78	9.17	12.49	10.77	8.19	7.38
22	PARACHIMIE	12.06	9.19	5.79	8.10	10.08	8.32	5.70	4.85
23	PRODUITS PHARMACEUTI	6.58	7.93	4.34	5.96	6.80	5.17	2.67	1.83
24	FONDERIES	2.95	9.77	5.18	6.74	6.00	4.38	2.13	1.53
25	TRAVAIL DES METAUX	3.17	6.61	3.38	5.20	4.68	2.32	-.25	-1.03
26	MACHINES AGRICOLES	-3.72	5.86	8.72	9.88	14.14	10.06	6.84	6.14
27	MACHINES OUTILS	7.77	12.36	4.49	8.35	10.69	7.74	5.55	4.85
28	EQUIPMENT INDUSTRIEL	4.45	11.57	6.08	8.77	10.93	8.75	5.90	4.79
29	MATERIEL MIPS	-9.69	15.62	15.85	16.94	17.66	15.30	12.35	11.32
30	MATERIEL D'ARMEMENT	20.68	18.13	13.78	16.02	16.65	15.31	13.21	12.87
31	MACHINES DE BUREAU	7.78	15.72	6.50	10.89	10.09	8.12	5.68	4.66
32	MATERIEL ELECTRIQUE	6.04	12.59	13.36	14.84	14.20	12.30	9.71	8.97
33	MATERIEL ELECTRONIQU	10.92	9.43	3.11	6.61	6.85	5.05	1.89	.84
34	MATERIEL ELECTRONIQU	8.83	7.82	3.38	4.97	5.65	4.08	1.85	1.31
35	EQUIPEMENT MENAGER	5.67	20.00	25.71	26.04	24.51	21.73	18.46	17.19
36	VEHICULES AUTOMOBILE	7.06	7.49	4.65	7.58	6.26	3.83	1.79	.69
37	MATERIEL FERROVIAIRE	-25.63	-22.12	-25.21	-28.64	-32.43	-36.59	-41.10	-45.93
38	CONSTRUCTION NAVALE	1.45	11.52	7.92	10.10	12.39	10.62	7.65	6.77
39	CONSTR. AERONAUTIQUE	16.25	12.89	8.38	10.17	10.01	8.47	6.23	5.73
40	INSTRUMENTS ET MATER	8.01	18.64	13.33	14.71	14.48	12.45	9.79	8.97
41	VIANDES	-2.06	7.30	2.78	4.26	1.61	-.06	-2.33	-2.99
42	LAIT ET PRODUITS LAI	6.18	7.31	3.66	6.09	6.17	4.38	1.99	1.28
43	CONSERVES	-.33	6.87	3.62	6.17	6.87	5.07	2.71	1.87
44	PAIN ET PATISSERIE	29.90	32.10	25.04	25.41	23.65	20.47	16.64	14.85
45	PRODUITS DU GRAIN	12.74	5.69	3.39	5.39	5.15	3.71	1.20	.32
46	CORPS GRAS ALIMENTAI	7.12	5.39	2.63	3.58	2.89	1.27	-1.08	-1.86
47	SUCRE	29.51	4.74	1.28	3.17	3.31	1.72	-.59	-1.07
48	AUTRES PROD. ALIMENT	21.82	5.54	1.83	3.86	3.39	2.02	-.60	.04
49	POISSONS ET ALCOOLS	16.24	5.18	1.57	3.65	2.94	1.27	-.98	-1.61
50	TABACS ET PROD.	.33	4.96	.56	2.04	1.73	.15	-2.05	-2.64
51	FILS ET FIBRES ARTIF	.27	11.26	8.29	10.80	10.85	8.72	6.09	4.91
52	FILS ET FILES	-1.57	6.55	2.87	4.94	5.11	3.41	1.15	.39
53	BONNETERIE	.97	7.88	4.75	9.89	7.35	5.46	3.25	1.60
54	OUVRAGE EN FILES	7.55	6.93	1.99	3.47	2.53	.93	-1.29	-1.88
55	CUIRS ET PEAUX	-6.83	3.91	3.40	5.44	2.49	.46	-1.64	-2.77
56	ARTICLES EN CUIR	8.05	6.37	1.91	3.48	2.68	1.04	-1.19	-1.80
57	CHAUSSURES	-3.34	7.87	3.61	5.68	5.01	3.35	1.04	.36
58	HABILLEMENT	3.97	11.45	6.37	7.53	6.82	4.81	2.18	1.26
59	PROD DU BOIS	4.93	5.82	1.40	2.90	2.60	1.02	-1.19	-1.77
60	MEUBLES	10.52	11.12	6.44	8.05	12.55	10.73	8.25	7.55
61	PAPIER, CARTON	13.34	7.62	3.90	6.31	6.45	4.53	2.18	1.31
62	PRESSE,IMPRIMERIE,ED	5.69	3.63	.57	4.23	1.48	-.71	-2.82	-3.68
63	PNEUMATIQUES	6.81	7.21	4.09	6.17	5.39	3.47	1.08	.20
64	PROD. PLASTIQUES	8.66	7.01	3.71	5.37	4.26	2.41	-.13	-.93
65	INDUSTRIES DIVERSES	12.65	5.34	1.68	4.31	3.27	1.50	-.79	-1.59
67	RECUPERATION	3.60	7.73	3.50	5.33	4.58	2.93	.55	-.23
72	TRANSP FERROVIAIRES	3.62	5.32	2.06	4.87	3.36	1.32	-1.39	-2.59
73	TRANSP ROUTIERS DE M	4.17	4.71	1.29	4.77	3.39	1.85	-1.02	-2.13
75	NAVIGATION INTERIEUR	4.57	7.35	3.97	7.22	7.60	5.65	2.79	1.58
76	TRANSPORTS MARITIMES	6.21	5.56	1.81	4.35	4.75	3.06	.56	-.34
77	TRANSPORTS AERIENS	6.47	6.52	1.58	3.85	4.19	2.47	.05	-.81
78	SERVICES AUXILIAIRES	7.54	3.98	-.36	1.11	.81	-.74	-2.92	-3.48
79	TELECOMMUNICATIONS	5.17	1.74	-2.96	-1.32	-2.09	-3.69	-5.83	-6.43
80	SERVICE AUX ENTREPRI	22.14	6.59	2.31	5.29	3.36	1.90	-1.32	-2.51
81	LOCATION ET CREDIT-B	4.55	14.30	9.26	10.64	10.09	8.21	5.67	4.91
84	ENSEIGNEMENT (MARCHA	.26	6.19	1.67	3.10	-1.87	-3.71	-6.14	-7.03
87	ASSURANCES	.37	7.38	2.80	4.24	-.31	-2.15	-4.60	-5.47

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: EXPORTS

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
88	FINANCE	7.15	9.24	4.67	6.21	5.88	4.24	1.94	1.33
	TOTAL	7.52	8.59	4.96	7.44	7.63	5.95	3.64	2.99

FORECAST FOR: REFERENCE FORECAST — SERIE: PCE

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	47747.	47089.	47149.	47713.	48254.	48322.	48575.	48732.	48681.
2	SYLVICULTURE	160.	147.	138.	126.	114.	103.	91.	79.	67.
3	PECHE	7289.	7811.	7851.	7938.	8069.	8117.	8201.	8273.	8300.
4	HOUILLE+LIGNITE+ AGG	1845.	1953.	2045.	1812.	1559.	1428.	1232.	1048.	901.
5	COKEFACTION	108.	117.	110.	104.	98.	92.	86.	81.	76.
8	PETROLE RAFFINE	38521.	40945.	41120.	41886.	43805.	44666.	45997.	47249.	47940.
9	ELECTRICITE DISTRIBU	11661.	14485.	14963.	14911.	15132.	15604.	15908.	16236.	16626.
10	GAZ DISTRIBUE	5507.	6660.	6683.	6652.	6815.	6922.	7038.	7153.	7237.
11	EAU ET CHAUFFAGE URB	6707.	7615.	7713.	7676.	7812.	7954.	8070.	8191.	8278.
14	PROD. DE L'ACIER	231.	234.	244.	248.	251.	261.	266.	271.	276.
16	METAUX NON FERREUX	114.	131.	140.	143.	145.	153.	156.	161.	165.
17	MINERAUX DIVERS	165.	169.	111.	172.	174.	176.	178.	179.	180.
18	MATER. DE CONSTRUCTIO	3249.	3731.	3806.	3901.	4031.	4131.	4230.	4324.	4383.
19	VERRE	2165.	2213.	2348.	2396.	2454.	2530.	2586.	2641.	2686.
21	CHIMIE MINERALE	54.	60.	62.	64.	65.	67.	68.	70.	71.
22	PARACHIMIE	15463.	16109.	16545.	17209.	17982.	18592.	19262.	19916.	20415.
23	PRODUITS PHARMACEUTI	20607.	21742.	22143.	23741.	24784.	25726.	26685.	27632.	28531.
25	TRAVAIL DES METAUX	6262.	6869.	6209.	6394.	6636.	6832.	7027.	7216.	7342.
26	MACHINES AGRICOLES	88.	98.	59.	102.	105.	107.	110.	113.	114.
31	MACHINES DE BUREAU	65.	71.	77.	79.	79.	89.	93.	97.	103.
32	MATERIEL ELECTRIQUE	2126.	2219.	2316.	2409.	2510.	2609.	2697.	2781.	2851.
34	MATERIEL ELECTRONIQU	9142.	11149.	12243.	12595.	12788.	13734.	14257.	14856.	15591.
35	EQUIPEMENT MENAGER	12411.	12567.	13227.	13503.	13589.	14405.	14819.	15304.	15931.
36	VEHICULES AUTOMOBILE	29023.	29351.	30087.	30581.	31397.	32340.	33168.	34023.	34678.
40	INSTRUMENTS ET MATER	6295.	6906.	7224.	7449.	7701.	8004.	8230.	8442.	8622.
41	VIANDES	66632.	70578.	72067.	72832.	73693.	74801.	75779.	76749.	77599.
42	LAIT ET PRODUITS LAI	31425.	32502.	33108.	33782.	34546.	35150.	35876.	36575.	37143.
43	CONSERVES	9652.	9902.	10264.	10509.	10747.	11065.	11345.	11628.	11906.
44	PAIN ET PATISSERIE	16639.	17141.	17393.	17473.	17539.	17725.	17869.	18024.	18178.
45	PRODUITS DU GRAIN	6769.	7219.	7358.	7560.	7703.	7863.	8035.	8204.	8369.
46	CORPS GRAS ALIMENTAI	3884.	4257.	4261.	4289.	4339.	4314.	4352.	4380.	4362.
47	SUCRE	2495.	2334.	2357.	2370.	2380.	2396.	2415.	2435.	2452.
48	AUTRES PROD. ALIMENT	15622.	15378.	15554.	15855.	16181.	16410.	16698.	16973.	17166.
49	BOISSONS ET ALCOOLS	16054.	16109.	16499.	16941.	17462.	17870.	18334.	18775.	19122.
50	TABACS ET PROD.	10091.	10574.	10318.	10882.	11107.	11256.	11453.	11640.	11754.
52	FILS ET FILES	1478.	1342.	1372.	1393.	1423.	1445.	1463.	1477.	1482.
53	BONNETERIE	13304.	13698.	14026.	14427.	14966.	15260.	15614.	15919.	16067.
54	OUVRAGE EN FILES	10057.	10350.	10745.	10871.	10986.	11247.	11377.	11502.	11618.
56	ARTICLES EN CUIR	4536.	4628.	4829.	4948.	5064.	5248.	5391.	5545.	5690.
57	CHAUSSURES	11873.	11958.	12104.	12336.	12415.	12595.	13155.	13417.	13616.
58	HABILLEMENT	37971.	38396.	38166.	38870.	39924.	40716.	41582.	42472.	42953.
59	PROD DU BOIS	693.	682.	650.	709.	731.	745.	762.	778.	789.
60	MEUBLES	27229.	27917.	29459.	30394.	31168.	32673.	33694.	34752.	35825.
61	PAPIER+ CARTON	2915.	3237.	3468.	3562.	3640.	3849.	3971.	4103.	4247.
62	PRESSE+IMPRIMERIE+ED	15123.	16136.	16349.	16681.	17167.	17517.	17892.	18264.	18478.
63	ENEUMATIQUES	4111.	4334.	4456.	4518.	4632.	4773.	4887.	5003.	5098.
64	PROD. PLASTIQUES	3359.	3561.	3622.	3774.	3967.	4079.	4228.	4368.	4461.
65	INDUSTRIES DIVERSES	22574.	24640.	25561.	26324.	27184.	28194.	29057.	29922.	30662.
66	BATIMENT ET GENIE CI	9478.	9854.	9984.	10235.	10598.	10793.	11074.	11356.	11551.
67	RECUPERATION	1203.	988.	1050.	1090.	1132.	1132.	1228.	1260.	1291.
69	REPARATION AUTO.	19233.	20028.	20459.	20946.	21490.	21985.	21990.	22401.	22718.
70	REPARATIONS DIVERSES	3533.	3585.	3625.	3594.	3568.	3581.	3557.	3538.	3527.
71	HOTELS+CAFES+RESTAUR	59937.	61294.	61152.	62304.	63177.	63594.	64101.	64581.	64926.

FORECAST FOR: REFERENCE FORECAST SERIE: PCE

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
72	TRANSP FERROVIAIRES	4848.	5030.	4903.	4878.	4858.	4732.	4672.	4684.	4919.
74	AUTRES TRANSP TERRES	9967.	10448.	10666.	10627.	10682.	10847.	10923.	11028.	11176.
76	TRANSPORTS MARITIMES	515.	525.	482.	478.	486.	457.	449.	442.	438.
77	TRANSPORTS AERIENS	1472.	1653.	1633.	1651.	1694.	1677.	1685.	1717.	1819.
78	SERVICES AUXILIAIRES	1866.	2118.	2103.	2127.	2172.	2157.	2168.	2206.	2326.
79	TELECOMMUNICATIONS	7846.	9725.	9881.	10065.	10316.	10541.	10752.	10963.	11115.
80	SERVICE AUX ENTREPRI	7491.	7440.	7413.	7556.	7727.	7780.	7862.	7937.	7961.
81	LOCATION ET CREDIT-B	1210.	1445.	1461.	1504.	1568.	1588.	1626.	1661.	1682.
82	LOGEMENT	98212.	108568.	110216.	113966.	118587.	120869.	123972.	127058.	129905.
84	ENSEIGNEMENT (MARCHA	4400.	4781.	4889.	4969.	5060.	5156.	5235.	5315.	5396.
85	SANTE	90933.	105793.	107916.	109951.	112107.	114406.	116466.	118416.	120365.
86	AUTRES SERVICES MARC	23830.	26132.	26335.	26469.	26841.	27014.	27174.	27328.	27370.
87	ASSURANCES	10413.	14034.	16737.	17136.	17525.	18165.	18584.	19035.	19545.
88	FINANCE	2895.	2824.	2862.	2898.	2916.	2946.	2971.	2996.	3023.
	TOTAL	918443.	982259.	1004229.	1023198.	1047577.	1069527.	1090587.	1111930.	1130145.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: PCE

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	-.69	1.20	1.13	.14	.52	.32	-.10
2	SYLVICULTURE	-4.15	-6.40	-8.93	-9.79	-9.36	-11.67	-13.22	-14.88
3	PECHE	3.52	.51	1.11	1.64	.60	1.09	.88	.32
4	HOUILLE,LIGNITE, AGG	2.89	4.73	-11.41	-13.98	-8.42	-13.72	-14.95	-14.02
5	COKEFACTION	4.08	-5.82	-5.88	-5.94	-6.00	-6.05	-6.11	-6.17
8	PETROLE RAFFINE	3.10	.43	1.86	4.58	1.97	2.98	2.72	1.46
9	ELECTRICITE DISTRIBU	11.45	3.30	-.34	1.48	3.12	1.95	2.07	2.40
10	GAZ DISTRIBUE	9.97	.34	-.47	2.46	1.56	1.67	1.64	1.17
11	EAU ET CHAUFFAGE URB	6.55	1.29	-.48	1.76	1.82	1.46	1.50	1.30
14	PROD. DE L'ACIER	.65	4.22	1.54	1.48	3.69	1.92	2.00	1.96
16	METAUX NON FERREUX	7.20	6.68	2.04	1.73	5.25	2.48	2.59	2.75
17	MINERAUX DIVERS	1.20	1.24	.47	1.10	1.48	.80	.83	.18
18	MATER. DE CONSTRUCTIO	7.16	2.01	2.49	3.35	2.47	2.40	2.23	1.35
19	VERRE	2.46	3.29	2.06	2.40	3.12	2.19	2.14	1.72
20	CHIMIE MINERALE	5.41	3.86	2.12	1.58	3.32	2.15	2.18	2.39
22	PARACHIMIE	2.27	2.73	3.99	4.49	3.39	3.60	3.40	2.51
23	PRODUITS PHARMACEUTI	4.25	4.60	4.39	4.39	3.81	3.72	3.55	3.25
25	TRAVAIL DES METAUX	-1.55	2.31	2.97	3.78	2.97	2.85	2.68	1.74
26	MACHINES AGRICOLES	5.53	.93	2.77	3.70	1.95	2.59	2.40	1.35
31	MACHINES DE BUREAU	4.51	8.07	2.59	.90	11.69	4.43	5.18	6.14
32	MATERIEL ELECTRIQUE	2.16	4.39	4.00	4.25	3.92	3.41	3.48	2.55
34	MATERIEL ELECTRONIQU	10.41	9.86	2.88	1.54	7.39	3.81	4.20	4.94
35	EQUIPEMENT MENAGER	.39	5.74	2.09	.63	4.01	2.88	3.27	4.10
36	VEHICULES AUTOMOBILE	.56	2.51	1.51	2.81	3.01	2.56	2.57	1.93
40	INSTRUMENTS ET MATER	4.77	4.69	3.12	2.39	2.93	2.82	2.58	2.13
41	VIANDES	3.38	2.02	1.15	1.18	1.50	1.31	1.28	1.11
42	LAIT ET PRODUITS LAI	1.70	1.86	2.04	2.26	1.75	2.07	1.95	1.55
43	CONSERVES	1.29	3.65	2.39	2.27	2.96	2.53	2.49	2.39
44	PAIN ET PATISSERIE	1.50	1.47	.46	.38	1.06	.82	.87	.85
45	PRODUITS DU GRAIN	3.27	2.49	2.18	1.89	2.38	2.18	2.10	2.01
46	CORPS GRAS ALIMENTAI	4.69	-1.31	1.14	2.13	-.56	.89	.64	-.42
47	SUCRE	-3.28	.98	.54	.43	.66	.82	.81	.68
48	AUTRES PROD. ALIMENT	-.78	1.41	1.67	2.06	1.41	1.76	1.65	1.14
49	BOISSONS ET ALCOOLS	.14	2.48	2.68	3.08	2.34	2.46	2.46	1.85
50	TABACS ET PROD.	2.37	1.36	1.53	2.07	1.34	1.75	1.63	.97
52	FILS ET FILES	-4.71	2.27	1.48	2.17	1.53	1.29	1.01	.27
53	BONNETERIE	1.47	2.39	2.86	3.75	1.95	2.32	1.95	.93
54	OUVRAGE EN FILES	1.45	3.81	1.18	1.05	2.38	1.14	1.09	1.01
56	ARTICLES EN CUIR	1.01	4.35	2.86	2.35	3.62	2.73	2.86	2.61
57	CHAUSSURES	-.06	2.07	1.92	2.26	2.22	2.02	1.99	1.48

FORECAST FOR: REFFRENCE FORECAST GROWTH RATES FOR: PCF

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
58	HABILLEMENT	.56	-.60	1.84	2.71	1.98	2.13	2.14	1.13
59	PROD DU BOIS	-.80	1.15	2.81	3.09	1.83	2.34	2.09	1.40
60	MEUBLES	1.26	5.52	3.09	2.72	4.83	3.12	3.14	3.09
61	PAPIER, CARTON	5.38	7.14	2.69	2.20	5.74	3.17	3.32	3.52
62	PRESSE,IMPRIMERIE,ED	3.29	1.32	2.03	2.91	2.04	2.14	2.08	1.17
63	ENCLMATIQUES	2.68	2.82	1.39	2.52	3.65	2.39	2.38	1.89
64	PROD. PLASTIQUES	2.96	1.71	4.19	5.13	2.82	3.65	3.33	2.12
65	INDUSTRIES DIVERSES	4.48	3.74	2.98	3.27	3.72	3.06	2.98	2.47
66	BATIMENT ET GENIE CI	1.96	1.32	2.52	3.55	1.83	2.60	2.55	1.72
67	RECUPERATION	-9.38	6.26	3.84	3.85	5.29	3.05	2.60	2.42
69	REPARATION AUTO.	2.05	2.15	.92	2.15	2.35	1.88	1.87	1.42
70	REPARATIONS DIVERSES	.73	1.12	-.85	-.75	.36	-.66	-.54	-.30
71	HOTELS,CAFES,RESTAUR	1.98	.71	.93	1.40	.66	.88	.76	.53
72	TRANSP FERROVIARES	1.86	-2.53	-.50	-.40	-2.60	-1.26	.25	5.03
74	AUTRES TRANSP TERRES	2.69	2.09	-.36	.14	1.86	.77	.97	1.33
76	TRANSPORTS MARITIMES	.97	-8.26	-.77	1.64	-5.86	-1.77	-1.59	-1.83
77	TRANSPORTS AERIENS	5.97	-1.22	1.14	2.57	-.97	.46	1.88	5.95
78	SERVICES AUXILIAIRES	6.54	-.76	1.12	2.11	-.68	.51	1.74	5.46
79	TELECOMMUNICATIONS	11.33	1.61	1.86	2.49	2.19	2.00	1.96	1.39
80	SERVICE AUX ENTREPRI	-.34	.44	1.12	2.26	.69	1.05	.96	.30
81	LOCATION ET CREDIT-B	9.28	1.11	2.94	4.23	1.30	2.42	2.14	1.24
82	LOGEMENT	5.14	1.57	3.35	4.05	1.92	2.48	2.57	2.24
84	ENSEIGNEMENT (MARCHA	4.24	2.26	1.63	1.84	1.89	1.54	1.53	1.51
85	SANTE	7.66	2.45	1.83	1.96	2.05	1.74	1.73	1.65
86	AUTRES SERVICES MARC	4.72	.78	.51	1.40	.65	.59	.57	.15
87	ASSURANCES	16.15	19.26	2.39	2.27	3.65	2.32	2.41	2.68
88	FINANCE	-1.23	1.35	.90	.96	1.05	.85	.85	.89
	TOTAL	3.42	2.24	1.88	2.39	2.10	1.97	1.95	1.64

FORECAST FOR: REFERENCE FORECAST SERIE: IMPORTS

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	21266.	22846.	24158.	25996.	27250.	29750.	29578.	29831.	30092.
2	SYLVICULTURE	1544.	1278.	1355.	1384.	1425.	1465.	1495.	1510.	1519.
3	PECHE	2279.	2735.	2841.	2950.	3090.	3211.	3335.	3435.	3504.
4	HOUILLE,LIGNITE, AGG	4315.	5640.	5758.	5879.	6003.	6130.	6261.	6395.	6533.
5	COKEFACTION	1248.	813.	838.	868.	918.	961.	1007.	1025.	1063.
6	PETROLE BRUT	55120.	52333.	52364.	53372.	54121.	54409.	54872.	54789.	54947.
7	GAZ NATUREL	2746.	3134.	3198.	3208.	3289.	3351.	3428.	3491.	3537.
8	PETROLE RAFFINE	6782.	7987.	8014.	8011.	8155.	8145.	8150.	8106.	8054.
9	ELECTRICITE DISTRIBU	495.	560.	591.	627.	666.	710.	744.	793.	846.
12	MINERAI DE FER	1329.	1396.	1518.	1694.	1872.	1961.	2019.	2065.	2087.
13	SIDERURGIE	11798.	11410.	12210.	13108.	13822.	14797.	15729.	16118.	16784.
14	PROD. DE L'ACIER	3021.	3076.	3447.	3855.	4305.	4799.	5344.	5944.	6604.
15	MINERAIS NON FERREUX	2331.	2048.	1892.	1937.	1883.	1859.	1949.	2036.	2169.
16	METAUX NON FERREUX	13564.	17425.	21664.	21155.	23342.	25221.	26036.	26689.	25708.
17	MINERAUX DIVERS	1793.	2323.	2407.	2496.	2587.	2683.	2783.	2888.	2997.
18	MATER. DE CONTRUCTIO	3297.	3089.	3243.	3344.	3444.	3521.	3593.	3643.	3697.
19	VERRE	1798.	1899.	2089.	2087.	2208.	2287.	2368.	2432.	2421.
20	CHIMIE MINERALE	3774.	4218.	4524.	4564.	4724.	4772.	4753.	4663.	4518.
21	CHIMIE ORGANIQUE	16235.	18709.	21115.	22238.	24284.	26682.	28355.	29469.	30252.
22	PARACHIMIE	5002.	6131.	6665.	6908.	7418.	8023.	8724.	9410.	9931.
23	PRODUITS PHARMACEUTI	374.	608.	642.	680.	721.	765.	814.	867.	925.
24	FONDERIES	580.	635.	716.	810.	891.	1009.	1122.	1245.	1379.
25	TRAVAIL DES METAUX	7387.	7917.	9109.	10464.	11998.	13698.	15612.	17778.	20226.
26	MACHINES AGRICOLES	3182.	3503.	3707.	3876.	4040.	4168.	4323.	4419.	4565.
27	MACHINES OUTILS	5410.	4498.	5203.	5941.	6759.	7498.	8202.	8982.	9823.
28	EQUIPMENT INDUSTRIEL	14689.	14662.	16224.	17917.	19778.	21538.	23402.	25453.	27675.
29	MATERIEL MTPS	4738.	4238.	5054.	5850.	6828.	7863.	8985.	9991.	11121.

FORECAST FOR: REFFRENCE FORECAST SERIF: IMPORTS

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
30	MATERIEL D'ARMEMENT	445.	935.	996.	1066.	1146.	1237.	1343.	1463.	1601.
31	MACHINES DE BUREAU	6668.	8879.	9564.	10452.	11445.	12600.	12935.	13998.	15160.
32	MATERIEL ELECTRIQUE	3997.	4635.	5012.	5338.	5758.	6159.	6667.	7108.	7560.
33	MATERIEL ELECTRONIQU	8045.	10022.	12340.	15063.	18324.	20951.	23855.	27249.	31070.
34	MATERIEL ELECTRONIQU	4718.	5268.	5761.	5630.	5695.	5853.	5845.	5873.	5878.
35	EQUIPEMENT MENAGER	4129.	3983.	4365.	4777.	5176.	5784.	6288.	6817.	7459.
36	VEHICULES AUTOMOBILE	21515.	23721.	24541.	26383.	28942.	31439.	33231.	34244.	35208.
37	MATERIEL FERROVIAIRE	181.	148.	170.	194.	220.	248.	278.	311.	347.
38	CONSTRUCTION NAVALE	1979.	1339.	1619.	1855.	2063.	2253.	2378.	2437.	2522.
39	CONSTR. AERONAUTIQUE	4669.	4268.	4888.	5573.	6330.	7166.	8091.	9113.	10243.
40	INSTRUMENTS ET MATER	4896.	5466.	6529.	7181.	8031.	8991.	9659.	10267.	10738.
41	VIANDES	8121.	10443.	11146.	11600.	12105.	12711.	13191.	13607.	13977.
42	LAIT ET PRODUITS LAI	1915.	2317.	2417.	2447.	2533.	2609.	2689.	2755.	2789.
43	CONSERVES	2297.	2665.	2761.	2859.	2972.	3117.	3208.	3288.	3361.
44	PAIN ET PATISSERIE	24.	33.	33.	33.	33.	33.	33.	33.	33.
45	PRODUITS DU GRAIN	1778.	1914.	1855.	1933.	2006.	2073.	2148.	2206.	2241.
46	CORPS GRAS ALIMENTAI	4302.	4878.	4907.	4930.	5025.	5053.	5213.	5351.	5432.
47	SUCRE	821.	792.	770.	748.	727.	707.	688.	670.	652.
48	AUTRES PROD. ALIMENT	2478.	2706.	2746.	2793.	2861.	2893.	2953.	2995.	3022.
49	POISSONS ET ALCOOLS	1349.	1749.	1789.	1835.	1879.	1918.	1926.	1928.	1925.
50	TABACS ET PROD.	541.	761.	778.	777.	794.	806.	818.	832.	835.
51	FILS ET FIBRES ARTIF	1551.	1577.	1788.	2044.	2343.	2457.	2616.	2798.	2987.
52	FILS ET FILES	2323.	2280.	2468.	2501.	2587.	2635.	2648.	2620.	2563.
53	BONNETERIE	3162.	3282.	3061.	3970.	5016.	6184.	7285.	8165.	8961.
54	OUVRAGE EN FILES	8616.	9213.	10025.	10519.	11161.	11972.	12580.	13034.	13392.
55	CUIRS ET PEAUX	939.	978.	1035.	1081.	1127.	1193.	1251.	1300.	1335.
56	ARTICLES EN CUIR	664.	909.	1039.	1087.	1175.	1319.	1450.	1587.	1701.
57	CHAUSSURES	2139.	2468.	2858.	2843.	3103.	3344.	3540.	3762.	3794.
58	HABILLEMENT	4159.	4199.	4435.	4609.	4958.	5282.	5538.	5779.	5873.
59	PROD DU BOIS	3404.	3376.	3602.	3719.	3873.	4070.	4269.	4441.	4593.
60	MEUBLES	3136.	3197.	3371.	3466.	3553.	3677.	3751.	3818.	3891.
61	PAPIER, CARTON	8451.	9785.	10240.	10559.	11054.	11629.	12518.	13304.	14051.
62	PRESSE,IMPRIMERIE,ED	2619.	3045.	3256.	3442.	3656.	3966.	4263.	4534.	4800.
63	PNEUMATIQUES	2731.	3062.	3345.	3634.	3887.	4272.	4603.	4844.	5108.
64	PROD. PLASTIQUES	3934.	4460.	5060.	5160.	5635.	6125.	6537.	6924.	7072.
65	INDUSTRIES DIVERSES	4932.	6107.	6861.	7708.	8660.	9726.	10924.	12269.	13780.
67	RECUPERATION	1103.	1358.	1420.	1485.	1552.	1623.	1696.	1772.	1852.
68	COMMERCE	-19641.	-21309.	-26545.	-28278.	-30457.	-32814.	-34869.	-36870.	-38886.
72	TRANSP FERROVIAIRES	464.	527.	546.	560.	578.	592.	607.	620.	641.
73	TRANSP ROUTIERS DE M	5554.	5224.	5628.	5819.	6136.	6426.	6676.	6799.	6873.
75	NAVIGATION INTERIEUR	96.	104.	109.	113.	117.	121.	126.	129.	131.
76	TRANSPORTS MARITIMES	2899.	2971.	3621.	3655.	4192.	4498.	4942.	5258.	5170.
77	TRANSPORTS AERIENS	1529.	1514.	1576.	1563.	1597.	1569.	1528.	1457.	1389.
78	SERVICES AUXILIAIRES	7457.	7478.	7960.	8246.	8626.	9059.	9446.	9768.	9968.
79	TELECOMMUNICATIONS	316.	332.	343.	350.	359.	366.	373.	378.	383.
80	SERVICE AUX ENTREPRI	9537.	11467.	12265.	12780.	13424.	14266.	15074.	15712.	16303.
81	LOCATION ET CREDIT-B	145.	146.	146.	146.	146.	146.	146.	146.	146.
84	ENSEIGNEMENT (MARCHA	241.	243.	243.	243.	243.	243.	243.	243.	243.
87	ASSURANCES	838.	795.	906.	927.	949.	978.	1021.	1062.	1105.
88	FINANCE	535.	781.	863.	949.	1039.	1133.	1229.	1329.	1431.
	TOTAL	344231.	369375.	397748.	419757.	450175.	481126.	508424.	532838.	555681.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: IMPORTS

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	3.65	8.55	4.83	4.82	7.71	.78	.85	.88
2	SYLVICULTURE	-9.02	6.06	2.09	3.01	2.19	2.00	1.04	.61
3	PECHE	3.55	4.09	3.61	4.75	3.90	2.88	2.98	2.02
4	HOUILLE,LIGNITE, AGG	14.32	2.09	2.10	2.11	2.12	2.13	2.14	2.15

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: IMPORTS

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
5	COKEFACTION	-19.24	3.05	6.05	3.28	4.72	4.80	1.75	3.72
6	PETROLE BRUT	-2.56	.06	1.93	1.40	.53	.05	-.15	.29
7	GAZ NATUREL	6.83	2.03	.33	2.53	1.86	2.29	1.85	1.32
8	PETROLE RAFFINE	8.53	.34	.71	1.08	-.12	.06	-.53	-.64
9	ELECTRICITE DISTRIBU	6.36	5.48	6.09	6.27	5.16	6.29	6.51	6.65
12	MINERAI DE FER	2.49	8.70	11.62	10.52	4.78	2.95	2.27	1.97
13	SIDERURGIE	-1.66	7.01	7.36	5.44	7.05	6.30	2.47	4.13
14	PROD. DE L'ACIER	.91	12.05	11.84	11.66	11.49	11.35	11.22	11.11
15	MINERAIS NON FERREUX	-5.66	-7.61	2.39	-2.79	-1.27	4.82	4.46	6.55
16	METAUX NON FERREUX	13.34	24.44	-2.44	10.38	8.05	3.23	2.51	-3.67
17	MINERAUX DIVERS	13.83	3.64	3.66	3.68	3.71	3.73	3.75	3.77
18	MATER. DE CONTRUCTIO	-3.26	4.96	3.12	3.00	2.23	2.06	1.38	1.49
19	VERRE	2.79	9.96	-.07	5.81	3.58	3.53	2.69	-.47
20	CHIMIE MINERALE	6.46	5.75	.90	3.50	1.04	-.42	-1.95	-3.05
21	CHIMIE ORGANIQUE	7.35	12.86	5.31	9.20	9.87	6.27	3.93	2.69
22	PARACHIMIE	16.71	8.71	3.64	7.38	8.16	8.70	7.86	6.53
23	PRODUITS PHARMACEUTI	27.55	5.66	5.84	6.02	6.19	6.36	6.52	6.68
24	FONDERIES	4.61	12.81	11.62	11.38	13.29	11.22	10.93	10.77
25	TRAVAIL DES METAUX	3.48	15.15	14.87	14.66	14.17	13.97	13.88	13.77
26	MACHINES AGRICOLES	4.92	5.81	4.57	4.23	3.18	3.71	2.22	3.29
27	MACHINES OUTILS	-8.82	15.68	14.19	13.77	10.99	9.28	9.51	9.37
28	EQUIPMENT INDUSTRIEL	-.09	10.65	10.43	10.39	8.89	8.66	8.76	8.73
29	MATERIEL MTPS	-5.43	19.26	16.53	15.94	15.16	14.27	13.19	13.31
30	MATERIEL D'ARMEMENT	44.95	6.51	7.01	7.51	8.01	8.50	8.98	9.45
31	MACHINES DE BUREAU	15.39	7.95	9.06	9.50	9.85	7.79	8.22	8.30
32	MATERIEL ELECTRIQUE	7.68	8.13	6.50	7.08	6.96	8.24	6.61	6.36
33	MATERIEL ELECTRONIQU	11.61	23.13	22.06	21.65	14.34	13.86	14.23	14.02
34	MATERIEL ELECTRONIQU	5.07	9.45	-.59	.48	2.79	-.14	.47	-.09
35	EQUIPEMENT MENAGER	-1.78	9.66	9.44	8.35	11.76	8.70	8.42	9.42
36	VEHICULES AUTOMOBILE	.48	12.98	7.51	9.70	9.32	5.03	3.05	2.81
37	MATERIEL FERROVIAIRE	-9.57	14.81	14.00	13.34	12.77	12.29	11.89	11.53
38	CONSTRUCTION NAVALE	-17.74	20.91	14.58	11.24	9.21	5.51	1.65	4.37
39	CONSTR. AERONAUTIQUE	-4.39	14.52	14.01	13.58	13.22	12.90	12.63	12.40
40	INSTRUMENTS ET MATER	6.71	19.44	9.99	11.87	11.96	7.42	5.68	5.21
41	VIANDES	13.41	6.75	8.06	4.35	5.01	3.77	3.16	2.71
42	LAIT ET PRODUITS LAI	25.31	4.31	1.27	3.51	2.99	2.86	2.66	1.24
43	CONSERVES	6.50	5.98	3.56	3.94	4.88	2.93	2.49	2.22
44	PAIN ET PATISSERIE	17.26	.00	.00	.00	.00	.00	.00	.00
45	PRODUITS DU GRAIN	1.02	4.48	1.96	3.79	3.33	3.62	2.78	1.55
46	CORPS GRAS ALIMENTAI	6.48	.60	.96	1.93	.56	3.17	3.64	1.51
47	SUCRE	-1.78	-2.82	-2.79	-2.71	-2.78	-2.72	-2.69	-2.66
48	AUTRES PROD. ALIMENT	4.49	1.50	1.71	2.03	1.12	2.06	1.45	.90
49	BOISSONS ET ALCOOLS	13.88	2.31	2.54	2.42	1.87	.61	-.11	.38
50	TABACS ET PROD.	18.60	2.29	-.20	2.28	.77	1.90	2.05	.27
51	FILS ET FIBRES ARTIF	.83	13.91	14.31	14.62	4.83	6.47	6.98	6.79
52	FILS ET FILES	-.93	8.23	1.32	3.44	1.87	.51	-1.03	-2.16
53	BONNETERIE	1.88	-6.72	26.69	26.33	23.29	17.81	12.88	9.75
54	OUVRAGE EN FILES	3.40	8.82	9.92	6.11	7.26	5.08	3.61	2.75
55	CUIRS ET PEAUX	2.07	5.81	3.49	5.28	5.85	4.85	3.32	2.65
56	ARTICLES EN CUIR	16.98	17.69	5.14	8.18	12.22	9.91	9.44	7.18
57	CHAUSSURES	7.80	15.83	-.53	9.11	7.77	5.86	6.29	.84
58	HABILLEMENT	.47	5.63	3.93	7.56	6.59	4.86	4.34	1.63
59	PROD DU BOIS	-.42	6.70	3.24	4.15	5.09	4.88	4.04	3.41
60	MEUBLES	.96	5.46	2.19	2.51	3.49	1.99	1.81	1.93
61	PAPIER, CARTON	7.60	4.66	3.45	4.35	5.19	7.65	6.27	5.61
62	PRESSE,IMPRIMERIE,ED	7.83	6.94	5.70	6.22	8.50	7.48	6.36	5.86
63	PNEUMATIQUES	5.89	9.24	7.76	7.86	9.88	7.75	5.24	5.45
64	PROD. PLASTIQUES	6.48	13.88	2.18	8.56	8.70	6.72	5.92	2.14
65	INDUSTRIES DIVERSES	11.27	12.35	12.35	12.35	12.31	12.31	12.32	12.32
67	RECUPERATION	10.96	4.58	4.56	4.55	4.53	4.52	4.51	4.49
68	COMMERCE	4.16	24.57	6.53	7.71	7.14	6.25	5.75	5.47
72	TRANSP FERROVIARES	6.57	3.59	2.57	3.24	2.37	2.65	2.07	3.35
73	TRANSP ROUTIERS DE M	-3.02	7.73	3.39	5.45	4.03	3.69	1.84	1.10
75	NAVIGATION INTERIEUR	4.08	4.47	3.68	3.96	3.71	3.76	2.01	2.19
76	TRANSPORTS MARITIMES	1.23	22.07	.79	14.68	7.29	9.88	6.41	-1.68

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: IMPORTS

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
77	TRANSPORTS AERIENS	-.99	4.11	-.86	2.17	-1.71	-2.64	-4.64	-4.66
78	SERVICES AUXILIAIRES	.14	6.45	3.59	4.60	5.02	4.27	2.77	2.68
79	TELECOMMUNICATIONS	2.50	3.35	1.94	2.51	1.99	1.98	1.43	1.13
80	SERVICE AUX ENTREPRI	9.37	7.52	4.19	5.08	6.27	5.66	4.24	3.76
81	LOCATION ET CREDIT-B	.34	.00	.00	.00	.00	.00	.00	.00
84	ENSEIGNEMENT (MARCHA	.41	.00	.00	.00	.00	.00	.00	.00
87	ASSURANCES	-2.60	13.90	2.35	2.43	3.06	4.39	3.99	4.04
88	FINANCE	20.82	10.52	9.98	9.47	8.99	8.53	8.10	7.69
	TOTAL	3.59	7.68	5.53	7.25	6.87	5.68	4.80	4.29

FORECAST FOR: REFERENCE FORECAST SERIE: CHANGES IN INVENTORIES

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	-2561.	4262.	6459.	5672.	6868.	7997.	9016.	10392.	10385.
4	HOUILLE,LIGNITE, AGG	-536.	-911.	-1360.	-1214.	-1470.	-1712.	-1930.	-2224.	-2223.
5	COKEFACTION	36.	-139.	-211.	-185.	-224.	-261.	-294.	-339.	-339.
6	PETROLE BRUT	361.	-1050.	-1591.	-1397.	-1692.	-1971.	-2221.	-2561.	-2558.
8	PETROLE RAFFINE	1040.	-1550.	-2349.	-2063.	-2498.	-2908.	-3279.	-3779.	-3777.
10	GAZ DISTRIBUE	117.	95.	144.	126.	153.	178.	201.	232.	231.
12	MINERAI DE FER	172.	32.	48.	43.	52.	60.	68.	78.	78.
13	SIDERURGIE	821.	-1835.	-2781.	-2442.	-2957.	-3443.	-3882.	-4474.	-4471.
14	PROD. DE L'ACIER	133.	24.	36.	32.	39.	45.	51.	59.	58.
15	MINERAIS NON FERREUX	25.	-45.	-68.	-59.	-72.	-84.	-95.	-109.	-109.
16	METAUX NON FERREUX	3592.	4003.	6067.	5327.	6451.	7511.	8468.	9761.	9754.
17	MINERAUX DIVERS	-255.	136.	161.	141.	171.	199.	224.	258.	258.
18	MATER. DE CONTRUCTIO	872.	159.	241.	212.	256.	298.	336.	388.	387.
19	VERRE	611.	812.	1231.	1081.	1308.	1524.	1718.	1980.	1979.
20	CHIMIE MINERALE	276.	-248.	-376.	-330.	-400.	-465.	-525.	-605.	-604.
21	CHIMIE ORGANIQUE	636.	-117.	-177.	-156.	-189.	-220.	-248.	-285.	-285.
22	PARACHIMIE	1912.	2027.	3072.	2697.	3266.	3803.	4288.	4943.	4939.
23	PRODUITS PHARMACEUTI	432.	678.	1028.	902.	1093.	1272.	1434.	1653.	1652.
24	FONDERIES	-265.	-401.	-608.	-534.	-646.	-752.	-848.	-978.	-977.
25	TRAVAIL DES METAUX	1355.	386.	585.	514.	622.	724.	817.	941.	941.
26	MACHINES AGRICOLES	-136.	146.	221.	194.	235.	274.	309.	356.	356.
27	MACHINES OUTILS	82.	197.	299.	262.	317.	370.	417.	480.	480.
28	EQUIPMENT INDUSTRIEL	426.	704.	1067.	937.	1134.	1321.	1489.	1717.	1715.
29	MATERIEL MIPS	248.	182.	276.	242.	293.	341.	385.	444.	443.
30	MATERIEL D'ARMEMENT	-129.	119.	180.	158.	192.	223.	252.	290.	290.
31	MACHINES DE BUREAU	-96.	-19.	-120.	-105.	-127.	-148.	-167.	-193.	-192.
32	MATERIEL ELECTRIQUE	1201.	617.	935.	821.	994.	1158.	1305.	1504.	1503.
33	MATERIEL ELECTRONIQU	317.	1478.	2240.	1967.	2382.	2773.	3127.	3604.	3601.
34	MATERIEL ELECTRONIQU	796.	456.	682.	599.	725.	844.	952.	1097.	1096.
35	EQUIPEMENT MENAGER	877.	-252.	-382.	-335.	-406.	-473.	-533.	-614.	-614.
36	VEHICULES AUTOMOBILE	3229.	-12.	-18.	-16.	-19.	-23.	-25.	-29.	-29.
37	MATERIEL FERROVIAIRE	57.	-99.	-150.	-132.	-160.	-186.	-209.	-241.	-241.
38	CONSTRUCTION NAVALE	-108.	-74.	-112.	-98.	-119.	-139.	-157.	-180.	-180.
39	CONSTR. AERONAUTIQUE	730.	548.	831.	729.	883.	1028.	1159.	1336.	1335.
40	INSTRUMENTS ET MATER	458.	387.	587.	515.	624.	726.	819.	948.	943.
41	VIANDES	79.	-74.	-112.	-98.	-119.	-139.	-157.	-180.	-180.
42	LAIT ET PRODUITS LAI	-329.	1472.	2534.	2225.	2694.	3137.	3537.	4077.	4074.
43	CONSERVES	-811.	-3.	-5.	-4.	-5.	-6.	-6.	-7.	-7.
45	PRODUITS DU GRAIN	-62.	-53.	-80.	-71.	-85.	-99.	-112.	-129.	-129.
46	CORPS GRAS ALIMENTAI	55.	171.	259.	228.	276.	321.	362.	417.	417.
47	SUCRE	-578.	213.	414.	363.	440.	512.	578.	666.	665.
48	AUTRES PROD. ALIMENT	-5.	-39.	-59.	-52.	-63.	-73.	-83.	-95.	-95.
49	BOISSONS ET ALCOOLS	-471.	-586.	-888.	-780.	-944.	-1100.	-1240.	-1429.	-1428.
50	TABACS ET PROD.	1508.	479.	726.	637.	772.	899.	1013.	1168.	1167.
51	FILS ET FIBRES ARTIF	-33.	-244.	-370.	-325.	-393.	-458.	-516.	-595.	-595.
52	FILS ET FILES	151.	-44.	-67.	-59.	-71.	-83.	-93.	-107.	-107.

FORECAST FOR: REFERENCE FORECAST SERIE: CHANGES IN INVENTORIES

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985	1986
53	BONNETERIE	600.	102.	155.	136.	164.	191.	216.	249.	249.
54	OUVRAGE EN FILES	276.	-192.	-291.	-256.	-309.	-360.	-406.	-468.	-468.
55	CUIRS ET PEAUX	96.	-94.	-142.	-125.	-151.	-176.	-199.	-229.	-229.
56	ARTICLES EN CUIR	128.	119.	211.	238.	288.	336.	379.	436.	436.
57	CHAUSSURES	780.	1314.	1991.	1749.	2117.	2465.	2780.	3204.	3202.
58	HABILLEMENT	1963.	938.	1422.	1248.	1512.	1760.	1984.	2287.	2286.
59	PROD DU BOIS	733.	413.	626.	550.	666.	775.	874.	1007.	1006.
60	MEUBLES	207.	26.	39.	35.	42.	49.	55.	63.	63.
61	PAPIER, CARTON	504.	-37.	-56.	-49.	-60.	-69.	-78.	-90.	-90.
62	PRESSE,IMPRIMERIE,ED	1.	-218.	-330.	-290.	-351.	-409.	-461.	-532.	-531.
63	PNEUMATIQUES	27.	-433.	-656.	-576.	-698.	-812.	-916.	-1056.	-1055.
64	PROD. PLASTIQUES	1992.	1163.	2612.	2296.	2781.	3308.	3729.	4299.	4296.
65	INDUSTRIES DIVERSES	138.	240.	364.	319.	387.	450.	508.	585.	585.
66	BATIMENT ET GENIE CI	-2148.	-415.	-720.	-632.	-765.	-891.	-1005.	-1158.	-1157.
67	RECUPERATION	-116.	-98.	-149.	-130.	-158.	-184.	-207.	-239.	-239.
	TOTAL	20624.	15580.	23614.	20732.	25105.	29231.	32955.	37988.	37960.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: CHANGES IN INVENTORIES

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
4	HOUILLE,LIGNITE, AGG	30.36	51.50	-12.03	21.09	16.46	12.73	15.23	-.14
5	COKEFACTION	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
6	PETROLE BRUT	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
8	PETROLE RAFFINE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
10	GAZ DISTRIBUE	-9.89	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
12	MINERAI DE FER	-56.87	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
13	SIDERURGIE	.10	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
14	PROD. DE L'ACIER	-57.52	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
15	MINERAIS NON FERREUX	.00	51.45	-13.24	22.03	16.67	13.10	14.74	.06
16	METAUX NON FERREUX	5.57	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
17	MINERAUX DIVERS	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
18	MATER. DE CONSTRUCTIO	-57.30	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
19	VERRE	15.28	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
20	CHIMIE MINERALE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
21	CHIMIE ORGANIQUE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
22	PARACHIMIE	2.96	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
23	PRODUITS PHARMACEUTI	25.28	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
24	FONDERIES	23.01	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
25	TRAVAIL DES METAUX	-46.63	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
26	MACHINES AGRICOLES	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
27	MACHINES OUTILS	55.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
28	EQUIPMENT INDUSTRIEL	28.55	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
29	MATERIEL MTPS	-14.33	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
30	MATERIEL D'ARMEMENT	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
31	MACHINES DE BUREAU	-9.29	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
32	MATERIEL ELECTRIQUE	-28.29	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
33	MATERIEL ELECTRONIQU	115.93	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
34	MATERIEL ELECTRONIQU	-20.16	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
35	EQUIPEMENT MENAGER	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
36	VEHICULES AUTOMOBILE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
37	MATERIEL FERROVIAIRE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
38	CONSTRUCTION NAVALE	-36.58	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
39	CONSTR. AERONAUTIQUE	-13.36	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
40	INSTRUMENTS ET MATER	-8.08	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
41	VIANDES	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
42	LAIT ET PRODUITS LAI	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
43	CONSERVES	-93.92	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
45	PRODUITS DU GRAIN	-7.54	51.56	-12.20	21.09	16.44	12.74	15.27	-.07

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: CHANGES IN INVENTORIES

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
46	CORPS GRAS ALIMENTAI	76.33	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
47	SUCRE	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
48	AUTRES PROD. ALIMENT	179.28	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
49	BOISSONS ET ALCOOLS	11.54	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
50	TABACS ET PROD.	-43.64	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
51	FILS ET FIBRES ARTIF	171.92	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
52	FILS ET FILES	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
53	BONNETERIE	-58.77	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
54	OUVRAGE EN FILES	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
55	CUIRS ET PEAUX	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
56	ARTICLES EN CUIR	18.26	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
57	CHAUSSURES	29.79	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
58	HABILLEMENT	-29.19	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
59	PROD DU BOIS	-24.94	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
60	MEUBLES	-69.56	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
61	PAPIER. CARTON	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
62	PRESSE,IMPRIMERIE,ED	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
63	PNEUMATIQUES	.00	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
64	PROD. PLASTIQUES	8.70	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
65	INDUSTRIES DIVERSES	31.88	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
66	BATIMENT ET GENIE CI	-52.97	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
67	RECUPERATION	-8.09	51.56	-12.20	21.09	16.44	12.74	15.27	-.07
	TOTAL	-13.68	51.56	-12.20	21.09	16.44	12.74	15.27	-.07

FORECAST FOR: REFERENCE FORECAST — SERIE: P.O.E.

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	INVEST. DES SOC.	193563.	196851.	200067.	211589.	214422.	211759.	212503.	210534.	214529.
2	INVEST. DES MENAGES	88755.	87235.	88553.	88938.	87760.	87927.	88438.	89291.	89961.
3	INVEST. DES ENT. DE	13475.	13248.	13312.	13061.	12813.	12703.	13301.	13904.	14338.
4	INVEST. DES ENT. D'A	2495.	2421.	2433.	2387.	2341.	2321.	2431.	2541.	2620.
5	INVEST. DES ADMS PUB	48877.	48474.	49182.	50085.	51379.	51994.	52213.	52406.	52406.
6	INVEST. DES ADMS PRI	1105.	1205.	1223.	1245.	1277.	1293.	1298.	1303.	1303.
	TOTAL	347870.	349434.	358769.	366806.	369993.	367996.	370182.	369979.	374659.

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: P.O.E.

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	INVEST. DES SOC.	-.85	3.67	3.69	1.34	-1.24	.35	-.93	1.90
2	INVEST. DES MENAGES	-.86	1.51	-.13	-.77	-.19	.58	.96	.19
3	INVEST. DES ENT. DE	-.85	.48	-1.88	-1.90	-.86	4.71	4.53	3.13
4	INVEST. DES ENT. D'A	7.56	.48	-1.88	-1.90	-.86	4.71	4.53	3.13
5	INVEST. DES ADMS PUB	-.41	1.46	1.84	2.58	1.20	.42	.37	.00
6	INVEST. DES ADMS PRI	4.43	1.46	1.84	2.58	1.20	.42	.37	.00
	TOTAL	.22	2.67	2.24	.87	-.54	.59	-.05	1.26

FORECAST FOR: REFERENCE FORECAST — SERIE: EMPLOYMENT

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRI.,SYL.,PECHE	406.	385.	360.	365.	354.	344.	335.	332.	325.
2	VIANDE PROD. LAITIER	158.	167.	171.	172.	176.	179.	183.	189.	193.
3	AUTRES PROD. ALIM.	347.	353.	349.	344.	342.	341.	338.	341.	340.
4	COMB. MIN. SOL.	80.	78.	81.	81.	80.	78.	76.	74.	73.
5	PETROLE, GAZ	44.	42.	41.	40.	39.	39.	38.	38.	37.
6	ELECTRICITE GAZ EAU	174.	172.	169.	161.	159.	156.	146.	144.	142.
7	MIN., METAUX FER.	223.	220.	226.	226.	227.	227.	227.	228.	228.
8	MIN., METAUX NON FER	67.	62.	57.	54.	52.	49.	49.	51.	54.
9	MAT. DE CONSTRUC.	203.	191.	184.	179.	174.	170.	165.	163.	160.
10	VERRE	73.	74.	75.	74.	74.	74.	75.	75.	74.
11	CHIMIE DE BASE	188.	183.	177.	173.	170.	171.	173.	179.	183.
12	PARACHIMIE	161.	158.	157.	155.	154.	155.	155.	157.	157.
13	FONDERIE	515.	503.	502.	503.	505.	504.	501.	499.	494.
14	CONS. MECA.	569.	551.	545.	541.	537.	535.	535.	538.	539.
15	MAT. ELEC. PROF.	470.	454.	452.	428.	415.	410.	401.	386.	369.
16	EQUIP. MENAGER	108.	102.	100.	99.	99.	102.	104.	108.	112.
17	AUTOMOBILE	534.	526.	530.	527.	533.	536.	541.	551.	559.
18	CONSTR. NAVALE	236.	243.	250.	250.	248.	248.	247.	247.	244.
19	TEXTILE	612.	562.	542.	523.	511.	497.	484.	478.	468.
20	CUIR	121.	114.	115.	113.	115.	117.	118.	122.	123.
21	BOIS, MEUBLES	340.	329.	324.	314.	308.	302.	295.	290.	283.
22	PAPIER	137.	135.	134.	133.	133.	132.	130.	128.	125.
23	PRESSE,EDITION	207.	209.	210.	210.	213.	215.	216.	220.	223.
24	CAOUTCHOUC,PLAST	226.	226.	226.	224.	225.	225.	225.	227.	227.
25	BATIMENT	1576.	1485.	1458.	1426.	1385.	1335.	1293.	1253.	1212.
26	COMMERCE	1835.	1871.	1918.	1984.	2050.	2128.	2207.	2248.	2268.
27	REP. COM. AUTO	308.	322.	320.	316.	316.	316.	315.	309.	301.
28	HOTELS,CAFES	355.	369.	371.	376.	385.	394.	402.	406.	408.
29	TRANSPORTS	815.	822.	804.	787.	775.	766.	756.	732.	705.
30	P.T.T.	415.	442.	451.	458.	472.	487.	502.	509.	514.
31	SERV. ENTREP.	761.	772.	793.	819.	800.	796.	777.	788.	799.
32	SERV. PART.	1393.	1491.	1515.	1532.	1565.	1601.	1639.	1652.	1659.
33	LOC. C.B. IMMO	52.	60.	63.	68.	73.	77.	82.	87.	92.
34	ASSURANCES	127.	136.	143.	148.	144.	142.	139.	134.	128.
35	SERV. ORG. FIN.	393.	396.	396.	395.	402.	409.	418.	420.	420.
	TOTAL	14119.	14215.	14228.	14196.	14203.	14246.	14288.	14278.	14235.

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: EMPLOYMENT

SECTOR		78-78	79-79	80-80	80-81	81-82	82-83	83-84	84-85
1	AGRI.,SYL.,PECHE	-2.68	-1.17	-3.62	-3.18	-2.73	-2.57	-.87	-2.06
2	VIANDE PROD. LAITIER	2.94	2.23	.76	1.98	1.97	1.94	3.35	2.52
3	AUTRES PROD. ALIM.	.75	-.90	-1.53	-.64	-.46	-.51	.76	-.10
4	COMB. MIN. SOL.	-1.42	-.97	-.41	-1.11	-2.69	-2.47	-2.90	-1.18
5	PETROLE, GAZ	-2.04	-1.94	-2.74	-1.47	-1.73	-1.72	-.51	-1.09
6	ELECTRICITE GAZ EAU	-.98	-1.80	-4.85	-3.88	-2.95	-2.69	-1.35	-1.67
7	MIN., METAUX FER.	-.53	2.60	.02	.21	-.03	-.01	.65	-.13
8	MIN., METAUX NON FER	-3.37	-8.94	-4.93	-4.50	-4.81	-.49	4.03	4.07
9	MAT. DE CONSTRUC.	-2.90	-3.81	-2.78	-2.50	-2.77	-2.67	-1.28	-1.75
10	VERRE	.21	1.92	-1.04	-.81	.51	.13	1.03	-.64
11	CHIMIE DE BASE	-1.24	-3.01	-2.56	-1.40	.03	1.58	3.07	2.31
12	PARACHIMIE	-1.01	-.31	-1.42	-.56	.35	.12	1.30	-.31
13	FONDERIE	-1.12	-.31	-.19	.47	-.29	-.54	-.26	-1.36
14	CONS. MECA.	-1.60	-1.17	-.77	-.61	-.50	-.01	.73	.13
15	MAT. ELEC. PROF.	-1.69	-.45	-5.24	-3.01	-1.35	-2.10	-3.31	-4.86
16	EQUIP. MENAGER	-3.09	-2.07	-.20	-.32	2.57	2.76	3.54	3.39
17	AUTOMOBILE	.15	-1.16	-.93	1.02	.61	.84	1.90	1.50
18	CONSTR. NAVALE	1.56	3.00	-.33	-.63	-.05	-.30	.15	-1.43
19	TEXTILE	-4.17	-3.46	-3.65	-2.27	-2.72	-2.67	-1.21	-2.14

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: EMPLOYMENT

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
20	CUIR	-3.09	.80	-1.05	1.33	1.60	1.25	2.84	.88
21	BOIS, MEUBLES	-1.57	-1.78	-3.01	-1.96	-1.72	-2.43	-1.63	-2.58
22	PAPIER	-1.06	-.21	-1.02	-.27	-.24	-1.87	-1.59	-2.49
23	PRESSE, EDITION	.64	.27	.27	1.27	.88	.61	1.77	1.15
24	CAOUTCHOUC, PLAST	.15	-.11	-1.05	.34	.31	-.02	.96	-.36
25	BATIMENT	-2.93	-1.87	-2.19	-2.88	-3.61	-3.09	-3.38	-2.99
26	COMMERCE	.96	2.56	3.45	3.36	3.77	3.72	1.76	1.00
27	REP. COM. AUTO	2.22	-.89	-1.15	-.01	-.06	-.19	-1.97	-2.51
28	HOTELS, CAFES	1.98	.51	1.19	2.44	2.31	2.31	.81	.34
29	TRANSPORTS	.41	-2.09	-2.20	-1.53	-1.15	-1.23	-3.26	-3.67
30	P.T.T.	3.22	1.85	1.60	3.02	3.15	3.27	1.39	.93
31	SERV. ENTREP.	4.98	2.65	3.31	-2.36	-.48	-2.38	-1.20	4.00
32	SERV. PART.	5.37	1.63	1.11	2.87	2.32	2.33	.79	.42
33	LOC. C.B. IMMO	7.19	6.09	7.33	7.90	5.76	6.08	5.92	5.41
34	ASSURANCES	3.23	5.17	3.35	-2.29	-1.85	-1.65	-3.81	-4.21
35	SERV. ORG. FIN.	.45	-.12	-.07	1.62	1.90	2.10	.43	-.02
	TOTAL	.34	.09	-.22	.05	.30	.30	-.07	-.30

FORECAST FOR: REFERENCE FORECAST — SERIE: NUM. OF HOURS PER WEEK

SECTOR		1978	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRI., SYL., PECHE	42.5	41.5	41.1	40.8	40.5	40.3	40.1	39.9	39.8
2	VIANDE PROD. LAITIER	42.5	41.5	41.1	40.8	40.5	40.3	40.1	39.9	39.8
3	AUTRES PROD. ALIM.	42.5	41.5	41.1	40.8	40.5	40.3	40.1	39.9	39.8
4	COMB. MIN. SOL.	39.3	39.1	38.8	38.5	38.2	37.9	37.7	37.4	37.2
5	PETROLE, GAZ	40.4	40.1	40.0	39.9	39.9	39.8	39.8	39.8	39.8
6	ELECTRICITE GAZ EAU	40.0	39.8	39.6	39.3	39.0	38.7	38.4	38.1	37.9
7	MIN., METAUX FER.	43.0	41.3	40.6	40.1	39.7	39.4	39.2	39.1	38.9
8	MIN., METAUX NON FER	43.0	41.3	40.7	40.2	39.9	39.7	39.5	39.4	39.3
9	MAT. DE CONSTRUC.	41.8	40.7	40.1	39.8	39.4	39.2	39.0	38.8	38.7
10	VERRE	41.8	40.7	40.1	39.8	39.4	39.2	39.0	38.8	38.7
11	CHIMIE DE BASE	40.1	39.9	39.6	39.4	39.2	39.0	38.8	38.7	38.5
12	PARACHIMIE	40.1	39.9	39.6	39.4	39.2	39.0	38.8	38.7	38.5
13	FONDERIE	42.3	41.1	41.6	40.1	39.8	39.5	39.2	39.1	38.9
14	CONS. MECA.	41.7	40.5	40.0	39.5	39.1	38.8	38.6	38.4	38.2
15	MAT. ELEC. PROF.	41.2	40.4	40.0	39.7	39.5	39.2	39.1	38.9	38.8
16	EQUIP. MENAGER	41.1	40.1	39.6	39.2	38.8	38.5	38.2	38.0	37.8
17	AUTOMOBILE	41.4	40.2	40.4	40.1	39.8	39.5	39.3	39.1	38.9
18	CONSTR. NAVALE	41.7	40.7	41.2	39.8	39.5	39.2	38.9	38.8	38.6
19	TEXTILE	41.4	40.8	40.6	40.4	40.2	40.1	39.9	39.8	39.7
20	CUIR	41.7	40.6	40.2	39.8	39.5	39.3	39.1	38.9	38.7
21	BOIS, MEUBLES	42.9	41.5	41.8	40.2	39.7	39.3	38.9	38.6	38.3
22	PAPIER	40.4	39.8	39.4	39.0	38.7	38.4	38.2	37.9	37.7
23	PRESSE, EDITION	41.4	40.8	40.5	40.3	40.1	39.9	39.8	39.7	39.6
24	CAOUTCHOUC, PLAST	41.6	40.6	41.1	39.7	39.4	39.1	38.9	38.7	38.6
25	BATIMENT	44.3	42.9	42.7	42.5	42.2	42.0	41.8	41.7	41.5
26	COMMERCE	42.3	41.5	41.2	41.9	40.7	40.4	40.3	40.1	39.9
27	REP. COM. AUTO	43.7	42.3	41.7	41.2	40.8	40.5	40.3	40.1	40.0
28	HOTELS, CAFES	43.2	42.8	42.5	42.3	42.0	41.8	41.6	41.4	41.2
29	TRANSPORTS	41.9	41.3	41.0	40.7	40.4	40.2	39.9	39.7	39.5
30	P.T.T.	40.6	40.4	41.2	40.1	39.9	39.8	39.6	39.5	39.4
31	SERV. ENTREP.	41.2	40.5	40.3	40.1	39.9	39.7	39.5	39.4	39.3
32	SERV. PART.	40.2	40.0	39.9	39.7	39.6	39.5	39.4	39.2	39.1
33	LOC. C.B. IMMO	40.0	39.9	39.8	39.7	39.6	39.5	39.3	39.2	39.1
34	ASSURANCES	40.0	39.9	39.8	39.7	39.6	39.5	39.3	39.2	39.1
35	SERV. ORG. FIN.	40.0	39.9	39.8	39.7	39.6	39.5	39.3	39.2	39.1
	AVERAGE	41.9	41.1	41.7	40.5	40.2	40.0	39.8	39.6	39.5

FORECAST FOR: REFERENCE FORECAST — GROWTH RATES FOR: NUM. OF HOURS PER WEEK

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRI.+SYL.+PECHE	-1.14	-.98	-.84	-.71	-.58	-.48	-.39	-.33
2	VIANDE PROD. LAITIER	-1.14	-.98	-.84	-.71	-.58	-.48	-.39	-.33
3	AUTRES PROD. ALIM.	-1.14	-.98	-.84	-.71	-.58	-.48	-.39	-.33
4	COMB. MIN. SOL.	-.24	-.70	-.79	-.80	-.77	-.73	-.69	-.65
5	PETROLE+ GAZ	-.42	-.24	-.16	-.11	-.08	-.06	-.05	-.04
6	ELECTRICITE GAZ EAU	-.21	-.64	-.75	-.78	-.76	-.72	-.67	-.62
7	MIN.+ METAUX FER.	-1.99	-1.71	-1.30	-.96	-.70	-.52	-.40	-.32
8	MIN.+ METAUX NON FER	-1.96	-1.59	-1.16	-.81	-.57	-.42	-.32	-.26
9	MAT. DE CONSTRUC.	-1.37	-1.26	-.99	-.78	-.61	-.50	-.41	-.36
10	VERRE	-1.37	-1.26	-.99	-.78	-.61	-.50	-.41	-.36
11	CHIMIE DE BASE	-.30	-.58	-.55	-.52	-.48	-.45	-.41	-.38
12	PARACHIMIE	-.30	-.58	-.55	-.52	-.48	-.45	-.41	-.38
13	FONDERIE	-1.37	-1.34	-1.12	-.92	-.74	-.61	-.50	-.41
14	CONS. MECA.	-1.40	-1.39	-1.17	-.97	-.79	-.65	-.54	-.45
15	MAT. ELEC. PROF.	-.94	-.97	-.80	-.65	-.52	-.43	-.35	-.30
16	EQUIP. MENAGER	-1.21	-1.29	-1.11	-.94	-.78	-.65	-.55	-.47
17	AUTOMOBILE	-.74	-.92	-.83	-.74	-.65	-.57	-.50	-.44
18	CONSTR. NAVALE	-1.17	-1.22	-1.04	-.87	-.72	-.59	-.49	-.41
19	TEXTILE	-.71	-.59	-.46	-.40	-.38	-.36	-.34	-.33
20	CUIR	-1.33	-1.09	-.85	-.69	-.59	-.53	-.48	-.45
21	BOIS, MEUBLES	-1.62	-1.66	-1.46	-1.27	-1.09	-.94	-.82	-.73
22	PAPIER	-.77	-.99	-.92	-.83	-.75	-.66	-.59	-.53
23	PRESSE+EDITION	-.71	-.74	-.59	-.47	-.38	-.32	-.28	-.26
24	CAOUTCHOUC+PLAST	-1.17	-1.20	-1.02	-.85	-.70	-.58	-.48	-.41
25	BATIMENT	-1.61	-.56	-.51	-.50	-.48	-.46	-.43	-.40
26	COMMERCE	-.91	-.79	-.70	-.61	-.53	-.46	-.41	-.36
27	REP. COM. AUTO	-1.58	-1.42	-1.21	-.99	-.77	-.59	-.44	-.33
28	HOTELS,CAFES	-.49	-.56	-.58	-.58	-.56	-.54	-.50	-.47
29	TRANSPORTS	-.72	-.73	-.71	-.68	-.64	-.61	-.57	-.53
30	P.T.T.	-.28	-.35	-.37	-.38	-.38	-.37	-.36	-.35
31	SERV. ENTREP.	-.80	-.65	-.56	-.48	-.42	-.37	-.33	-.30
32	SERV. PART.	-.27	-.31	-.32	-.32	-.32	-.31	-.29	-.28
33	LOC. C.R. IMMO	-.07	-.24	-.30	-.33	-.35	-.35	-.34	-.33
34	ASSURANCES	-.07	-.24	-.30	-.33	-.35	-.35	-.34	-.33
35	SERV. ORG. FIN.	-.07	-.24	-.30	-.33	-.35	-.35	-.34	-.33
	AVERAGE	-.63	-.71	-.92	-.57	-.25	-.19	-.50	-.69

FORECAST FOR: REFERENCE FORECAST — SERIE: OUTPUT

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	152852.	167492.	172898.	173413.	177997.	180740.	185251.	189018.	189948.
2	SYLVICULTURE	6356.	6833.	7167.	7140.	7258.	7345.	7419.	7447.	7454.
3	PECHE	3584.	3513.	3557.	3543.	3531.	3492.	3461.	3429.	3396.
4	HOUILLE+LIGNITE+ AGG	6104.	5510.	5251.	5354.	4931.	4644.	4312.	3791.	3715.
5	COKEFACTION	4579.	5260.	5212.	5259.	5322.	5321.	5317.	5240.	5222.
6	PETROLE BRUT	472.	2555.	2555.	2575.	2591.	2595.	2604.	2603.	2606.
7	GAZ NATUREL	1653.	1838.	1864.	1919.	1972.	2039.	2093.	2140.	2181.
8	PETROLE RAFFINE	100853.	102013.	103057.	104579.	106509.	107562.	108871.	109337.	109628.
9	ELECTRICITE DISTRIBU	34117.	38114.	37335.	39740.	40541.	41621.	42536.	43377.	44211.
10	GAZ DISTRIBUE	10102.	11587.	11833.	11688.	12216.	12487.	12772.	13025.	13209.
11	EAU ET CHAUFFAGE URB	10640.	11815.	12068.	12149.	12414.	12687.	12943.	13167.	13363.
12	MINERAI DE FER	1114.	969.	815.	646.	480.	407.	363.	303.	272.
13	SIDERURGIE	41940.	45543.	46257.	47108.	47695.	48222.	48709.	48525.	48675.
14	PROD. DE L'ACIER	13016.	13970.	14323.	14244.	14285.	14345.	14351.	14082.	13751.
15	MINERAIS NON FERREUX	429.	381.	346.	356.	344.	338.	359.	379.	409.
16	METAUX NON FERREUX	22818.	19943.	18310.	18719.	18226.	18052.	19109.	20200.	21674.
17	MINERAUX DIVERS	2653.	2810.	2913.	2858.	2898.	2917.	2945.	2932.	2853.
18	MATER. DE CONTRUCTIO	31973.	32787.	33470.	34628.	35374.	35910.	36594.	37190.	37629.
19	VERRE	9465.	10482.	11240.	11376.	11900.	12443.	12907.	13312.	13459.

FORECAST FOR: REFERENCE FORECAST SERIE: OUTPUT

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
20	CHIMIE MINERALE	17635.	18909.	19357.	19602.	20036.	20449.	21019.	21423.	21713.
21	CHIMIE ORGANIQUE	33017.	36214.	37340.	38513.	39955.	42479.	45723.	48803.	51869.
22	PARACHIMIE	28950.	30964.	32970.	33571.	35266.	36892.	38381.	39738.	40991.
23	PRODUITS PHARMACEUTI	19449.	21451.	22768.	23501.	24663.	25771.	26847.	27872.	28588.
24	FONDERIES	15887.	15887.	16287.	16751.	17114.	17407.	17758.	17869.	18155.
25	TRAVAIL DES METAUX	59934.	61238.	63066.	63501.	64105.	63932.	63683.	62269.	60716.
26	MACHINES AGRICOLES	11950.	12202.	12664.	13056.	13432.	13690.	14052.	14271.	14611.
27	MACHINES OUTILS	11987.	14453.	14996.	14819.	14808.	14928.	15083.	14871.	14674.
28	EQUIPMENT INDUSTRIEL	44711.	47711.	50258.	51215.	52383.	53589.	55007.	55262.	55793.
29	MATERIEL MIPS	17660.	16582.	17575.	18610.	19771.	21020.	22438.	23719.	25140.
30	MATERIEL D'ARMEMENT	8824.	10035.	11361.	12386.	13783.	15442.	17224.	18943.	20782.
31	MACHINES DE BUREAU	6890.	5665.	6002.	5750.	5520.	5602.	5412.	4852.	4298.
32	MATERIEL ELECTRIQUE	28765.	29567.	31563.	33084.	35128.	37157.	39199.	40966.	42636.
33	MATERIEL ELECTRONIQU	27388.	29221.	29838.	27620.	25920.	25072.	23891.	21517.	18229.
34	MATERIEL ELECTRONIQU	5685.	6170.	6961.	7242.	7543.	8347.	8959.	9612.	10235.
35	EQUIPEMENT MENAGER	10741.	10212.	10948.	11787.	12623.	14037.	15435.	16937.	18742.
36	VEHICULES AUTOMOBILE	108282.	104718.	101526.	109445.	112463.	114201.	116358.	117664.	118766.
37	MATERIEL FERROVIAIRE	3885.	2949.	2762.	2543.	2342.	2138.	1993.	1850.	1805.
38	CONSTRUCTION NAVALE	12605.	12798.	13257.	13745.	14187.	14685.	15331.	15817.	16453.
39	CONSTR. AERONAUTIQUE	20955.	28211.	30845.	32042.	34065.	36119.	37940.	39056.	39844.
40	INSTRUMENTS ET MATER	11613.	12291.	12819.	13214.	13736.	14178.	14962.	15668.	16381.
41	VIANDES	69621.	71155.	72260.	72931.	73660.	74299.	74946.	75278.	75609.
42	LAIT ET PRODUITS LAI	37689.	41127.	43042.	43666.	45329.	46850.	48362.	49815.	50565.
43	CONSERVES	7691.	8460.	8768.	8885.	9088.	9330.	9578.	9812.	10014.
44	PAIN ET PATISSERIE	18940.	19611.	19923.	20060.	20209.	20447.	20656.	20868.	21072.
45	PRODUITS DU GRAIN	30655.	33978.	34997.	35427.	36343.	37095.	37979.	38648.	38988.
46	CORPS GRAS ALIMENTAI	5653.	5498.	5712.	5874.	6114.	6314.	6412.	6473.	6433.
47	SUCRE	8154.	9155.	9641.	9740.	10086.	10444.	10720.	10891.	10923.
48	AUTRES PROD. ALIMENT	12992.	13317.	13652.	13896.	14209.	14497.	14769.	14982.	15141.
49	BOISSONS ET ALCOOLS	24213.	25853.	26275.	26915.	27534.	28018.	28483.	28742.	29051.
50	TABACS ET PROD.	10539.	9736.	10113.	10178.	10568.	10771.	11053.	11356.	11448.
51	FILS ET FIBRES ARTIF	3068.	2827.	2765.	2703.	2566.	2616.	2596.	2470.	2383.
52	FILS ET FILES	18321.	18027.	18487.	18566.	18782.	18991.	18961.	18919.	18802.
53	BONNETERIE	9662.	9346.	10240.	9503.	9122.	8419.	7774.	7263.	6830.
54	OUVRAGE EN FILES	22726.	23232.	23528.	23623.	23818.	23816.	23813.	23716.	23552.
55	CUIRS ET PEAUX	2720.	2398.	2463.	2485.	2546.	2568.	2575.	2569.	2537.
56	ARTICLES EN CUIR	3809.	3787.	3956.	3974.	4055.	4124.	4162.	4198.	4184.
57	CHAUSSURES	8313.	8407.	8982.	8918.	9377.	9769.	10137.	10550.	10675.
58	HABILLEMENT	33194.	33099.	33780.	34329.	35495.	36966.	37439.	38355.	38752.
59	PROD DU BOIS	17994.	18399.	19137.	19365.	19809.	20146.	20479.	20703.	20840.
60	MEUBLES	17016.	17411.	18305.	18662.	19388.	20222.	20856.	21461.	22103.
61	PAPIER. CARTON	32147.	33481.	34973.	35413.	36329.	37066.	36946.	36521.	35985.
62	PRESSE.IMPRIMERIE.ED	32156.	34769.	35639.	36289.	37156.	37710.	38264.	38497.	38673.
63	PNEUMATIQUES	15792.	16354.	16718.	17041.	17405.	17645.	17827.	17820.	17843.
64	PROD. PLASTIQUES	18590.	19741.	20965.	21601.	21823.	22475.	23086.	23635.	23649.
65	INDUSTRIES DIVERSES	17453.	18865.	19234.	19026.	19023.	18963.	18591.	17946.	16935.
66	BATIMENT ET GENIE CI	232388.	235761.	241021.	245244.	247752.	248414.	250684.	252105.	254132.
67	RECUPERATION	6286.	6628.	6726.	6855.	6925.	7072.	7248.	7229.	7237.
68	COMMERCE	249677.	259327.	272053.	278798.	287459.	296571.	304660.	311392.	316820.
69	REPARATION AUTO.	35600.	37162.	38767.	39315.	40170.	40988.	41748.	42388.	42944.
70	REPARATIONS DIVERSES	5576.	5750.	5862.	5869.	5893.	5960.	5993.	6014.	6039.
71	HOTELS.CAFES.RESTAUR	70136.	73119.	74621.	74841.	76042.	76778.	77574.	78281.	78800.
72	TRANSP FERROVIAIRES	19027.	20123.	20562.	20884.	21304.	21608.	21956.	22232.	22701.
73	TRANSP ROUTIERS DE M	23223.	25270.	26616.	26454.	27085.	27657.	28148.	28386.	28526.
74	AUTRES TRANSP TERRES	17980.	18927.	19439.	19569.	19808.	20212.	20487.	21726.	20986.
75	NAVIGATION INTERIEUR	620.	646.	662.	676.	692.	708.	723.	731.	740.
76	TRANSPORTS MARITIMES	10238.	11802.	11848.	12088.	12190.	12591.	12820.	12371.	12339.
77	TRANSPORTS AERIENS	9766.	11065.	11553.	11779.	12163.	12586.	12919.	13106.	13287.
78	SERVICES AUXILIAIRES	38555.	42113.	43174.	43666.	44425.	44985.	45437.	45568.	45690.
79	TELECOMMUNICATIONS	35837.	39969.	41350.	42227.	43333.	44417.	45462.	46286.	46996.
80	SERVICE AUX ENTREPRI	124566.	132466.	136145.	140540.	144096.	146824.	149311.	150434.	151075.
81	LOCATION ET CREDIT-B	19650.	21353.	22148.	22613.	23222.	23826.	24422.	24878.	25266.
82	LOGEMENT	98212.	108568.	110276.	113966.	118587.	120869.	123872.	127058.	129905.
83	CREDIT-BAIL IMMOBILI	12735.	13724.	14268.	14564.	14953.	15334.	15699.	15968.	16193.
84	ENSEIGNEMENT (MARCHA	12511.	14668.	15288.	15717.	16217.	16665.	17084.	17374.	17649.

FORECAST FOR: REFERENCE FORECAST SERIE: OUTPUT

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
85	SANTE	93999.	108815.	111553.	113646.	115939.	118377.	120533.	122683.	124758.
86	AUTRES SERVICES MARC	38949.	42432.	43199.	43740.	44604.	45258.	45926.	46491.	46924.
87	ASSURANCES	17831.	21760.	24169.	25340.	25982.	26766.	27321.	27831.	28379.
88	FINANCE	69755.	68738.	71639.	72842.	74264.	75619.	76936.	77813.	78650.
	TOTAL	2663393.	2829484.	2921590.	2969553.	3038178.	3099310.	3162709.	3207047.	3242852.

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: OUTPUT

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	3.23	.30	2.64	1.54	2.50	2.03	.49
2	SYLVICULTURE	3.42	1.03	1.66	1.20	1.00	.38	.10
3	PECHE	-.45	-.40	-.38	-1.10	-.89	-.91	-.96
4	HOUILLE,LIGNITE, AGG	-4.71	1.97	-7.90	-5.88	-7.13	-12.10	-1.98
5	COKEFACTION	.23	1.68	.43	-.02	-.07	-1.43	-.35
6	PETROLE BRUT	.02	.77	.57	.22	.35	-.06	.12
7	GAZ NATUREL	3.01	1.34	2.76	3.39	2.63	2.27	1.89
8	PETROLE RAFFINE	1.02	1.48	1.84	.98	1.23	.43	.27
9	ELECTRICITE DISTRIBU	3.20	1.03	2.02	2.66	2.29	1.88	1.92
10	GAZ DISTRIBUE	2.12	.47	2.76	2.22	2.28	1.98	1.37
11	EAU ET CHAUFFAGE URB	2.31	.50	2.18	2.20	2.02	1.73	1.49
12	MINERAI DE FER	-10.27	-20.82	-25.63	-15.33	-10.67	-16.57	-10.30
13	SIDERURGIE	1.57	1.84	1.25	1.10	1.01	-.38	.31
14	PROD. DE L'ACIER	2.53	-.56	.29	.42	.04	-1.89	-2.34
15	MINERAIS NON FERREUX	-9.36	3.00	-3.47	-1.59	6.87	5.55	8.06
16	METAUX NON FERREUX	-7.72	2.23	-2.63	-.95	5.85	5.71	7.30
17	MINERAUX DIVERS	3.67	-1.88	1.38	.68	.96	-.47	-2.67
18	MATER. DE CONTRUCTIO	3.30	2.24	2.15	1.51	1.90	1.37	1.45
19	VERRE	7.23	1.21	4.61	4.57	3.73	3.18	1.10
20	CHIMIE MINERALE	2.37	1.27	2.21	2.06	2.79	1.92	1.36
21	CHIMIE ORGANIQUE	3.11	3.14	3.75	6.32	7.64	6.73	6.28
22	PARACHIMIE	6.48	1.82	5.05	4.61	4.04	3.58	1.64
23	PRODUITS PHARMACEUTI	6.23	3.15	4.92	4.52	4.15	3.82	2.57
24	FONDERIES	2.52	2.85	2.17	1.71	2.02	.63	1.60
25	TRAVAIL DES METAUX	3.02	.66	.95	-.27	-.39	-2.22	-2.49
26	MACHINES AGRICOLES	3.79	3.09	2.89	1.92	2.65	1.56	2.38
27	MACHINES OUTILS	3.76	-1.18	-.07	.76	1.09	-1.41	-1.32
28	EQUIPMENT INDUSTRIEL	5.34	1.91	2.28	2.30	2.65	.06	.96
29	MATERIEL MIPS	5.99	5.89	6.24	6.32	6.74	5.67	6.05
30	MATERIEL D'ARMEMENT	12.68	9.58	11.28	12.04	11.58	9.98	9.71
31	MACHINES DE BUREAU	5.94	-4.19	-4.01	1.49	-3.39	-10.33	-11.45
32	MATERIEL ELECTRIQUE	6.77	5.02	6.18	5.78	5.50	4.36	4.23
33	MATERIEL ELECTRONIQU	2.11	-1.43	-6.16	-3.27	-4.71	-9.94	-15.28
34	MATERIEL ELECTRONIQU	11.84	4.36	4.74	10.66	7.33	7.18	6.59
35	EQUIPEMENT MENAGER	7.21	7.67	7.09	11.22	9.96	9.73	10.66
36	VEHICULES AUTOMOBILE	2.68	1.19	2.76	1.58	1.89	1.67	.99
37	MATERIEL FERROVIAIRE	-8.39	-5.87	-7.92	-8.69	-6.78	-7.21	-2.42
38	CONSTRUCTION NAVALE	3.59	3.68	3.21	3.51	4.46	3.17	4.02
39	CONSTR. AERONAUTIQUE	9.34	3.88	6.31	6.03	5.09	2.92	2.03
40	INSTRUMENTS ET MATER	4.36	3.68	3.95	3.22	5.53	4.71	4.55
41	VIANDES	1.58	.90	1.03	.84	.79	.58	.44
42	LAIT ET PRODUITS LAI	4.66	1.45	3.81	3.36	3.23	3.01	1.56
43	CONSERVES	2.93	2.04	2.28	2.66	2.65	2.34	2.16
44	PAIN ET PATISSERIE	1.57	.70	.72	1.20	1.02	1.03	.98
45	PRODUITS DU GRAIN	3.00	1.23	2.59	2.07	2.38	1.76	.88
46	CORPS GRAS ALIMENTAI	4.98	1.77	4.08	3.28	1.55	.95	-.62
47	SUCRE	5.30	1.03	3.55	3.55	2.65	1.59	.30
48	AUTRES PROD. ALIMENT	2.06	1.79	2.25	2.02	1.88	1.44	1.06
49	BOISSONS ET ALCOOLS	1.63	2.44	2.31	1.73	1.69	.91	1.07
50	TABACS ET PROD.	3.87	.64	3.25	2.50	2.61	2.74	.81

FORECAST FOR: REFERENCE FORECAST GROWTH RATES FOR: OUTPUT

SECTOR		78-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
51	FILS ET FIBRES ARTIF	-3.83	-2.56	-2.25	-5.06	1.95	-.75	-4.85	-3.55
52	FILS ET FILES	-.81	2.55	.43	1.16	.58	.37	-.22	-.62
53	BONNETERIE	-1.65	7.43	-5.34	-4.01	-7.71	-7.66	-6.58	-8.71
54	OUVRAGE EN FILES	1.11	1.27	.40	.83	-.01	-.01	-.41	-.69
55	CUIRS ET PEAUX	-6.10	2.70	.89	2.47	.87	.28	-.24	-1.25
56	ARTICLES EN CUIR	-.29	4.46	.45	2.04	1.69	.93	.86	-.33
57	CHAUSSURES	.57	6.84	-.05	4.44	4.18	3.77	4.07	1.18
58	HABILLEMENT	-.14	2.06	1.63	3.40	2.74	2.67	2.45	1.63
59	PROD DU BOIS	1.12	4.01	1.38	2.18	1.70	1.63	1.12	.66
60	MEUBLES	1.15	5.14	1.04	2.79	4.31	3.15	2.96	2.99
61	PAPIER, CARTON	2.05	4.46	1.43	2.41	2.03	-.32	-1.15	-1.74
62	PRESSE,IMPRIMERIE,ED	3.98	2.50	1.82	2.39	1.49	1.31	.77	.46
63	ENEGMATIQUES	1.76	2.23	1.93	2.14	1.38	1.03	-.04	.13
64	PROD. PLASTIQUES	3.05	6.20	.17	3.92	2.99	2.72	2.38	.66
65	INDUSTRIES DIVERSES	3.97	1.95	-1.08	-.02	-.31	-1.96	-3.47	-5.63
66	BATIMENT ET GENIE CI	.72	2.23	1.75	1.02	.27	.91	.57	1.04
67	RECUPERATION	2.69	1.47	1.92	1.02	2.12	2.49	-.27	.12
68	COMMERCE	1.91	4.91	2.48	3.11	3.17	2.73	2.21	1.74
69	REPARATION AUTO.	2.99	2.71	1.36	2.17	2.03	1.85	1.54	1.31
70	REPARATIONS DIVERSES	1.58	1.88	.11	.42	1.12	.58	.34	.42
71	HOTELS,CAFES,RESTAUR	2.10	1.23	1.11	1.60	.96	1.04	.91	.66
72	TRANSP FERROVIAIRES	2.84	2.18	1.57	2.01	1.43	1.61	1.26	2.11
73	TRANSP ROUTIERS DE M	4.99	3.19	1.45	2.39	2.11	1.77	.84	.50
74	AUTRES TRANSP TERRES	2.60	2.70	.67	1.22	2.04	1.36	1.17	1.25
75	NAVIGATION INTERIEUR	2.01	2.60	2.12	2.31	2.24	2.14	1.12	1.24
76	TRANSPORTS MARITIMES	7.37	.39	2.02	.84	3.29	.23	-1.97	.22
77	TRANSPORTS AERIENS	6.44	4.41	1.96	3.26	3.43	2.70	1.45	1.38
78	SERVICES AUXILIAIRES	4.51	2.52	1.14	1.74	1.26	1.00	.29	.27
79	TELECOMMUNICATIONS	5.61	3.45	2.12	2.62	2.50	2.35	1.81	1.54
80	SERVICE AUX ENTREPRI	4.82	4.29	1.73	2.53	1.89	1.69	.75	.43
81	LOCATION ET CREDIT-B	4.12	3.97	2.10	2.69	2.60	2.50	1.87	1.56
82	LOGEMENT	5.14	1.57	3.35	4.05	1.92	2.48	2.57	2.24
83	CREDIT-BAIL IMMOBILI	3.81	3.96	2.08	2.67	2.55	2.38	1.71	1.41
84	ENSEIGNEMENT (MARCHA	8.28	4.23	2.80	3.18	2.76	2.52	1.69	1.58
85	SANTE	7.59	2.52	1.88	2.02	2.10	1.82	1.78	1.69
86	AUTRES SERVICES MARC	4.38	1.81	1.25	1.98	1.46	1.48	1.23	.94
87	ASSURANCES	11.73	13.92	2.22	2.37	3.18	2.07	1.87	1.97
88	FINANCE	3.03	4.22	1.68	1.95	1.82	1.75	1.14	1.08
	TOTAL	3.07	3.26	1.64	2.31	2.01	2.05	1.40	1.12

AX01 SUMPRINT

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 SERIES: PCF

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	47747.	47669.	47145.	47713.	48459.	48649.	49032.	49328.	49410.
2	SYLVICULTURE	160.	147.	138.	126.	113.	103.	91.	81.	68.
3	PECHE	7289.	7811.	7851.	7938.	8112.	8187.	8301.	8413.	8459.
4	HOUILLE,LIGNITE, AGG	1845.	1953.	2045.	1812.	1519.	1396.	1196.	1014.	872.
5	COKEFACTION	108.	117.	110.	104.	98.	92.	86.	81.	76.
8	PETROLE RAFFINE	38521.	40945.	41120.	41886.	44307.	45362.	46898.	48371.	49258.
9	ELECTRICITE DISTRIBU	11661.	14485.	14963.	14911.	15066.	15576.	15917.	16287.	16725.
10	GAZ DISTRIBUE	5517.	6660.	6683.	6652.	6852.	6997.	7140.	7291.	7409.
11	EAU ET CHAUFFAGE URB	6747.	7615.	7713.	7676.	7827.	8003.	8155.	8313.	8457.
14	PROD. DE L'ACIER	231.	234.	244.	248.	251.	262.	269.	277.	285.
16	METAUX NON FERREUX	114.	131.	141.	143.	144.	153.	159.	165.	171.
17	MINERAUX DIVERS	165.	169.	171.	172.	175.	179.	182.	185.	187.
18	MATER. DE CONSTRUCTIO	3249.	3731.	3806.	3901.	4061.	4170.	4321.	4449.	4541.
19	VERRE	2165.	2273.	2348.	2396.	2459.	2553.	2628.	2703.	2770.
20	CHIMIE MINERALE	54.	66.	62.	64.	64.	67.	68.	70.	72.
22	PARACHIMIE	15403.	16109.	16549.	17209.	18099.	18774.	19513.	20292.	20812.
23	PRODUITS PHARMACEUTI	21077.	21747.	22743.	23741.	24847.	25849.	26868.	27381.	28843.
25	TRAVAIL DES METAUX	6262.	6069.	6209.	6354.	6684.	6928.	7114.	7436.	7596.
26	MACHINES AGRICOLES	88.	98.	99.	102.	106.	109.	112.	115.	117.
31	MACHINES DE BUREAU	65.	71.	77.	79.	78.	89.	94.	101.	109.
32	MATERIEL ELECTRIQUE	2126.	2219.	2316.	2409.	2518.	2628.	2728.	2824.	2908.
34	MATERIEL ELECTRONIQU	9142.	11144.	12243.	12595.	12609.	13600.	14255.	14753.	15806.
35	EQUIPEMENT MENAGER	12911.	12507.	13221.	13503.	13399.	14268.	14741.	15286.	15992.
36	VEHICULES AUTOMOBILE	29023.	29751.	30487.	31541.	31556.	32633.	33656.	34718.	35589.
40	INSTRUMENTS ET MATER	6295.	6900.	7224.	7449.	7718.	8080.	8368.	8646.	8894.
41	VIANDES	66032.	71578.	72807.	72832.	73764.	75099.	76327.	77547.	78668.
42	LAIT ET PRODUITS LAI	31425.	32502.	33168.	33762.	34666.	35357.	36176.	36975.	37641.
43	CONSERVES	9652.	9702.	10264.	10509.	10744.	11097.	11414.	11737.	12057.
44	PAIN ET PATISSERIE	16639.	17141.	17353.	17473.	17531.	17760.	17951.	18156.	18364.
45	PRODUITS DU GRAIN	6769.	7219.	7398.	7569.	7703.	7863.	8035.	8204.	8368.
46	CORPS GRAS ALIMENTAI	3884.	4257.	4211.	4249.	4385.	4372.	4422.	4464.	4456.
47	SUCRE	2495.	2334.	2357.	2370.	2382.	2401.	2425.	2448.	2469.
48	AUTRES PROD. ALIMENT	15622.	15378.	15594.	15855.	16257.	16551.	16909.	17258.	17525.
49	BOISSONS ET ALCOOLS	16054.	16100.	16459.	16941.	17550.	18036.	18583.	19112.	19548.
50	TABACS ET PROD.	10091.	10574.	10718.	10882.	11178.	11393.	11661.	11924.	12114.
52	FILS ET FILES	1478.	1342.	1312.	1393.	1432.	1464.	1492.	1518.	1534.
53	BONNETERIE	13304.	13698.	14126.	14427.	15108.	15485.	15923.	16331.	16570.
54	OUVRAGE EN FILES	10157.	10750.	10745.	10871.	10972.	11291.	11483.	11672.	11858.
56	ARTICLES EN CUIR	4536.	4628.	4829.	4948.	5061.	5264.	5428.	5605.	5773.
57	CHAUSSURES	11873.	11958.	12104.	12336.	12656.	12983.	13295.	13612.	13866.
58	HABILLEMENT	37971.	38796.	38166.	38870.	40229.	41288.	42438.	43638.	44430.
59	PROD. DU BOIS	693.	682.	691.	709.	735.	749.	766.	783.	793.
60	MEUBLES	27229.	27917.	25459.	30344.	31771.	32766.	33989.	35267.	36571.
61	PAPIER, CARTON	2915.	3237.	3468.	3562.	3616.	3856.	4019.	4177.	4360.
62	PRESSE,IMPRIMERIE,ED	15123.	16136.	16349.	16681.	17295.	17758.	18256.	18759.	19105.
63	PNEUMATIQUES	4111.	4334.	4456.	4518.	4641.	4807.	4948.	5192.	5215.
64	PROD. PLASTIQUES	3359.	3561.	3622.	3774.	4009.	4137.	4302.	4461.	4570.
65	INDUSTRIES DIVERSES	22374.	24643.	25561.	26324.	27253.	28421.	29451.	30496.	31422.
66	BATIMENT ET GENIE CI	9478.	9854.	9984.	10235.	10697.	10965.	11324.	11692.	11971.
67	RECUPERATION	1203.	988.	1150.	1090.	1131.	1202.	1250.	1293.	1336.
69	REPARATION AUTO.	19233.	20128.	20459.	20646.	21146.	21757.	22285.	22626.	23277.
70	REPARATIONS DIVERSES	3513.	3585.	3625.	3594.	3564.	3603.	3606.	3614.	3633.
71	HOTELS,CAFES,RESTAUR	59937.	61230.	61732.	62314.	63417.	64072.	64850.	65577.	66181.
72	TRANSP FERROVIAIRES	4848.	[illegible]	4903.	4878.	4857.	4756.	4722.	4766.	5030.
74	AUTRES TRANSP TERRES	[illegible]	10448.	10666.	10627.	10600.	10831.	11041.	11189.	11277.
76	TRANSPORTS MARITIMES	515.	525.	482.	418.	497.	470.	467.	458.	452.
77	TRANSPORTS AERIENS	1472.	1653.	1633.	1651.	1708.	1715.	1746.	1814.	1937.

Appendix Table 16 Results of the Alternate Forecast

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 SERIES: PCE

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
78	SERVICES AUXILIAIRES	1866.	2118.	2113.	2127.	2184.	2193.	2228.	2291.	2444.
79	TELECOMMUNICATIONS	7846.	9725.	9861.	10065.	10375.	10688.	10997.	11[illegible]4.	11559.
80	SERVICE AUX ENTREPRI	7491.	7440.	7473.	7556.	7794.	7919.	8055.	8198.	8289.
81	LOCATION ET CREDIT-B	1210.	1445.	1461.	1510.	1586.	1615.	1664.	1709.	1739.
82	LOGEMENT	98212.	108568.	110716.	113966.	119334.	122183.	125791.	129630.	133141.
84	ENSEIGNEMENT (MARCHA	4497.	4781.	4889.	4969.	5067.	5184.	5286.	5390.	5496.
85	SANTE	93933.	105393.	107976.	109951.	112223.	114885.	117262.	119681.	122050.
86	AUTRES SERVICES MARC	23830.	26132.	26335.	26469.	26998.	27387.	27771.	28161.	28444.
87	ASSURANCES	15443.	16020.	16731.	17136.	17484.	18246.	18794.	19375.	20027.
88	FINANCE	2835.	2824.	2862.	2888.	2916.	2953.	2985.	3017.	3051.
	TOTAL	918443.	982259.	1004225.	1023108.	1050886.	1077560.	1103637.	1130296.	1154039.

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 GROWTH RATES FOR: PCE

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	-.69	.13	1.20	1.56	.39	.79	.63	.17
2	SYLVICULTURE	-4.15	-6.40	-8.43	-11.15	-9.10	-11.32	-12.75	-14.21
3	PECHE	3.52	.51	1.11	2.19	.93	1.38	1.24	.67
4	HOUILLE, LIGNITE, AGG	2.89	4.73	-11.41	-16.20	-8.49	-13.93	-15.22	-14.02
5	COKEFACTION	4.08	-5.82	-5.88	-5.94	-6.30	-6.15	-6.11	-6.17
8	PETROLE RAFFINE	3.11	.43	1.86	5.78	2.38	3.39	3.14	1.84
9	ELECTRICITE DISTRIBU	11.45	3.36	-.34	1.09	3.38	2.20	2.32	2.68
10	GAZ DISTRIBUE	9.97	.36	-.47	3.01	2.02	2.13	2.11	1.63
11	EAU ET CHAUFFAGE URB	6.55	1.29	-.48	1.97	2.25	1.89	1.94	1.74
14	PROD. DE L'ACIER	.65	4.22	1.54	1.24	4.51	2.74	2.84	2.82
16	METAUX NON FERREUX	7.20	6.68	2.34	1.16	6.35	3.54	3.65	3.94
17	MINERAUX DIVERS	1.20	1.24	.47	1.54	2.34	1.70	1.76	1.14
18	MATER. DE CONTRUCTIO	7.16	2.01	2.49	4.11	3.18	3.12	2.96	2.37
19	VERRE	2.46	3.29	2.06	2.61	3.85	2.41	2.88	2.47
20	CHIMIE MINERALE	5.41	3.86	2.12	1.12	3.49	2.32	2.35	2.58
22	PARACHIMIE	2.27	2.73	3.99	5.17	3.73	3.94	3.73	2.82
23	PRODUITS PHARMACEUTI	4.25	4.60	4.39	4.64	4.03	3.94	3.77	3.46
25	TRAVAIL DES METAUX	-1.55	2.31	2.97	4.54	3.65	3.59	3.38	2.42
26	MACHINES AGRICOLES	5.53	.93	2.77	4.65	2.39	3.03	2.86	1.79
31	MACHINES DE BUREAU	4.51	8.07	2.59	-1.36	14.15	6.41	7.19	8.13
32	MATERIEL ELECTRIQUE	2.16	4.39	4.00	4.52	4.36	3.89	3.51	2.96
34	MATERIEL ELECTRONIQU	10.41	9.86	2.88	.11	8.18	4.51	4.91	5.71
35	EQUIPEMENT MENAGER	.39	5.76	2.09	-.78	6.49	3.31	3.70	4.62
36	VEHICULES AUTOMOBILE	.56	2.51	1.51	3.16	3.58	3.13	3.16	2.51
40	INSTRUMENTS ET MATER	4.70	4.69	3.12	3.62	4.68	3.57	3.32	2.87
41	VIANDES	3.38	2.12	1.15	1.28	1.81	1.63	1.61	1.45
42	LAIT ET PRODUITS LAI	1.70	1.86	2.04	2.62	1.99	2.72	2.21	1.80
43	CONSERVES	1.29	3.65	2.39	2.24	3.29	2.86	2.83	2.73
44	PAIN ET PATISSERIE	1.5	1.47	.46	.33	1.31	1.08	1.19	1.14
45	PRODUITS DU GRAIN	3.27	2.49	2.18	1.88	2.18	2.18	2.10	2.[illegible]1
46	CORPS GRAS ALIMENTAI	4.69	-1.31	1.14	3.21	-.30	1.15	.93	-.17
47	SUCRE	-3.28	.98	.54	.52	.81	.98	.98	.85
48	AUTRES PROD. ALIMENT	-.78	1.41	1.67	2.54	1.81	2.16	2.06	1.55
49	BOISSONS ET ALCOOLS	.14	2.48	2.68	3.59	2.77	3.14	2.85	2.28
50	TABACS ET PROD.	2.37	1.36	1.53	2.72	1.92	2.35	2.26	1.59
52	FILS ET FILES	-4.71	3.27	1.48	2.79	2.23	1.96	1.75	1.32
53	BONNETERIE	1.47	2.39	2.86	4.72	2.50	2.87	2.52	1.47
54	OUVRAGE EN FILES	1.45	3.81	1.18	.93	2.71	1.70	1.65	1.53
56	ARTICLES EN CUIR	1.11	4.35	2.46	2.27	4.11	3.12	3.26	3.01
57	CHAUSSURES	-.36	2.07	1.72	2.57	2.59	2.40	2.38	1.87
58	HABILLEMENT	.56	-.6	1.64	3.50	2.63	2.79	2.83	1.61
59	PROD. DU BOIS	-.80	1.15	2.81	3.63	1.86	2.36	2.12	1.40
60	MEUBLES	1.26	5.82	3.03	2.40	5.46	3.73	3.75	3.71
61	PAPIER, CARTON	5.36	7.14	2.69	1.54	6.62	4.10	4.16	4.36

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 GROWTH RATES FOR: PCE

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
62	PRESSE,IMPRIMERIE,ED	3.29	1.32	2.[illegible]	3.68	2.68	2.80	2.76	1.84
63	ENELMATIQUES	2.68	2.82	1.39	2.71	3.58	2.92	2.92	2.43
64	PROD. PLASTIQUES	2.96	1.71	4.19	6.23	3.19	4.01	3.69	2.45
65	INDUSTRIES DIVERSES	4.48	3.74	2.98	3.53	4.28	3.42	3.55	2.74
66	BATIMENT ET GENIE CI	1.76	1.32	2.52	4.51	2.51	3.28	3.24	2.39
67	RECUPERATION	-9.38	4.26	3.84	3.72	4.27	3.99	3.51	3.32
69	REPARATION ALIM.	2.05	2.15	.92	2.42	2.89	2.43	2.43	1.97
70	REPARATIONS DIVERSES	.73	1.12	-.85	-.68	1.08	.88	.24	.52
71	HOTELS,CAFES,RESTAUR	1.98	.71	.93	1.77	1.33	1.18	1.15	.92
72	TRANSP FERROVIAIRES	1.86	-2.53	-.5[illegible]	-.43	-2.07	-.72	.82	[illegible].66
74	AUTRES TRANSP TERRES	2.69	2.09	-.36	-.26	2.17	1.09	1.29	1.71
76	TRANSPORTS MARITIMES	.37	-8.26	-.77	3.97	-5.48	-1.40	-1.14	-1.28
77	TRANSPORTS AERIENS	5.97	-1.22	1.14	3.44	.40[illegible]	1.84	2.27	7.43
78	SERVICES AUXILIAIRES	6.58	-.70	1.12	2.73	.40[illegible]	1.60	2.85	2.66
79	TELECOMMUNICATIONS	11.33	1.61	1.86	3.68	3.02	2.85	2.83	2.26
80	SERVICE AUX ENTREPRI	-.39	.44	1.12	3.15	1.47	1.85	1.78	1.12
81	LOCATION ET CREDIT-B	9.28	1.11	2.94	5.45	1.86	2.98	2.71	1.77
82	LOGEMENT	5.14	1.57	3.35	4.71	2.39	2.95	3.15	2.71
84	ENSEIGNEMENT (MARCHA	4.24	2.26	1.63	1.97	2.32	1.97	1.97	1.95
85	SANTE	7.66	2.45	1.83	2.07	2.37	2.17	2.16	1.98
86	AUTRES SERVICES MARC	4.72	.78	.51	2.61	1.48	1.48	1.48	1.51
87	ASSURANCES	16.15	19.26	2.39	2.03	4.36	3.61	3.09	3.36
88	FINANCE	-1.23	1.35	.90	.99	1.26	1.07	1.08	1.13
	TOTAL	3.42	2.24	1.88	2.72	2.58	2.42	2.42	2.10

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 SERIES: P.D.E.

SECTOR		1978	1979	1980	1981	1982	1983	1984	1985
1	INVEST. DES SOC.	193563.	196651.	2[illegible]0161.	212629.	216859.	214165.	214916.	212927.	216967.
2	INVEST. DES MENAGES	88755.	87235.	88553.	88438.	87760.	87927.	88438.	89291.	89461.
3	INVEST. DES ENT. DE	13475.	13248.	13312.	13061.	12913.	12703.	13301.	13914.	14338.
4	INVEST. DES ENT. D'A	2695.	2821.	2973.	2387.	2341.	2321.	2431.	2541.	2620.
5	INVEST. DES ADMS PUB	48877.	48974.	49182.	50085.	51379.	51994.	52213.	52406.	52406.
6	INVEST. DES ADMS PRI	1195.	1205.	1223.	1245.	1277.	1293.	1298.	1303.	1303.
	TOTAL	348787.	349934.	358769.	367885.	372429.	370403.	372597.	372371.	377098.

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 GROWTH RATES FOR: P.D.E.

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	INVEST. DES SOC.	.85	3.67	4.20	1.99	-1.24	.35	-.93	1.90
2	INVEST. DES MENAGES	-.84	1.51	-.13	-.77	.19	.56	.96	.19
3	INVEST. DES ENT. DE	-.95	.88	-1.88	-1.90	-.86	4.71	4.63	3.13
4	INVEST. DES ENT. D'A	7.5	.48	-1.88	-1.91	-.86	4.71	4.63	3.13
5	INVEST. DES ADMS PUB	-.41	1.46	1.84	2.58	1.29	.82	.37	.50
6	INVEST. DES ADMS PRI	4.43	1.46	1.84	2.58	1.29	.82	.37	.50
	TOTAL	.22	2.67	2.53	1.25	-.54	.59	-.76	1.27

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 SERIES: OUTPUT

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
1	AGRICULTURE	152852.	177492.	172858.	173427.	178419.	181551.	186477.	191682.	192052.
2	SYLVICULTURE	6356.	6833.	7367.	7146.	7273.	7369.	7451.	7486.	7503.
3	PECHE	3584.	3573.	3551.	3543.	3532.	3494.	3464.	3432.	3399.
4	HOUILLE,LIGNITE, AGG	6154.	5510.	5251.	5360.	4958.	4639.	4327.	3826.	3776.
5	COKEFACTION	4579.	5240.	5212.	5302.	5332.	5333.	5332.	5257.	5244.
6	PETROLE BRUT	472.	2555.	2555.	2575.	2596.	2604.	2617.	2618.	2625.
7	GAZ NATUREL	1653.	1838.	1894.	1923.	1977.	2048.	2116.	2159.	2205.
8	PETROLE RAFFINE	[illegible]853.	162313.	163751.	164647.	167089.	168418.	170736.	172214.	111399.
9	ELECTRICITE DISTRIBU	34117.	38114.	39335.	39751.	43524.	41693.	42742.	43641.	44584.
10	GAZ DISTRIBUE	11[illegible]2.	11587.	11833.	11891.	12263.	12574.	129[illegible]1.	13198.	13420.
11	EAU ET CHALEFAGE URB	11641.	11815.	12288.	12152.	12440.	12754.	13152.	13321.	13564.
12	MINERAI DE FER	1114.	909.	815.	697.	484.	411.	369.	310.	280.
13	SIDERUGIE	4194[illegible].	45543.	46251.	47143.	47789.	48339.	48851.	48691.	48869.
14	PROD. DE L'ACIER	13316.	13970.	14323.	14260.	14330.	14404.	14427.	14173.	13862.
15	MINERAIS NON FERREUX	429.	381.	346.	356.	343.	337.	358.	378.	408.
16	METAUX NON FERREUX	22818.	19843.	18310.	18711.	18204.	18922.	19175.	20164.	21637.
17	MINERAUX DIVERS	2653.	2810.	2913.	2860.	2907.	2934.	2969.	2963.	2893.
18	MATER. DE CONTRUCTIO	33973.	32787.	33870.	34669.	35499.	36063.	36779.	37313.	37890.
19	VERRE	9465.	11482.	11240.	11380.	11919.	12481.	12964.	1339[illegible].	13559.
20	CHIMIE MINERALE	17635.	18949.	19357.	19666.	20064.	20498.	21194.	21524.	21842.
21	CHIMIE ORGANIQUE	33017.	36214.	37340.	38515.	39971.	42509.	45774.	48877.	51972.
22	PARACHIMIE	29950.	30964.	32972.	33580.	35372.	37062.	38619.	40046.	40769.
23	PRODUITS PHARMACEUTI	17449.	21451.	22788.	23537.	24719.	25873.	26795.	28774.	28845.
24	FONDERIES	15497.	15807.	16267.	16774.	17169.	17475.	17841.	17968.	18271.
25	TRAVAIL DES METAUX	59934.	61238.	63086.	63632.	64467.	64381.	64231.	62320.	61980.
26	MACHINES AGRICOLES	11953.	12202.	12664.	13591.	13522.	13784.	14153.	14377.	14727.
27	MACHINES OUTILS	11387.	14453.	14396.	14866.	14922.	15038.	15718.	15101.	14815.
28	EQUIPEMENT INDUSTRIEL	44711.	47711.	51258.	51389.	52781.	53998.	55435.	55716.	56262.
29	MATERIEL BTPS	17660.	16582.	17575.	18636.	19833.	21082.	22511.	23774.	25207.
30	MATERIEL D'ARMEMENT	8824.	10035.	11367.	12386.	13784.	15443.	17225.	18944.	20784.
31	MACHINES DE BUREAU	6894.	5665.	6002.	5780.	5591.	5677.	5493.	4939.	4392.
32	MATERIEL ELECTRIQUE	28705.	29517.	31563.	33170.	35241.	37298.	39366.	41198.	42857.
33	MATERIEL ELECTRONIQU	27388.	29221.	29838.	27686.	26052.	25222.	24069.	21717.	18466.
34	MATERIEL ELECTRONIQU	5085.	6179.	6931.	7213.	7476.	8312.	8963.	9651.	10340.
35	EQUIPEMENT MENAGER	10741.	10212.	11948.	11789.	12535.	13976.	154[illegible]4.	16938.	18785.
36	VEHICULES AUTOMOBILE	100882.	104718.	107529.	109536.	112768.	114659.	116087.	118412.	117762.
37	MATERIEL FERROVIAIRE	3685.	2989.	2712.	2550.	2358.	2157.	2014.	1873.	1832.
38	CONSTRUCTION NAVALE	12605.	12778.	13257.	13766.	14235.	14733.	15381.	15869.	16507.
39	CONSTR. AERONAUTIQUE	20955.	28211.	30845.	32065.	34126.	36193.	38029.	39155.	39969.
40	INSTRUMENTS ET MATER	11613.	12291.	12819.	13226.	13768.	14225.	15026.	15751.	16485.
41	VIANDES	69621.	71155.	72280.	72932.	73746.	74522.	75235.	75840.	76350.
42	LAIT ET PRODUITS LAI	37689.	41127.	43042.	43666.	45441.	47049.	48655.	50208.	51057.
43	CONSERVES	7691.	8460.	8708.	8885.	9091.	9355.	9627.	9877.	10117.
44	PAIN ET PATISSERIE	18941.	19611.	1592[illegible].	[illegible]	20206.	21503.	22768.	21041.	21311.
45	PRODUITS DU GRAIN	[illegible]655.	33978.	34957.	35429.	36397.	372[illegible].	38143.	38874.	39218.
46	CORPS GRAS ALIMENTAI	5033.	5098.	5772.	5874.	6145.	6358.	6470.	6595.	6518.
47	SUCRE	6154.	9155.	5641.	9740.	10094.	10466.	10747.	10928.	10971.
48	AUTRES PROD. ALIMENT	12972.	13377.	13652.	13837.	14259.	14589.	14908.	15171.	15380.
49	BOISSONS ET ALCOOLS	2421[illegible].	25853.	26215.	26916.	27626.	28187.	28752.	29110.	29513.
50	TABACS ET PROD.	10537.	9736.	10113.	10178.	10669.	10889.	11231.	11599.	11758.
51	FILS ET FIBRES ARTIF	3068.	2837.	2765.	2703.	2573.	2631.	2619.	2571.	2422.
52	FILS ET FILES	18321.	18727.	18487.	18567.	18811.	18952.	19055.	19047.	18965.
53	BONNETERIE	9662.	9346.	[illegible]	9557.	9215.	8572.	7991.	7541.	6980.
54	OUVRAGE EN FILES	22726.	23232.	23528.	23626.	23844.	23885.	23926.	23873.	23753.
55	CUIRS ET PEAUX	272[illegible].	2398.	2463.	2485.	2549.	2576.	2588.	2587.	2559.
56	ARTICLES EN CUIR	[illegible]	3187.	3956.	3975.	40[illegible]6.	4134.	4163.	4228.	4225.
57	CHAUSSURES	8313.	8467.	8982.	8978.	9393.	9804.	10193.	10628.	10775.
58	HABILLEMENT	33194.	33099.	33[illegible]16.	34371.	35675.	36804.	37948.	39049.	39632.
59	PROD. DU BOIS	17994.	18399.	19127.	19411.	19852.	20211.	20564.	20919.	20983.
60	MEUBLES	17016.	17417.	18305.	18871.	19765.	20288.	21017.	21723.	22476.
61	PAPIER, CARTON	32147.	33481.	34373.	35481.	36389.	37215.	37183.	36945.	36274.
62	PRESSE,IMPRIMERIE,ED	32156.	34769.	35639.	36295.	37266.	37971.	38610.	39052.	39377.
63	PNEUMATIQUES	15792.	16354.	16118.	17048.	17433.	17702.	17913.	17737.	17592.
64	PROD. PLASTIQUES	1954[illegible].	19741.	20965.	21[illegible]8.	21873.	22558.	23204.	23789.	23941.
65	INDUSTRIES DIVERSES	17453.	18865.	15234.	19028.	19079.	19135.	18884.	18373.	17479.

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 — SERIES: OUTPUT

SECTOR		1976	1978	1979	1980	1981	1982	1983	1984	1985
66	BATIMENT ET GENIE CI	232388.	235761.	241021.	245610.	248730.	249499.	251899.	253448.	256228.
67	RECUPERATION	6286.	6628.	6726.	6853.	6922.	7077.	7253.	7237.	7250.
68	COMMERCE	249677.	259321.	272153.	278901.	288235.	298384.	307584.	315500.	322159.
69	REPARATION AUTO.	35611.	37762.	38787.	39333.	40291.	41262.	42188.	43104.	43743.
70	REPARATIONS DIVERSES	5576.	5754.	5862.	5871.	5897.	5993.	6058.	6112.	6173.
71	HOTELS,CAFES,RESTAUR	70136.	73119.	74321.	74846.	76318.	77330.	78021.	79436.	80265.
72	TRANSP FERROVIAIRES	19127.	20123.	20562.	20851.	21336.	21694.	22100.	22436.	22973.
73	TRANSP ROUTIERS DE M	23323.	25270.	26176.	26464.	27134.	27748.	28283.	28568.	28758.
74	AUTRES TRANSP TERRES	17980.	18927.	19439.	19573.	19792.	20254.	20589.	20893.	21223.
75	NAVIGATION INTERIEUR	620.	646.	662.	677.	694.	710.	725.	734.	744.
76	TRANSPORTS MARITIMES	10239.	11812.	11948.	12098.	12186.	12587.	12619.	12361.	12392.
77	TRANSPORTS AERIENS	9766.	11065.	11553.	11781.	12186.	12672.	13003.	13225.	13447.
78	SERVICES AUXILIAIRES	38555.	42113.	43174.	43681.	44521.	45172.	45720.	45951.	46181.
79	TELECOMMUNICATIONS	35837.	39969.	41350.	42291.	43469.	44723.	45949.	46966.	47877.
80	SERVICE AUX ENTREPRI	120566.	132466.	136145.	140622.	144461.	147469.	150252.	151686.	152649.
81	LOCATION ET CREDIT-B	19650.	21303.	22148.	22621.	23279.	23942.	24599.	25122.	25578.
82	LOGEMENT	98212.	108568.	110216.	113966.	119334.	122183.	125791.	129630.	133141.
83	CREDIT-BAIL IMMOBILI	12735.	13724.	14268.	14569.	14988.	15008.	15813.	16126.	16397.
84	ENSEIGNEMENT (MARCHA	12510.	14668.	15288.	15719.	16235.	16710.	17159.	17479.	17786.
85	SANTE	99999.	108815.	111553.	113647.	116059.	118863.	121404.	123962.	126460.
86	AUTRES SERVICES MARC	38949.	42832.	43159.	43745.	44867.	45722.	46665.	47519.	48249.
87	ASSURANCES	17431.	21760.	24789.	25344.	25919.	26882.	27581.	28242.	28952.
88	FINANCE	64755.	68738.	71639.	72896.	74455.	75970.	77467.	78529.	79562.
	TOTAL	2663393.	2829484.	2921590.	2971224.	3046786.	3114828.	3185637.	3237192.	3281737.

FORECAST FOR: SOC. SEC. TAX CUT IN 1981 — GROWTH RATES FOR: OUTPUT

SECTOR		76-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85
1	AGRICULTURE	4.68	3.23	.31	2.88	1.76	2.71	2.25	.72
2	SYLVICULTURE	3.68	3.42	1.12	1.78	1.32	1.11	.48	.22
3	PECHE	-.15	-.45	-.40	-.29	-1.08	-.88	-.91	-.97
4	HOUILLE,LIGNITE, AGG	-4.99	-4.71	2.07	-8.42	-5.51	-6.72	-11.58	-1.31
5	COKEFACTION	6.56	.23	1.74	.56	.02	-.02	-1.38	-.29
6	PETROLE BRUT	132.69	.02	.78	.79	.33	.47	.16	.24
7	GAZ NATUREL	5.46	3.01	1.36	2.97	3.61	2.66	2.50	2.12
8	PETROLE RAFFINE	.57	1.02	1.50	2.37	1.24	1.49	.71	.53
9	ELECTRICITE DISTRIBU	5.69	3.20	1.36	1.95	2.88	2.52	2.10	2.16
10	GAZ DISTRIBUE	7.10	2.12	.49	3.13	2.53	2.60	2.31	1.68
11	EAU ET CHAUFFAGE URB	5.38	2.31	.52	2.37	2.52	2.34	2.16	1.82
12	MINERAI DE FER	-9.7[illegible]	-10.27	-20.64	-25.20	-15.[illegible]2	-10.30	-16.03	-9.71
13	SIDERURGIE	4.21	1.57	1.92	1.37	1.15	1.06	-.33	.37
14	PROD. DE L'ACIER	3.60	2.53	-.44	.49	.52	.16	-1.76	-2.19
15	MINERAIS NON FERREUX	-5.69	-9.36	2.95	-3.56	-1.63	6.06	5.55	8.08
16	METAUX NON FERREUX	-6.75	-7.72	2.19	-2.71	-.99	5.84	5.71	7.31
17	MINERAUX DIVERS	2.92	3.67	-1.82	1.65	.91	1.21	-.19	-2.36
18	MATER. DE CONSTRUCTIO	1.27	3.30	2.36	2.41	1.59	1.99	1.45	1.54
19	VERRE	5.23	7.23	1.25	4.73	4.71	3.67	3.28	1.26
20	CHIMIE MINERALE	3.55	2.37	1.29	2.34	2.17	2.90	2.04	1.48
21	CHIMIE ORGANIQUE	4.73	3.11	3.15	3.78	6.35	7.68	6.79	6.33
22	PARACHIMIE	3.42	6.48	1.85	5.34	4.78	4.2	3.71	1.80
23	PRODUITS PHARMACEUTI	5.02	6.23	3.15	5.12	4.71	4.33	4.11	2.75
24	FONDERIES	1.28	2.52	2.99	2.36	1.78	2.10	.71	1.69
25	TRAVAIL DES METAUX	1.08	3.02	.97	1.31	-.13	-.23	-2.14	-2.29
26	MACHINES AGRICOLES	1.05	3.79	3.38	3.29	1.94	2.68	1.59	2.42
27	MACHINES OUTILS	9.8[illegible]	3.76	-.87	.37	.78	1.13	-1.36	-1.24
28	EQUIPEMENT INDUSTRIEL	3.31	5.34	2.23	2.73	2.31	2.66	.49	1.10
29	MATERIEL BTPS	-3.10	5.79	6.03	6.42	6.30	6.77	5.66	6.03
30	MATERIEL D'ARMEMENT	6.64	12.68	9.54	11.29	12.04	11.54	9.38	9.71
31	MACHINES DE BUREAU	-9.32	5.90	-3.69	-3.29	1.56	-3.25	-10.09	-11.07

FORECAST FOR: SOC. SEC. TAX CUT (IN 1981) GROWTH RATES FOR: OUTPUT

SECTOR		78-79	79-80	80-81	81-82	82-83	83-84	84-85
32	MATERIEL ELECTRIQUE	1.39	6.77	5.16	6.39	5.82	5.59	4.81	4.28
33	MATERIEL ELECTRONIQU	3.29	2.11	-1.21	-5.97	-3.19	-4.67	-9.76	-14.98
34	MATERIEL ELECTRONIQU	10.15	11.88	4.38	3.81	11.19	7.83	7.68	7.14
35	EQUIPEMENT MENAGER	-2.49	7.21	7.68	6.33	11.49	10.22	9.96	11.91
36	VEHICULES AUTOMOBILE	1.88	2.68	1.88	2.95	1.68	2.03	1.22	1.14
37	MATERIEL FERROVIAIRE	-12.87	-8.39	-5.48	-7.51	-8.53	-4.62	-7.12	-2.19
38	CONSTRUCTION NAVALE	.76	3.59	3.84	3.41	3.51	4.41	3.17	4.12
39	CONSTR. AERONAUTIQUE	14.13	9.34	3.96	6.43	6.16	5.07	2.96	2.58
40	INSTRUMENTS ET MATER	2.88	4.33	3.17	4.19	3.32	5.43	4.82	4.66
41	VIANDES	1.11	1.58	.91	1.12	1.05	.96	.81	.87
42	LAIT ET PRODUITS LAI	4.96	4.64	1.45	4.66	3.54	3.41	3.19	1.89
43	CONSERVES	4.38	2.33	2.04	2.31	2.91	2.91	2.63	2.43
44	PAIN ET PATISSERIE	1.76	1.57	.71	.73	1.47	1.29	1.31	1.28
45	PRODUITS DU GRAIN	5.28	3.11	1.23	2.72	2.22	2.58	1.92	1.78
46	CORPS GRAS ALIMENTAI	4.32	4.98	1.78	4.63	3.48	1.75	1.16	-.41
47	SUCRE	21.97	5.33	1.33	3.63	3.63	2.74	1.68	.47
48	AUTRES PROD. ALIMENT	1.47	2.06	1.79	2.61	2.32	2.18	1.76	1.38
49	BOISSONS ET ALCOOLS	3.34	1.63	2.44	2.44	2.13	2.04	1.24	1.29
50	TABACS ET PROD.	-3.89	3.87	.64	3.85	3.03	3.14	3.28	1.36
51	FILS ET FIBRES ARTIF	-7.83	-2.56	-2.23	-4.81	2.23	-.48	-4.89	-2.17
52	FILS ET FILES	-.81	2.55	.93	1.32	.75	.54	-.04	-.83
53	BONNETERIE	-1.45	7.43	-5.34	-3.[illegible]	-4.98	-4.78	-5.55	-7.51
54	OUVRAGE EN FILES	1.33	1.27	.41	.93	.17	.17	-.22	-.51
55	CUIRS ET PEAUX	-6.12	2.79	.96	2.61	1.15	.46	-.15	-1.16
56	ARTICLES EN CUIR	-.29	4.46	.47	2.03	1.94	1.17	1.39	-.9
57	CHAUSSURES	.57	4.84	-.05	4.62	4.38	3.96	4.27	1.39
58	HABILLEMENT	-.14	2.64	1.63	3.92	3.17	3.11	2.95	1.49
59	PROD DU BOIS	1.12	4.01	1.43	2.27	1.81	1.75	1.24	.79
60	MEUBLES	1.15	5.14	1.19	2.62	4.77	3.59	3.36	3.47
61	PAPIER, CARTON	2.65	4.46	1.45	2.56	2.27	-.19	-.91	-1.56
62	PRESSE,IMPRIMERIE,ED	3.98	2.50	1.94	2.74	1.84	1.67	1.14	.83
63	PNEUMATIQUES	1.76	2.23	1.97	2.26	1.54	1.23	.13	.30
64	PROD. PLASTIQUES	3.05	4.23	.20	4.12	3.13	2.88	2.52	.22
65	INDUSTRIES DIVERSES	3.97	1.95	-1.67	.27	.29	-1.31	-2.72	-4.76
66	BATIMENT ET GENIE CI	.72	2.23	1.90	1.27	.31	.94	.62	1.15
67	RECUPERATION	2.49	1.47	1.89	1.61	2.17	2.56	-.21	.17
68	COMMERCE	1.91	4.91	2.52	3.35	3.52	3.[illegible]	2.57	2.11
69	REPARATION AUTO.	2.99	2.71	1.41	2.43	2.41	2.28	1.94	1.71
70	REPARATIONS DIVERSES	1.58	1.88	.14	.45	1.63	1.09	.83	1.10
71	HOTELS,CAFES,RESTAUR	2.13	1.23	1.12	1.97	1.33	1.41	1.59	1.14
72	TRANSP FERROVIAIRES	2.84	2.18	1.61	2.13	1.68	1.87	1.52	2.39
73	TRANSP ROUTIERS DE M	4.19	3.19	1.49	2.53	2.26	1.93	1.11	.67
74	AUTRES TRANSP TERRES	2.61	2.70	.69	1.12	2.33	1.66	1.47	1.58
75	NAVIGATION INTERIEUR	2.01	2.61	2.18	2.48	2.32	2.21	1.23	1.32
76	TRANSPORTS MARITIMES	7.37	.80	2.12	.81	3.29	.22	-2.51	.18
77	TRANSPORTS AERIENS	6.44	4.41	1.99	3.43	3.67	2.94	1.70	1.68
78	SERVICES AUXILIAIRES	4.51	2.52	1.17	1.92	1.46	1.21	.51	.55
79	TELECOMMUNICATIONS	5.61	3.45	2.16	2.91	2.88	2.74	2.21	1.94
80	SERVICE AUX ENTREPRI	4.82	4.29	1.79	2.73	2.58	1.59	.95	.64
81	LOCATION ET CREDIT-B	4.12	4.97	2.13	2.91	2.85	2.74	2.13	1.81
82	LOGEMENT	5.14	1.57	3.35	4.71	2.39	2.95	3.15	2.71
83	CREDIT-BAIL IMMOBILI	3.81	3.96	2.11	2.88	2.81	2.63	1.98	1.66
84	ENSEIGNEMENT (MARCHA	8.28	4.23	2.82	3.28	2.93	2.69	1.87	1.75
85	SANTE	7.59	2.52	1.88	2.12	2.42	2.14	2.11	2.12
86	AUTRES SERVICES MARC	4.38	1.81	1.27	2.83	2.14	2.[illegible]	1.83	1.54
87	ASSURANCES	11.73	13.92	2.24	2.27	3.71	2.6[illegible]	2.4[illegible]	2.51
88	FINANCE	3.13	4.22	1.75	2.14	2.13	1.97	1.37	1.31
	TOTAL	3.17	3.24	1.71	2.54	2.23	2.27	1.64	1.36

CURRICULUM VITAE

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Ecole des Hautes Etudes Commerciales	1973-76	Diplôme	1976
University of Maryland	1978-80	M.A.	1980

Major: Applied Mathematics.

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