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1987: Year I of Community environmental statistics

At its meeting of 29 and 30 March 1985, the European Council decided that 1987 would be the European Year of the Environment. The Commission is actively engaged in preparing this year in close collaboration with the national committees set up in each Member State. The European Year of the Environment starts on 21 March 1987. It is not particularly intended as a special event, but rather as a launching pad for specific projects to be carried out during the whole period covered by the 4th programme of action of the European Communities on the environment (1987-92) and beyond.

The main objective of the Year of the Environment is to convince every person in the European Community of the importance of the environment and consequently to change the attitudes of society, companies, organizations and individuals towards strict standards for the protection of the environment. As well as being a challenge, it is an opportunity to make considerable progress by disseminating information on environmental problems and subjects and to make an active contribution towards environmental improvement, prevention, protection and even job creation activities.

For the Commission, Directorate-General XI (Environment, Consumer Protection and Nuclear Safety) is concerned mainly with drafting and developing Community environmental policy and is supported by the Council of Ministers and the European Parliament. Eurostat, which was not involved at all in the 1st, 2nd and 3rd programmes of action of the European Communities on the environment, decided to set up a permanent group of full-time officials and experts as from 1 October 1986. The objective of this group is to develop a statistical component as an integral part of all Commission activities, in particular

those under the Corine programme, aimed at providing the economy and decision-makers of the whole Community with reliable and comparable environmental data, in order to facilitate decisions on the application of legislation. The environmental dimension, complete with maps and statistics, must be integrated into all Community policies.

1987 will therefore see the first Community statistics prepared by Eurostat on the environment. The task is immense, given the difficulties involved in drawing up accounts for 'natural assets' — air, water, soil, flora and fauna — in an attempt to spotlight the links between the economy and the environment. The first action taken by Eurostat will see the distribution this year of a publicity brochure to mark the European Year of the Environment and the publication of the first yearbook specifically on the environment, *Environmental statistics — 1987*.

For the brochure, the purpose of which is to make potential users aware of environmental statistics, Eurostat has chosen some out of several hundred equally fundamental subjects. The indicators concerned will of course be extracted from domains which are already part of the statistical programme of the European Communities, but they will help to provide a better understanding of the environment.

As part of the Corine programme, and on the basis of the work done by experts and specialist national institutions, the Commission is preparing definitions, scales and, where appropriate, compulsory legislation aimed at the progressive quantification of the various aspects of man's natural heritage. In addition, purely statistical measures will have to be prepared by Eurostat and implemented by the *ad hoc* statistical services of the Member

States. In the statistical yearbooks an attempt will be made to single out, subject by subject, the physical and temporal data which need to

be stored without further delay in order to provide the basis for work connected with the environment and natural resources.

The European Community's external trade in services, 1979—84



S. Deroose¹

Introduction

Since the GATT Ministerial Meeting of November 1982 the Commission of the European Communities has, like some other international bodies, been showing a keen interest in international trade in services. The inclusion of services in the recently agreed agenda for the new Uruguay Round on trade liberalization at Punta del Este will certainly enhance this interest.

For several years already, the 'Balance of payments' section of Eurostat has undertaken research activities aimed at assessing the Community's position in international trade in services. Recently, two complementary studies have been finished. Below, the main results of the report focusing on the impor-

tance of international trade in services for EUR 10 are summarized. The European Community's position in world trade in services, subject-matter of the second report, will be dealt with by T. Coulet in a future issue of *Eurstat News*.

1. Methodological notes

Establishing the economic significance of a sector requires an adequate statistical basis. With respect to international trade in services any detailed analysis runs up against data deficiencies.

(i) First of all, there exists a manifest conceptual problem. In the field of balances of payments, the concept of services refers generally to very heterogeneous transactions (products, remunerations, transfers or financial transactions), subject to different rules and trends. Here, the aggregate services contains the following transactions:

Transport consisting of:

- Sea-freight*
- Sea-passengers*
- Air-freight*
- Air-passengers*
- Other transport*

Insurance on transport

Travel

¹ S. Deroose is an administrator in the division 'Regional and financial statistics' of Eurostat.

Other services consisting of:

- Property income*
- Banking*
- Non-merchandise insurance*
- Construction/Engineering*
- Films/Broadcasting*
- Other services — other*

This scheme is derived from that recommended in the fourth edition of the IMF's *Balance of payments manual*, supplemented by additional details (marked with an asterisk). Data contained in this report have been provided by the national compilers according to a standard questionnaire.

(ii) Second, the valuation method raises some doubts about the accuracy of the data. Indeed, a lot of transactions are valued on a net basis, undermining on the one hand the consistency of the data and on the other hand the relative importance of trade in services. Categories supposed to suffer significantly from being recorded at net value are 'Insurance', 'Travel' and 'Construction'.

(iii) Third, the study of international trade in services of the European Community is seriously hindered by the non-availability of essential information in some Member States, which in some cases makes it difficult to aggregate at EUR 10 level.

(iv) Finally, the discrepancy in payment statistics due to divergences in compiling methods, a recurrent discomfort in the analy-

sis of developments in international trade, is also encountered in the present study. Although the so-called asymmetries may bias the results, it is not unreasonable to assume that their impact on the major findings is more or less negligible.

2. Overall trends in extra-EUR 10 trade in services

Services account for a large proportion of the European Community's external current account transactions. According to the figures, extra-EUR 10 trade in services amounted in 1984 to ECU 111.8 billion¹ for exports and to ECU 103.2 billion for imports. Over the whole intervening period EUR 10 recorded a surplus on services. It peaked in 1984 at ECU 8.6 billion, representing about 8% of services exports (see Table 1).

For the period 1979—84 trade in services grew, perhaps unexpectedly, at a very similar pace to that in merchandise, namely, annual growth rates of 12.73% and 13.00% for exports and imports respectively. Consequently, the share of services in total trade (goods and services) remained stable at about 30%, after a moderate rise in the 1970s.

There were, however, some marked fluctuations in year to year variations, as is shown below. An essential feature of extra-EUR 10 trade in services was the break in the growth

Year-to-year variations in extra-EUR 10 trade in services

	1979	1980	1981	1982	1983	1984
Exports	(13.6)	15.6	21.3	5.3	9.7	12.2
Imports	(15.1)	18.0	23.7	8.0	3.9	12.3

Note: () = estimates.

¹ 1 billion is equal to 1 000 million.

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pattern, most acute in 1982 and less dramatic in 1983. The abrupt slackening is encountered in all related time-series, sometimes even resulting in negative growth rates (e.g. for 'Sea-freight' and 'Construction/Engineering').

Perhaps astonishingly, EUR 10 trade in services developed much faster outside than inside the European Community between

1979 and 1984. Among factors which could explain this apparent paradox, one should certainly mention the activities of subsidiaries, for instance in the field of banking and insurance, which are not accurately reflected in balance of payments statistics. As Community firms in all likelihood primarily centred the setting up of foreign subsidiaries in Member States, and not in third countries, intra-figures might be biased downward.

Table 1

Some features of the European Community's external trade in services (EUR 10)

	Absolute values (mio ECU) 1984			Growth rates 1979-1984		Shares (in %) 1984		Coverage 1984
	+	-	=	+	-	+	-	
Merchandise	356 431	357 378	- 947	13.38	12.24	318.7	346.2	99.7
Services	111 846	103 223	8 623	12.73	13.00	100.0	100.0	108.4
Transport:	37 396	37 767	- 371	10.31	11.99	33.4	36.6	99.0
● Sea-freight	13 797	16 263	- 2 466	7.60	10.24	12.3	15.8	84.8
● Sea-passengers	1 110	408	702	13.94	16.51	1.0	0.4	272.1
● Air-freight	1 750	953	797	12.34	13.28	1.6	0.9	183.6
● Air-passengers	7 546	5 623	1 923	16.13	16.06	6.7	5.4	134.2
● Other transport	13 193	14 520	- 1 327	9.99	12.44	11.8	14.1	90.9
Insurance on transport	1 279	1 627	- 348	16.15	16.17	1.1	1.6	78.6
Travel	23 373	24 072	- 699	14.56	10.49	20.9	23.3	97.1
Other services	49 798	39 757	10 041	13.80	15.67	44.5	38.5	125.3
● Property income	3 589	5 304	- 1 715	16.96	15.37	3.2	5.1	67.7
● Banking	2 737	1 524	1 213	17.21	8.92	2.4	1.5	179.6
● Non-merchandise insurance	3 144	2 451	693	13.31	21.23	2.8	2.4	128.3
● Construction/Engineering	11 850	4 677	7 173	10.79	13.95	10.6	4.5	253.4
● Film/Broadcasting	595	601	- 6	5.57	15.93	0.5	0.6	99.0
● Other services — other	27 883	25 200	2 683	12.01	12.70	24.9	24.4	110.6

A simulation of the extended European Community's external trade in services shows marked differences between EUR 12 and EUR 10. EUR 12 would report a surplus twice as large as that of EUR 10, namely, ECU 12.0 billion against ECU 5.6 billion on average

over 1979-84, stemming from higher exports (+ 6 %) and somewhat lower imports (- 1 %). The divergence between EUR 12 and EUR 10 is largely attributable to effects on the 'Travel' account; changes are minor for the other sectors, but not negligible.

3. Sectoral composition of extra-EUR 10 trade in services

The overall services performance is the result of widely varying performances between transactions. The second column of the table provides us with some insights into which sectors mostly contributed to the overall growth of extra-EUR 10 trade in services. The most dynamic sectors seem to have been 'Sea-passengers', 'Air-passengers', 'Property income', 'Banking' and 'Travel'. Unfortunately, with the exception of 'Travel', their volume is rather small.

The structure of the European Community's external trade in services is given in the third column. From this table it can be seen that 'Travel' is by far the most important service item, accounting for 21% of services exports and 23% of imports. This picture is rather misleading, however, as 'Travel' transactions are not broken down into sub-items. The most important single services items are 'Sea-freight', 'Other transport' and 'Construction/Engineering'. The share of these traditional services gradually declined from 1979 to 1984, in favour of 'Property income' and other new services, amalgamated in 'Other services — other'. From a pilot questionnaire on the sectoral breakdown of the last item, it emerged that four categories of transactions occupy a rather significant position, namely, 'Commissions (financial + other)', 'Services related to trade (including merchanting)', 'Services related to technological transfers' and 'Services between related companies'. These transactions appeared to have high growth rates, sometimes the highest of all items, indicating the tendency in the European Community towards specialization in new services. Therefore, their shares might increase substantially in the years ahead.

The overall surplus on services comprises a mixture of surpluses and deficits of the constituent transactions. Traditional deficits appear for 'Sea-freight', 'Insurance on transport', 'Travel' and 'Property income', whilst

for 'Air-passengers', 'Banking' and especially 'Construction/Engineering' the European Community reports a significant surplus. In contrast to all other services transactions, 'Construction/Engineering' has shown both for exports and imports a markedly downward trend since 1982. This deterioration is basically imputable to the worsening financial position of OPEC and ACP.

The relative significance of the balance is measured by the coverage, defined as the ratio of credits over debits. It highlights to what extent expenditure is covered by receipts. As is shown in the last column of Table 1, the coverage ranges from 67.7 for 'Property income' to 272.1 for 'Sea-passengers'.

4. The European Community's major partners

Global figures have been broken down geographically, focusing in particular on the Community's major trade partners. In this note the following countries or areas are distinguished: the United States, Japan, other OECD countries and other countries. Figures given in Table 2 do not add up to 100, as a considerable proportion of the transactions (about 8%) was not allocated geographically by national compilers.

It should be noted that data for the United States may be overestimated, at the expense of the other partners, since countries may tend to allocate some of their transactions denominated in US dollars to the United States and because in some Member States US figures include Canada.

Geographically, the European Community's external trade in services is basically and increasingly oriented towards the other OECD countries, as can be seen from Table 2. Almost 60% of transactions in services have been carried out with OECD members. Among the OECD countries the United States

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Table 2

Geographical breakdown of extra-EUR 10 trade in services (1984, in %)

	United States		Japan		OECD — other		Other countries	
	Credits	Debits	Credits	Debits	Credits	Debits	Credits	Debits
Merchandise	19.62	16.23	2.42	6.71	26.49	25.93	44.63	45.52
Services	29.58	27.89	3.50	2.47	21.41	30.22	34.69	30.03
Transport	26.35	23.56	4.00	3.87	18.38	19.80	37.28	40.16
● Sea-freight	31.51	24.10	4.01	4.33	13.55	16.34	34.26	41.87
● Sea-passengers	37.30	9.31	2.07	3.43	7.75	31.13	15.77	15.20
● Air-freight	16.46	13.54	4.11	2.10	7.89	12.80	29.77	49.63
● Air-passengers	15.44	12.82	3.70	2.01	10.03	11.84	35.30	39.43
● Other transport	27.57	28.17	4.32	4.21	30.49	26.88	44.39	38.62
Insurance on transport	47.38	40.81	4.61	6.52	14.54	22.00	23.38	20.84
Travel	37.68	15.59	2.02	0.69	35.27	60.16	18.50	19.99
Other services	27.75	38.93	3.79	2.04	17.36	22.34	40.64	26.87
● Property income	39.43	71.93	13.01	1.58	13.51	13.99	17.97	2.83
● Banking	40.04	64.96	15.35	2.56	5.22	8.27	23.13	7.15
● Non-merchandise insurance	57.19	45.70	2.51	1.67	18.26	30.56	13.23	13.06
● Construction/Engineering	6.19	20.91	0.36	0.88	7.86	15.46	82.76	61.75
● Film/Broadcasting	64.71	72.71	2.35	1.50	9.58	11.15	10.25	7.49
● Other services — other	30.10	32.30	3.10	2.37	23.15	25.69	31.11	28.46

was by far the largest trading partner of the European Community. The size of the US share increased for both exports and imports, with the present share equivalent to 29.6% and 27.9% respectively, against 25.9% and 24.8% in 1979. The upward trend is largely due to developments in 'Travel' earnings at the export side and relatively fast-rising imports of 'Other services', especially 'Property income', 'Banking' and 'Films' (respectively 71.9%, 64.9% and 72.7%). Not surprisingly, trade relations with the United States were extremely strong as regards the so-called less-traditional services, supporting the hypothesis that trade in services reflects the maturity of economies.

The other reported OECD countries had shares of similar size: Japan (almost 3%), Australia/New Zealand (more than 2%) and

Canada (almost 2%). Generally, these figures remained roughly constant throughout the period.

Although the United States did not occupy a predominant position in all cases, it is a major partner for all but one. In the case of 'Construction/Engineering', the European Community's transactions were not centred on the US, but on other countries, accounting for 85% of exports and 64% of imports.

The surplus on the services account stemmed from discernible surpluses with Japan and other countries, partially offset by deficits with OECD - other. In 1984 the coverage was 160%, 129% and 84% respectively. The net import position *vis-à-vis* OECD - other is almost totally due to pronounced deficits on the 'Travel' account.

5. Concluding remarks

All in all the analyses hitherto carried out testify to the undeniable considerable importance of services in the European Community's external trade. Unfortunately, they remain too general and superficial for guiding trade policy effectively. In order to defend its legitimate interests properly, the European

Community should urge the development of an appropriate statistical system (a thorough breakdown of services, harmonization of compiling methods, etc.).

To date, only a limited amount of this work has been carried out (for instance the project on a new classification of exchanges of invisibles), but the range is likely to increase in the years ahead.

The Taban project: an interim report (10.12.1986)



A.
Cunningham¹

1. Background

1.1 Origins: The Taban project was created in October 1980, in order to review the situation then facing Eurostat:

- (i) Substantial data flows had been created by the work of the previous decades;
- (ii) The relative economics had changed radically from those of the past: the big costs were now in data collection, not in data processing;
- (iii) Eurostat had indeed absorbed, with computers, a major change in its technology, but it had not, so far, used these new tools to their full potential;

(iv) What it had done was to use the new tools to do faster, and on a larger scale, what had always been done in pre-computer days.² But there were many new possibilities to be exploited.

1.2 Taking the past achievements for granted, it then seemed opportune:

- (i) To examine these new possibilities;
- (ii) To tackle the new problems being created by the successes of the past.³

1.3 The project led first to work on measuring, and locating the information content of tables, and to pilot investigations on the possibility of using modelling techniques developed on small sets of data, for the large data sets, which characterize official statistics. It was clear that considerable general discussion was necessary, and a seminar⁴ was held at Luxembourg in November 1983.

² There were two recognized exceptions to this generalization, which both went back into the early days of computers, namely seasonal adjustment and input-output tables, but the generalization can stand.

³ Tables have to be read. Tens of pages of tables on one topic are probably useful: thousands of pages of finely cross-classified tables are almost certainly not useful. The problems seemed to be of how to extract or distill the information out of the data. It would have been disastrous if achievement had become identified with volume of output. Technology (data bases, and microfiche, etc.) could solve the physical problem, but not the intellectual problem. Hence the name of the TABLE Analysis project.

⁴ Recent developments in the analysis of large-scale data sets, *Eurostat News*, Special number, 1984 (Eurostat, 1984).

¹ A. Cunningham is a principal administrator in the directorate 'Energy and industrial statistics' of Eurostat.

Mr Malinvaud, chairman of this seminar summarized in the following terms the implications for official statistics:

'In the life of institutions as in private life, there are moments when one has to make a choice committing oneself to a long-term course, moments when the road forks and one wonders which way to go.

National statistical institutes encountered such a moment at the end of the war when they had to decide whether or not they should implement probability sampling in their surveys. A little later another moment came when they had to decide whether it should be their job to prepare national accounts. Today they face a similar choice with regard to data analysis.

... At the current stage of development in public statistics, the mass of data collected contains such a wealth of information that it is far in excess of what can be passed on by usual methods of publication and dissemination.

... There is an obvious need for more concentrated information, for exploratory research into the intelligible structures emerging from the results, and for a choice of models which lend themselves to extrapolations or conditional forecasts.'

1.4 Following the evidence presented at the seminar, the feasibility of modelling¹ many large sets of data was no longer in doubt. But many difficulties remained unresolved, and the project continued under the supervision of Mr Nanopoulos, Director of 'Energy and industrial statistics', who organized a continuing seminar, designed to review the method-

ological problems of the Office, to locate the common problems, recognizing that in some ways 'the problem was to identify the problem'.

1.5 The present paper outlines some of the ideas of an interim synthesis deriving from this second phase of the project. It argues that something useful and general may be said about the *structure*, that is, the *form* of our data, (as contrasted with the *substance*, or *content*, of particular data) which usually receives most attention in the on-going work of Eurostat. It is a preface to a return to the specific problems.

1.6 Naturally any synthesis is incomplete: and no field of knowledge can be fully axiomatized, but a framework of concepts may help to provide understanding. For what can be formalized can be communicated and can be taught. Possibly a computer can be programmed to perform the operation. Formalizing the state of an art facilitates the wider application of good practice, and makes it easier to review what is happening. It is an activity which is part of the scientific tradition of exposing ideas in a stark, clear form so that they may be criticized, and therefore improved.

1.7 Accordingly an attempt has been made to pull together a number of linked ideas, and to expose them in a short series of articles. The present paper sets the scene. It will be followed by more detailed papers dealing with specific topics, and developing the theme of what might be incorporated in an 'information audit' to discover how much information there is in a data set, and where it is located.

1.7.1 The opinions expressed are unofficial and commit nobody but the writer, who will welcome criticism. Prototype programs, written in APL, and specimen applications are available, illustrating some of the procedures suggested by the project.

¹ To avoid any possibility of confusion about the meaning of the word 'modelling' in the present paper, it should be stressed that it does not mean forcing the data into the strait-jacket of some predetermined theory. It means finding a simplified and approximate representation of the data which reduces volume while respecting and highlighting essential characteristics.

2. Data

2.1 Our work — statistics — can conveniently be decomposed, using the formulae:

‘Data + procedures = Statistics’
 ‘Most procedures are programs’

to adapt the well-known:

‘Data structures + algorithms = Programs’

(A book of this name on computing by Niklaus Wirth,¹ has had a wide influence.)

By this decomposition we are able to think of our work in more unified terms, and to simplify it, and to bring out the common structures. The natural order is to discuss first the data, then the algorithms, which operate on the data. In fact the nature of the data and the purpose of the manipulation we make turn out to be more important than the technical detail of the mathematics. The important questions today seem to be about the relation between ideas and the real world, i.e. they are epistemological in nature rather than questions of mathematics in a strict sense. After the intensive mathematical development of recent generations it may not be surprising that the current main problems are less mathematical, and more problems of understanding the application of mathematics already developed, (some from fields, like the theory of computation, and the foundations of mathematics which have not traditionally been associated with statistics).

2.2 The characteristics of our data is then the first topic: in particular its formal properties, and the concepts of dimension, and structure. Important background ideas are:

- (i) That data has certain substantive properties, (see section 7 below);

- (ii) We enforce a relative simplicity on the data by the use of what one can call Procrustean beds (see 5.7 below);

- (iii) Data is, (or soon becomes) numeric data consisting of counts or of measurements on scales which may be nominal, (i.e. unordered,) ordered, or cardinal scales;

- (iv) ‘Looking at the figures’ means making numerous comparisons, and the product of a comparison is information. The distinction between information and data is important.

2.3 Cardinal scales of measurement, (or those where it is sensible to talk of differences, and of the relative sizes of several differences,) have a particular importance for statistics, linked to the fundamental role of the operation of comparison. Although many economists hold that such scales do not exist for utilities in general, information is a utility: the simplest that there is, and it is one which is measured on a cardinal scale, because it is defined so that this shall be so. One of the themes of this paper is that we can formalize our intuitive ideas of the information contained in a comparison, to provide a measure of divergence, or loosely, of ‘distance’, between structures. This information is not a physical quantity, but the product of a comparison, of comparisons which we have chosen to make.

2.3.1 Comparisons are also important because it is commonly easier to measure differences than to measure absolute levels, and often sufficient. (Much management is ‘management by exception’.) The user needs, above all, information about these differences, about ‘what’s new?’, and sometimes information about differences to the differences. He needs some kind of compromise to be struck between absolute and relative differences. Structural changes come about as consequences of differences in rates of change.

2.3.2 It is important to be clear about what is implied by comparison in this context because the nature of our data is much determined by

¹ Wirth N.: *Data structures + algorithms = Programs*, 1st edition, Prentice-Hall, 1975.

what we need to do with it. We force our data to conform (see 5.7 below). Comparison, one remembers, is:

- (i) A binary operation requiring weights with which to combine the unit comparisons each of which must be a fair comparison.
- (ii) An asymmetric, or non-commutative operation and from that derives much of our difficulties. A compared with B is not the same as B compared with A. (See 6.2.5 below.);
- (iii) Either between two sets of observed data, (an O-O comparison), or between data and an expectation, (an O-E comparison).
- (iv) An operation which requires thresholds or tolerances, which often depend on circumstances, and which may often be determined from the data itself.

2.4 In fact measurements and counts both depend on operations of comparison. Index numbers, experimental design, numerical classifications, and indeed induction in general, are all topics which can be thought of as variations on the theme of systematic comparisons systematically made, of how to handle sets of comparisons, how to simplify, how to partition the information which they produce? The final object is to produce insight and not numbers, necessary as they are as intermediate products, and to provide the benchmarks for the comparisons of future policy-makers.¹

3. Dimensions

3.1 It is useful to discuss dimensions in the physicist's sense of the term, the theory of measurement having originated with the physicists. An emphasis on the point of view

¹ We are also doing legwork for future historians, but nobody gives budgets for that job.

of physicists, and of measurement theorists may provide some counterbalance to the dominant influence on statistics, of the biometrical, or frequency school, whose paradigms provide only one of the several paradigms relevant to the work of official statistics. Classical physics has been concerned, in the first place with the dimensions of mass, of time and of length, and with the distinction between scalar quantities which have magnitude only, and vector quantities which have both magnitude and direction.

3.2 It is the dimensions of data which determine the logical and arithmetical operations which can, or cannot be performed on that data. While accurate instincts² guide the normal practice of statisticians, the topic can be clarified by a systematic listing of the distinctions, such as those between:

- (i) Intensive variables, like temperatures, and ratios which can only be averaged, and extensive variables, which can be added. One cannot aggregate by addition variables which have the dimensions of a ratio. For them, the process must be a weighted averaging. If the dimensions of the top and bottom line of a ratio are the same, then the ratio is a pure number.
- (ii) Stock variables (measured at a point of time) and flow variables (measured over a period of time), as has been done with economic data since the time of Irving Fisher.

3.3 On the dimensions of a variable depend:

3.3.1 The procedures appropriate to aggregate it and to combine it, which constitute for us the most important of its properties. If

² Some people may have reservations about this word: what matters is an insight into, an understanding of the nature of the data. It shows itself as skill, as judgement. It is developed by experience, and can be improved by criticism. We know the first task of a constructive criticism is often to defamiliarize the familiar, so perhaps the reader will understand a point of view which both respects a practical skill, and wants to translate its ideas into an abstract jargon.

there is a stable pattern of aggregation then a good mathematician will find a calculus to fit. The main alternative procedures include:

- ordinary addition, the simplest case;
- vector addition, of variables which have both magnitude and direction;
- weighted averaging, the most general of the procedures, which raises the question of what weights, and with it some crucial problems, associated with the asymmetry of relations. (Most of our complexities arise from these asymmetries, and the non-commutativity of operations which follows from them, just as most of our simplicities arise from those Procrustean beds discussed later (5.7) which impose additivity.)

3.3.2 On the dimensions of a variable depend also the transformations to which the data may reasonably be subject. One may have doubts, for example, about taking logarithms of any variables, which are not ratios, or pure numbers. As the mathematician will put it 'you cannot take logarithms of a vector space'.

4. Mass

4.1 Much socio-economic data has analogies to physical mass, in that the numbers are non-negative, and the data are extensive variables, which have magnitude only, and no direction, and are aggregated by ordinary addition.

- Mass is not the same as weight but, in a given context, weight is directly proportional to mass, and the patterns of

weights for the basic operation of weighted averaging are supplied by mass variables. Here we use the terms interchangeably.

- Data which has magnitude and direction combines by vector addition, but this plays no major part in socio-economic data, as it is usually collected. In some situations we can construct such quantities.²

4.2 'Mass-like' data has the property that the total of the figures means something, and one may express the figures as proportions of these totals. Given that proportions have the same formal properties as those relative frequencies which people call probabilities, the door is open to the mathematics developed by the frequency school, without taking on board their metaphysics.

4.3 Mass variables are often measured at a point of time, and then constitute stock variables. The same convenient property of additivity is found with variables measured over a period of time, or flow variables, provided the periods of time for all the measurements are the same. One can thus aggregate by summation some variables with the dimensions of a ratio, provided the bottom line is constant, (although as noted above in general, ratio variables require weighted averaging.)

4.4 Data whose dimensions are those of a product, e.g. tonne miles, or expenditure considered as the product of price and quantity, can be added, and have the mass-like property of a sum of money.

4.5 There are tendencies:

- (i) To call tables of such variables 'contingency tables' because they share the aggregation properties of the undoubted contingency tables, but this terminology seems to be a mistake. However we do

¹ The logarithms found useful are perhaps best regarded not as transformations of the variables but as the information contents of the untransformed variables. The information of a comparison is a dimensionless, akin to a relative variance, in that it is calculated as weighted averages of the logarithms of ratios, and is thus independent of the units of the original measurements, and (more or less) of the size of the data sets.

² Data about short-lived commodities like newspapers, and airline seats, have special problems and cannot be aggregated by ordinary addition. They have the characteristics of what lawyers call 'non-fungible' things, and have analogues of what physicists call 'occupancy problems'.

need a name for this family. One may suggest the term 'mass data'.

- (ii) To limit the term 'log-linear models' to models, probably using the logit transformation, of contingency tables in the strict sense. This would seem to be an unnecessary, even harmful restriction.

4.6 The greater part of Eurostat data as collected, can be expressed in terms of mass variables, but the greater policy interest is in processed and standardized variables, like unemployment rates, and price indices, which have the dimensions of ratios, with both the top and bottom lines varying and which, therefore, are not to be combined by addition, but by weighted averaging. A new technique¹ analyses data which is commonly published in the form of ratios, in terms of two tables of mass-like variables. It has the advantage over the more usual techniques (described for example in *Eurostat News*, Special number, 1984) of being more suited to routine use, requiring less skill in application.

5. Structure

5.1 Two ideas are linked in the concept of data structure: firstly that of structure itself — of arrays, of lists and of the tree structures — and secondly the idea of distances between structures.

5.2 The idea of structure starts with the geometric ideas of three or more dimensional spaces, and regards data as points in such spaces, a cluster being a high density of points, a region in which each has a lot of neighbours. To this school of thought, statistics are largely descriptive statistics, and a matter of approximating the geometry of the data points.

5.3 However, official statisticians think more readily in terms of arrays, of lists, and the tree structures of the nomenclatures which are our basic tools. While list structures are more general, array structures are sufficient to handle all our current data. Much of the processing may be specified using inner product operators, mainly matrix multiplication, operating on arrays of data, and of meta data coded into Boolean arrays.

5.4 Although there are five ways, at least, of representing tree structures (cf. Wirth, 1975, p. 190), it is convenient to express tree structures in terms of Boolean matrices, a computationally easy and theoretically profound formulation which allows most work to be specified in terms of inner product operations, on matrices, numeric and Boolean.²

5.5 Linear algebra³ is then the key to our data processing, and most of it is easy linear algebra. This has implications both in making operational statistical theory (which is already expressed mainly in matrix algebra), and for the exasperating task of maintenance programming where changing programs might be largely replaced by the editing of Boolean data matrices, a more straightforward task.

5.6 Clearly we ought to try to get as much mileage as possible out of this piece of luck, which makes part of our task straightforward, but the subsequent discussion of some asymmetries, and the consequential non-commutativity of operations brings out real difficulties. Even the simplicities which permit the matrix algebra may be not so much facts about the world as consequences of the Procrustean beds which we have decided that we must use.

² It implies that most structure data relevant to most statistical surveys can be expressed in terms of the propositional calculus, the simpler of the two types of 'logic' discussed in the context of expert systems. This conclusion may turn out to be important for future work.

³ The value of the computer language APL derives largely because it provides a nearly word-for-word implementation of linear algebra. As its originator remarked, it is 'the only computer language which has been under development for 300 years'.

¹ 'Partitioning information in a multi-dimensional contingency table and centring of log-linear parameters', Zighera, J.: *Applied stochastic models and data analysis*, Vol. 1, pp. 93—108, 1985.

5.7 What then are the structures we impose on our data, the two Procrustean beds which simplify our work:

- (i) The first is that our nomenclatures insist on putting things in boxes, or bins, and this encoding bed makes the structures finite. We throw away before we start, all information about within-box variation. Statisticians recognize some tens of thousands of commodities (there are about 8 000 in Nimexe). Quartermasters recognize many millions of commodities.
- (ii) The second is the result of respecting the constraints which we want to be obeyed: as when we insist on the decoding bed that 'things must add up', and on transitivity of relations, on 'factor reversibility', and the conservation of value. Imposing such identities strains and distorts the data. A measure of this distortion can be made using the general technique outlined in the next section.

Given these two Procrustean beds, we can get away with structures which are discrete, and finite, and with mathematics and models which are linear (in the sense of the general linear model, i.e. linear in the parameters, not necessarily linear in the variables, and in fact, are largely log linear).¹

5.7.1 There are two, and not three Procrustean beds: to stress, as we do in the next

section, the advantages of having one family of measures for discrepancies between structures, is not to advocate a third Procrustean bed. The proposals to make extensive use of one family of measures of discrepancy or distance do not constrain, but would extend, current practice. The minor imperfections of this measure (with our data, it obeys the 'triangle inequality'² most of the time, but not all the time, although the discrepancies found so far have been minor, and occur in recognizably extreme situations) must be seen in relation to the other approximations already accepted by ignoring within-box variation.

5.8 Another property of data is the number of dimensions required to identify it. In most economic data half a dozen dimensions suffice, each with a fine breakdown into an elaborate tree structure as in the European statistical nomenclatures NACE and Nimexe. Data from social surveys however may easily have 50—100 dimensions, usually with only coarse breakdowns within each dimension. At the most half a dozen, and probably only three or four variables can usefully be incorporated into any cross-tabulation. Yet cross-tabulation remains the principal method of analysis. There thus exists a 'dimensionality problem' with data from social surveys.

5.9 Any reflection on the nature of our data requires us to know the structure of the data as it originates and as it is published, and what one must do to pass from one structure to the other. There is less need to know its structure as it is stored.

5.9.1 In fact our input consists of sequential files, with time at the top of the hierarchy, and then country. Most of the regular work consists of 'updating time-series'. The usual processing job is to take data, defined by a four or five level hierarchy, with time at the top of the tree, and to convert this to a three or four level hierarchy by aggregating over one, or two levels, and moving time to the

¹ These remarks may be as much remarks about the human mind as they are remarks about the real world: being, perhaps, the consequences of the Procrustean beds which we have decided to employ. But their practical importance, and their implications for action are just as great as if they were physical facts, and simple literal truths about the real world outside.

² The 'triangle inequality' is the relationship between the squares of the purported distances between sets of three points which must hold if the measurements are to be held to be true distances. It involves a generalization of Pythagoras's theorem. It is known by mathematical analysis that measurements of divergence, even when symmetrized (another requirement for distances) do not always obey this inequality. It is also known empirically that, with our data, they usually do obey the inequality, and that when they do not, the discrepancies are small, and the adjustments to the figures required to obey the inequality are small. There is thus empirical evidence which justifies trying to use them as if they were distances. The final justification will depend on experience on the interpretability of a considerable volume of results.

bottom of the three, as the time-series is updated.

5.10 Does one analyse before or after aggregation? At the moment we generally aggregate first, and then try to analyse the aggregated data. In some areas this is changing. It helps to perform aggregation and standardization as late as possible, replacing analysis on aggregated data, by the aggregation of the results of analysis on micro data. The future may be one in which most econometrics will no longer consist of fancy regressions on highly aggregated data.

6. Distances between structures

6.1 The second major unifying concept relating to structure, is the idea of a 'distance', or the divergence, or dissimilarity, or badness of fit between two structures, which is akin to the idea of the distortion of an elastic solid, and taken from physics, or from geometry. The two structures may both be of data, or one of data and the other a model, in which case the divergence provides a measure of badness of fit.

6.2 By and large we cannot collect measures of distance between structures, but we can construct them. We do have intuitive ideas about distances, and a fundamental idea which has come to motivate the whole of the Taban project is that one can determine and justify one particular family of measures for measuring distances between structures. This technique and the comparisons it makes possible can be used in essentially the same way in many different aspects of our work.

6.2.1 There are advantages in using one measure of badness of fit, one quantity to be minimized: it unifies our task, multiplying the numbers of comparisons possible. It provides a method of costing each of the constraints which we impose (see 5.7 above).

6.2.2 Because comparison is a non-commutative operation there are two divergences. A

compared with B is not simply the inverse of B compared with A. We can however often symmetrize the measure, and often enough, ignore the occasional failure by small margins, to obey the 'triangle inequality' (see footnote to 5.7.1). Divergences thus provide measures which we can interpret in intuitive terms as 'distances', or rather as the squares of distances, which almost always obey the 'triangle inequality', and when they do not, then we can ignore the discrepancy as part of the approximation errors. The proof of the pudding will be in the eating, but experience so far is favourable. The point is not that these measures provide a perfect measure of distance, but that we need some such a measure to quantify our intuitions, and these measures are the simplest which have most of the desired properties. The proposals of this paper are 'top down' and 'goal driven', based on customers' needs to quantify their intuitive ideas which are geometric in nature.¹

They suggest that we should thus use a single family of criteria of divergence, or badness of fit, or 'distance' between structures, and the methods associated with them, of maximum likelihood or minimum cross-entropy to fit models by minimization, and to measure discrepancies in both stochastic and non-stochastic situations. In the linear world, of official statistics, there is no conflict between these minimization criteria, and the more difficult ideas of specialist mathematicians about canonical solutions and structures.

6.2.3 The single family of criteria of divergence refer to a number of measures, all essentially the same, which keep reappearing in a variety of contexts, and under different names. This variety of names for what are the

¹ Any map constructed from a matrix of distances has obvious analogies with the plots of the two most important variables derived from principal components analysis, or from correspondence analysis, which operate on symmetric matrices of distances or measures of association. The approaches are complementary rather than competitive, but the simpler proposals have the advantage of being more intuitive, and using only elementary mathematics.

same concepts, (cross-entropy, directed divergence, Jeffrey's J , minimum discrimination information, mutual information, log-likelihood ratio, deviance and likelihood, etc.) provides evidence of the number of the times the idea has been reinvented, and thus provides pragmatic evidence of its importance, and of its ability to cope with a variety of circumstances.

6.2.4 Its adoption in a statistical context resulted from the following reasoning. Official statisticians have by and large, not yet been able to do with their tables what most experimental scientists do, namely carry out those analyses of variance which constitute one paradigm of the scientific method (the flagship of the biometrical school). The reasons are technical, and not because of any irrelevance of the ambition to decompose variation into a series of additive components. The analysis of variance, which is based on squared differences, cannot usefully be used with data, which are skew and often sparse. The variables combine multiplicatively but are subject to additive constraints. These characteristics, however do not invalidate the analysis of deviance, nor of information, which does not clash with traditional least-squares statistics, but generalizes them to a wider range of situations, by using arithmetically-weighted logarithms, and providing an acceptable compromise between:

- large absolute differences which are relatively unimportant, and
- large relative differences which are absolutely unimportant.

These are the simplest measures which have the property desired, namely of partitionability, and of compromise between absolute and relative differences (being directly proportional to both). One may note that, to facilitate comparison, the measures used should be averages and not totals (i.e. analogous to mean squares and not to sums of squares).

6.3 Given a measure of the difference between each pair of two structures, one can construct a square matrix of 'distances' between the members of a set. Given a table of distances it is possible to construct a map which approximates the relative positions of the members of the set. Such a measure of distance between structures also allows one to display many structural relationships in a particularly straightforward way. It provides an intuitively appealing alternative to the more usual, but difficult to interpret, techniques of multivariate analysis, following the analogy of a two-way table of distances between towns, from which using no more than compasses, or school trigonometry one can derive a plan of the relative positions of the towns.

6.3.1 Given the availability of computer graphics, this creates a new way of presenting much data, and particularly the inter-country comparisons which are of special importance to us. It becomes possible, in principle, to derive by calculation, what one ordinarily cannot measure directly, vector quantities, having both magnitude and direction, and thus to implement in a concrete and quantified way the geometric intuitions about, for example, which countries are 'close' to other countries. Large numbers of people do in fact have these intuitions.

7. The empirical characteristics of data

7.1 Procedures must take into account the characteristics of 'real world' problems, which provide difficulties for any implementation of science, problems which seem rather similar in all fields. The permanent practical difficulties of implementing a data collection programme must be incorporated into any theory which is worth having. Whereas engineers are likely to talk of 'noise, dirt and leaks', as the characteristics of the real world, and to remark that only noise is easy to handle mathematically, the statistician is

likely to speak of the 'errors, omissions, and atypicals', and of the 'births, deaths, fissions and fusions' of his entities. Sampling errors, his version of noise, are usually the least of his worries. He is more concerned with problems of definition, and a dialectical penumbra of concepts, with problems of measurement and approximation, the majority of which are not stochastic in nature. So we need to consider the empirical characteristics of our data.

7.2. The data are itself determined, not only by those constraints which we impose, but also, and even principally by the nature of the entities with which we deal, (or, if one likes the phrases, of our ontology, or even the inhabitants of 'our zoo'), the entities which enprint their characteristics upon the data, and of which the data are the encoded representations. The main ones are persons, both natural, and artificial (e.g. companies and households), acts or events, or transactions, commodities, activities, objectives, (as in the NABS nomenclature for scientific research).

7.2.1 There are major advantages of person-based statistics, over event, or act-based statistics: records can be linked, and the information recovered by cross classification. Longitudinal surveys, and panel statistics become possible. Comparisons over time can be much more precise. The obstacles to record linking, and indeed to a decent system of personal identification, which would ensure that 'identifiers identify' are now more administrative and legal than technical. However the variable extension of names, particularly of geographic entities, and artificial persons, like industrial companies, add to the difficulties of making the unit comparisons out of which figures must be built up. 'Register problems' are familiar to industrial statisticians, as when, for example between two periods a firm buys another firm, so an unchanged name refers to a different entity. It is often difficult to get behind the operational definition that a 'reporting unit is an unit which reports'.

7.2.2 A special problem with transactions is the need for imputed transactions: in order to preserve coherence it is necessary to invent figures for certain transactions which do not actually take place (the income imputed to an owner occupier of a house, being an example). In general there is no way of valuing services, and measuring their output except from the cost of its inputs. In consequence there can be no real measurements of the relations of inputs and outputs, and no direct estimates of productivity.

Other acts may be deemed to have taken place when they have not actually occurred: the phrase means that one will proceed as if the event had happened, although it has not happened. The defence for making such imputations tends to run like this: 'it may seem odd to do so, but it would be even odder if one did not'.

7.2.3 'Activities' or industries are commonly defined only in terms of their products (or their principal products); a classification of activities reads like a classification of products. They may have 'by-products', or, in a better phrase 'produits fatals'. Machines are commonly classified by the nature of their product, but there are other possibilities, say, by technique of power transmission, or by the raw material employed. Consider for example:

- (i) The hydraulics industry, and the packaging industry;
- (ii) The production of the same product by different technology, or different kinds of organization, e.g. sulphuric acid, which is sometimes a by-product of non-ferrous metal refining, and in the future may be a by-product of electricity generation. Christmas trees in Denmark are part of forestry, but in Italy count as market gardening.

Minor changes in product mix, and in the degree of vertical integration of enterprises can cause reclassification between activities, and consequent instability in the figures for

activities. Some of this instability in the figures must be considered a self-inflicted wound.

7.3. A further determinant of the nature of our data is that one collects the data which it is practical to collect, and, often, not the data which theory suggests, but only collecting proxy variables: e.g. figures of sales or deliveries instead of production. The same proxies are not always used, or appropriate. If figures which are intended to measure the same concept are in fact constructed from different sources then they will be different figures.

7.4 In practice data contain errors and omissions, and are subject to delays, timeliness being a continual problem, and delays greatest with detailed cross-section data. Variables are often nearly collinear. The variables may then all contain information, but it is often nearly the same information in every one of them. Clearly we should eliminate some of the redundancy.

7.5 Data require cleaning, a task which requires an examination of the larger residuals of the obvious, or natural comparisons, which we can call the banal comparisons (e.g. with a uniform distribution, and with pro-rated row and column totals). Only after this has been done can the data be more or less, trusted. This fact, of the need to check our data before using it 'for real', gives an early yet important application of the general technique of the comparison of the differences in structures. If, for example there are 'surprising' differences between the structure of this year's data and last year's data, then either something interesting has happened and one ought to know about it, or there is an important error in the data.

7.5.1 It is the occasional large error that matters most. Automated data, and previously verified data can still be erroneous, and still needs checking. One important consequence of the use of computers is that numerous small errors are eliminated, but at the risk of an occasional massive error which

may get through unnoticed. (Instrument failures cause gross errors with automated systems, errors much greater than would ever have occurred if human eyes had scanned the data however casually. Analogous errors are possible with files of data, supposedly already checked within Member States.) We still need data checks, even at the late stages of processing, to make sure that the figures are roughly what one expected, remembering the folklore that 'if a figure is really interesting then it must be wrong'.

7.5.2 There are always implicit qualifications to data, such as 'errors and omissions excepted', or 'E OE', which one used to find on bills and railway timetables. The most that one can say is that 'it is to be trusted unless it is to be mistrusted'. This escape clause brings out the recursive and conditional characteristics of these definitions, indeed of most of our definitions (a topic which will be taken up later).

7.6 The omissions may be accidental, or they may be systematic consequences of the collection mechanism, as with the truncated distributions obtained when it is not practical to survey small firms or farms.¹ Omissions may be temporary, e.g. when data are late, but it is necessary to produce an early estimate of a total. Some data are 'lost' from the beginning and the end of series treated by moving average filters, as in current seasonal adjustment. Limited forecasting is necessary when one has to 'now-cast', in order to make up for the collection lags.

7.7 Proxy variables, 'atypicals' and extreme values: Is one interested in the data for itself, or because it provides a proxy for an empirical correlate of some otherwise unmeasurable variable of greater interest? Data often con-

¹ These truncations often invalidate attempts to calculate commodity balance sheets, but procedures are available to allow plausible estimations in cases where employment data are available for the firms which do provide production figures and distributions are known to be, more or less log-normal. One could expect to fit truncated bivariate log-normal distributions by maximum likelihood. In fact the estimates are never (?) made.

sist, not of the variables one would like to measure, but of some substitute for some empirical correlate of those variables (e.g. the use of delivery figures as proxies for production figures in an index of industrial production). This is one reason for unusual data and outliers. Besides the real errors there are 'atypicals', figures which may be alright as far as they go, but which are quite untypical of the underlying variable in which we are really interested. In this case they must not be used. Such a figure is not so much wrong in itself; but would be misleading if used in this context for the current purpose. Thus our data are commonly a mixture of (two or more) distributions, the usual and the exceptional, or unusual: e.g. the effects of strikes, or of foreign wars. So we call one of these distributions 'atypicals' or 'extreme values', and try to exclude its members.

7.8 Some characteristic problems derive from the data being a mixture of distributions, and from the frequent use of proxy variables. There are losses of data, and inconvenient zeros of several different types. The treatment of these cases commonly has a greater influence on the results than do differences in the algorithms used for the main problem, or the problems which interest the standard theory. (Seasonal adjustment procedures provide a good example.)

8. Some features of the official statistician's work

8.1 Our job differs from the formulations of the work which come naturally to current academic statisticians, both frequentists and Bayesians, and fits more with the numerical analyst, and the mathematical programmer, and their general methods of minimizing or maximizing functions. We are concerned with approximation, with modelling populations, and minimizing discrepancies, which are commonly not stochastic in nature. The problem

seems more that of approximating geometries.

8.2 A frequent problem is disaggregation: one applies some structure to a directly estimated total, or set of totals. In the latter case some distortion is inevitable. How do we quantify this distortion? Incidentally, the existence of the problem of disaggregation provides one clear example of the non-stochastic nature of the central difficulties as does the index number problem.

8.3 We are concerned with combining data from two sources, but the data do not often consist of a prior distribution, and some new evidence, as the Bayesians suggest, but some data, probably old data, and some constraints which must be reconciled with that data. These constraints may be *a priori*, like the accountancy identities, or they may be empirical, some new aggregate figures, as in the updating of input-output tables.

8.4 Given the frequent multiple sources of estimates, discrepancies in the data are common. Our job is not finished when the initial estimates have been made, and, strictly speaking remains incomplete until final estimates have been obtained which satisfy the constraints that hold between their true values. But only sometimes is it, in fact, reasonable to distribute the discrepancies. Formal similarity, in the internal relations of two problems, the characteristic which we stress here, does not imply similarity of substance between the problems, or in the criteria of judgement appropriate, e.g. on distributing discrepancies. The differences in the balances of payments and of raw materials provide a striking example. With money, the thresholds of comparison are low, and it is commonly not reasonable to distribute discrepancies. With raw materials balance sheets, the thresholds are high, and it is reasonable to distribute the discrepancies or errors.

8.5 Our input is by source, but output is required by problem: e.g. budgets are given to institutions, but policies are discussed in

terms of functions and objectives, which may be multiple. There may be no formal difficulty in passing from one classification to another. The operation is a matrix multiplication, but the coefficients of the classification converter matrix are likely to be arbitrary, however reasonable.

8.6 To have confidence in conclusions drawn from data, one needs to know that:

- the data have been checked, and the larger residuals have been reviewed;
- the conclusions are robust to the method and robust to the data, so that no single piece of data, if erroneous, can have any excessive influences.

8.7 One common need is for the robust estimation of ratios known *a priori*, to be not far from unity. ('Births and deaths', generate ratios in their unit comparisons of either zero or infinity.) We have a great deal of vague *a priori* knowledge which generally lets us recognize absurd results.

8.8 Most of our conclusions are, by the (low) current standards of precision, robust to the methods of analysis, i.e. when alternative procedures, are used the answers differ, but not by much. In this context 'not much' might mean, what? Perhaps half of 1%? We accept this because it is small compared with the real variations in economic parameters. We know that none of them are stable.

8.8.1 In practice one adopts the working rule of quoting one more figure than is likely to be meaningful, and to be concerned with changes of procedure which will change that last figure, by more than two or three but not with changes which alter figures by less than that. The files of course contain figures expressed to many more figures than would ever be published.

8.9 There is a need to formalize the criteria by which to judge a good table. One need is for some summary measures of the strength of an association, of the distance between two

structures, on a scale which is unbounded upwards. Here is another example of the application of measuring the differences between structures. This technique guides us in our decisions on:

- when to cross-classify: when to group: when to smooth, (i.e. to eliminate variations thought to be uninteresting, e.g. calendar effects, seasonal effects, sampling errors, or noise in order to estimate, e.g. small area statistics, and region to region transport flows). The idea, of smoothing, familiar with time-series can be applied also to cross-section data.

8.9.1 In favourable cases, prior knowledge may help. It is luck if thresholds can be generated from internal evidence, as in those cases in which significance tests are relevant, or when one decides to discard the highest order interaction components of the information as the price which must be paid if there is to be any simplification of the data. Simplify we know that we must, so that price will be paid.

9. The implications

The present analysis is, in fact a marshalling and systematization of the working practices and insights of numerous SOEC staff, collected over the years. Its importance is that the uniformities observed would allow a more algorithmic approach to how we handle data, and suggest a programme of what may be called an 'Information audit', or 'Data audit', to provide a set of procedures suitable for routine application to improve data quality from the stage of 'input quality control' onwards to the greater part of Eurostat data.¹ For any such clean data set under examination there would be applied these procedures to calculate how much infor-

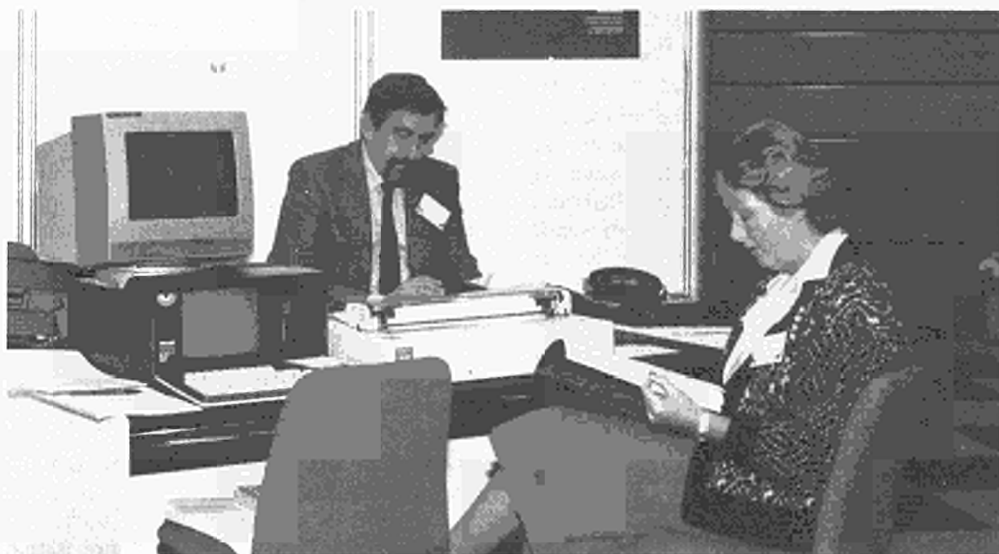
¹ i.e. to that collected as mass variables and as non-negative numbers, and not that collected as ratios, like index numbers are, nor as differences, like stock changes, numbers which may be positive or negative.

mation there is, and where it is located, so that the most informative tables, and graphs for particular purposes, may be provided. They would pay particular attention to the idea of distances between structures, and how these can be approximated onto computer-

generated maps. Some procedures by which this can be done will be outlined in a following article. Later the discussion will return to the specific problems which have been discussed in the seminars, and can be reviewed in the general framework.

Eurostat's participation in exhibitions

by Sara Mendosa, Assistant in the 'Dissemination' division of Eurostat



During 1986 in its drive to promote statistical information, the Dissemination Division of Eurostat attended a number of specialist trade fairs and exhibitions in the European Community, as well as organizing visits, introductory courses, demonstrations and seminars aimed at sectors specifically interested in statistical information in the Member States. The main object of participating at these events is to make known to the general public what Eurostat represents. We often get visitors looking at our posters and literature and asking us what does Eurostat stand for, what

does Eurostat do? The presence of the Statistical Office enables the visitors to be informed of our role as part of the Commission of the European Communities. The main aim is to interest as many people as possible in our data banks, so they may consequently become customers of the host companies. Also we give information on the different media on which the data can be obtained, that is, magnetic tapes, microfilms, listings or the various publications produced. The presence of Eurostat at the major online exhibitions and conferences in the Community has been

an important factor in increasing the use of Eurostat data, both by commercial hosts and in the national administrations of the 12 Member States.

A tremendous amount of work goes into the preparation of a Commission stand at any one of the exhibitions. The administrative side is looked after by the Publications Office. Up to a year before the actual date of the fair the organization begins; initially the position and the size of the stand are chosen, to ensure maximum exposure. The telephones needed to link the terminals to the national networks have to be ordered, the furniture required for housing the equipment and documentation has to be hired. The equipment on the stand for demonstration purposes consists of three microcomputers linked via modems to the host computers; another terminal provides a continuous set of information screens on the different data banks.

Prior to the exhibition the Dissemination Division at Eurostat prepares hundreds of folders which have been specially printed for events such as trade fairs, presentations, etc. The publicity material included in the folders has been built up over the last few years and now consists of leaflets for the Cronos, Comext and Regio data banks in various languages. A leaflet, produced by Reuters, gives information on what statistical data are available using the Reuters terminals. An article is also added which gives a brief summary of Eurostat, the three statistical data banks — Cronos, Comext and Regio — and Eurostat's dissemination policy. A list of the commercial hosts and, where appropriate, their branch offices is also part of the publicity material. A poster for the statistical data banks has been produced by the Publications Office in the nine official Community languages and this adorns the walls of the stand.

Apart from these folders which are handed out, there is also a variety of other documentation available for visitors with specific questions. For example, all the classification plans

for each of the Cronos domains, the foreign trade user guide, the Nimex nomenclature of goods, the Regio manual and the Nuts nomenclature, a number of copies of the *Eurostatistics* publication (as this has now been incorporated into Cronos as part of the ICG domain), a collection of the most recent monthly bulletins on price indices, unemployment, industrial trends, iron and steel and energy, the new price catalogue for statistical information for anyone interested in obtaining magnetic tapes, microfilms, etc., and, of course, a stock of *Eurostat News*.

The three main online exhibitions attended in 1986 were Infodial in Paris from 14-19 April, Infobase in Frankfurt from 13-15 May and Online in London from 2-4 December.

In 1986 the fifth Infodial-Videotex exhibition and conference took place in conjunction with the Sicob at La Défense in Paris. More than 120 companies participated in this specialized trade fair. The second Infobase exhibition took place in Frankfurt in 1986. More than 1 400 data bases were represented and the aim is to inform the general public of what is available and the latest developments. A convention also takes place at the same time with a number of lectures and discussions. The 10th International Online Information Meeting was held in London and covers data bases, software, non-bibliographical chemical data bases, optical media, etc. The exhibition is aimed at anyone who has anything to do with information. Over 100 companies exhibit at this fair. A conference takes place at the same time with sessions on particular themes.

During these exhibitions, as an exhibitor, we are given the opportunity of presenting our products. The aim of these product reviews is to give visitors the possibility of obtaining information on the data banks in an informal atmosphere. In the product review we explain the basic concepts of the data banks and any new developments which are foreseen, and

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anyone interested in asking us questions or obtaining documentation is invited to visit our stand.

The exhibition stand represents the Commission of the European Communities and, apart from the statistical data banks, a number of documentary data bases are present, such as Celex, Sesame and Scad. The stand is easily identifiable by the 13 miniature Community flags, one for each of the Member States and the Community flag, which attract a lot of interest from visitors.

Visitors come from all over the world, perhaps Online in London being the most cosmopolitan, and represent many different professions — businessmen, teachers, librarians, documentalists, scientists, publishers and students. Some visitors already know of Eurostat, use the publications and want to have information on accessing the data online. Certain people come with specific questions on a particular subject or want to know more details about the collection and harmonization of the figures. Some visitors ask for a demonstration of one of the data banks and see how up to date the statistics are and for what countries the figures are available and how user-friendly the software is. It is not always possible to give an immediate reply, in which case, their name and address are noted and the inquiry is followed up after the exhibition and a reply is sent.

Parliamentary questions

WRITTEN QUESTION No 469/86
by Ms Joyce Quin (S—UK)
to the Commission of the European Communities

(5 June 1986)

(86/C 330/34)

Subject: The extent to which Community shipowners place shipbuilding orders in Community shipyards

which case, their name and address are noted and the inquiry is followed up after the exhibition and a reply is sent.

Eurostat has agreements with three host companies. WEFA (Cisi-Wharton) has its head office in Paris and branch offices in London and Frankfurt. Datacentralen, a Danish company with an office in Copenhagen, and GSI-ECO, a French company with offices in Paris. On certain occasions one or more of these commercial host companies are also present at the online exhibitions, which means that a visitor interested in accessing the statistical data banks can be immediately referred to the host's stand where he can obtain a full demonstration of the software and get details on prices.

The results of Eurostat's presence at these exhibitions has led to an increase in the number of requests for information, not only for online access, but also for general information and the *ad hoc* services provided by the Statistical Office. Where the host companies are concerned the online consultation of Cronos has doubled in the past two years. The consultation of Comext stood at over 1 000 000 data points in 1986 (each data point representing a figure).

Further to my Written Question No 179/82¹ and the reply by the Commission:

1. Will the Commission please state what percentage of new orders placed in each Community shipbuilding country is accounted for by orders placed by shipowners based in that particular country —

¹ OJ C 271, 14. 10. 1982, p. 2.

supplying figures for each of the last four years?

2. Will the Commission please state the percentage of orders placed by shipowners based in each of the Community shipbuilding countries in Community countries other than their own — supplying the appropriate percentages for each of the past four years?
3. Will the Commission please state what proportion of new orders the shipowners in each of the Community's present member countries placed in shipyards outside

the Community — supplying figures for each of the past four years?

**Answer given by Mr Narjes
on behalf of the Commission**

(9 September 1986)

As points 2 and 3 of the Honourable Member's question relate to total orders placed by Community shipowners, and point 1 relates to total orders received by Community shipyards, the Commission figures are presented in corresponding form.

I. Orders received by Community shipyards

(% total)

Shipbuilding country	1982			1983			1984			1985		
	(A = National shipowner			B = Shipowner from other Member State			C = Shipowners from non-Community countries)					
	A	B	C	A	B	C	A	B	C	A	B	C
Belgium	100.0	—	—	100.0	—	—	97.5	—	2.5	100.0	—	—
Denmark	43.2	—	56.8	76.0	0.2	23.8	78.0	6.7	15.3	66.4	3.7	29.9
France	70.0	—	30.0	67.1	—	32.9	36.1	—	63.9	25.0	—	75.0
FR of Germany	74.3	1.4	24.3	56.0	2.4	41.6	82.3	1.4	16.3	59.7	16.1	24.3
Greece	100.0	—	—	71.7	—	28.3	100.0	—	—	38.8	—	61.2
Ireland	—	—	—	—	—	—	—	—	—	—	—	—
Italy	93.2	—	6.8	46.6	9.4	44.0	86.7	—	13.3	99.5	—	0.5
Netherlands	76.0	1.9	22.1	77.1	4.6	18.3	80.3	14.7	5.0	59.6	17.9	22.5
United Kingdom	71.8	—	28.2	74.4	—	25.6	93.0	—	7.0	68.6	—	31.4
EUR 10	73.0	1.0	26.0	68.3	1.8	29.9	80.1	4.6	15.3	61.8	9.3	28.9
Spain										59.5	—	40.5
Portugal										100.0	—	—

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II. Orders placed by Community shipowners

(% total)

Shipbuilding country	1982			1983			1984			1985		
	(A = National shipyard)			B = Community shipyards			C = Non-Community shipyards)					
	A	B	C	A	B	C	A	B	C	A	B	C
Belgium	89.4	10.6	—	100.0	—	—	61.9	1.4	36.7	100.0	—	—
Denmark	92.1	7.9	—	91.4	3.6	4.0	92.7	2.8	4.5	45.1	17.8	37.1
France	79.2	0.5	20.3	68.8	4.1	27.1	100.0	—	—	100.0	—	—
FR of Germany	88.1	—	11.9	84.1	1.6	14.3	92.3	5.1	2.6	99.2	0.8	—
Greece	5.4	—	94.6	0.5	—	99.5	1.7	3.5	94.8	59.2	7.0 ¹	33.8
Ireland	—	—	—	—	—	—	—	100.0	—	—	100.0	—
Italy	100.0	—	—	97.8	—	2.2	100.0	—	—	100.0	—	—
Netherlands	85.2	—	14.8	66.3	—	33.7	79.3	—	20.7	58.8	—	41.2
United Kingdom	52.2	—	47.8	39.4	2.0	58.6	72.5	8.1	19.4	68.9	26.1	5.0
EUR 10	77.0	1.0	22.0	49.9	1.3	48.8	67.1	3.9	29.0	74.9	11.3 ¹	13.8
Spain										100.0		
Portugal										100.0		

¹ This figure is mainly accounted for by an order to Greek shipyards by German shipowners for two passenger ships.

The Commission would point out that percentage figures sometimes do not accurately reflect the real pattern of order volumes. Absolute figures ('000 cgt) are given for the Community as a whole.

I. Orders received by Community shipyards

('000 cgt)

	1982			1983			1984			1985		
	(A = National shipowner)			B = Shipowner from other Member State			C = Shipowners from non-Community countries)					
	A	B	C	A	B	C	A	B	C	A	B	C
EUR 10	1447.3	15.1	526.0	1109.2	29.8	484.8	1504.9	86.4	287.4	1221.0	183.6	571.6
	1988.4			1623.0			1878.8			1976.0		

II. Orders placed by Community shipowners

('000 cgt)

	1982			1983			1984			1985		
	(A = National shipyard)			B = Community shipyards			C = Non-Community shipyards)					
	A	B	C	A	B	C	A	B	C	A	B	C
EUR 10	1444.5	18.7	412.7	1108.7	28.8	1084.3	1507.0	87.5	651.3	1220.8	184.1	224.9
	1876.0			2222.0			2246.0			1630.0		

Written Question No 304/86
by Mr Michael Hindley (S—UK)
to the Commission of the
European Communities

(13 May 1986)

(86/C 330/22)

Subject: Trade in textiles

1. Will the Commission state:

- what percentage of total imports into the Community of Twelve of:
 - (a) textiles, and
 - (b) clothing is covered by the Multifibre Arrangement?
- what percentage is covered by preferential agreements with the remaining preferential countries (i.e. excluding Spain and Portugal)?
- what percentage is covered by ACP unilateral limitations?
- what percentage is covered by GSP treatment?
- what percentage is covered by imports other than the above, i.e. from countries such as Taiwan?

— what percentage of imports from less-developed countries come from China and Hong Kong?

— what percentage of Community imports come under the OPT regime?

The above percentages should concern imports firstly by value and secondly by weight. The actual figures should be given as well as the percentages.

2. Does the Commission share the view that there is considerable uncertainty concerning the above trade in textiles and that it is difficult to understand how the renewal of the Multifibre Arrangement can be negotiated by July 1986 unless these uncertainties are clarified?

Answer given by Mr De Clerq
on behalf of the Commission

(16 September 1986)

1. With regard to the statistics for the Community of Twelve requested by the Honourable Member, it should be noted that the most recent harmonized statistics available refer to 1985; they relate therefore to the Community as constituted prior to the accession of Spain and Portugal.

	'000 tonnes	%	million ECU	%
Extra-EEC imports				
All products textiles/clothing	2 470		20 220	
Of which MFA products:	1 791	72.5	18 616	92
— textiles	1 263	51.2	8 294	41
— clothing	528	21.3	10 322	52
Imports of MFA products from countries with MFA bilateral agreements (% of extra-EEC imports of MFA products)	815	45.5	8 816	47.4
Share of MFA imports of textiles/clothing covered by arrangements concluded with preferential countries (excluding Spain and Portugal)	228	12.7	2 091	11.3
MFA imports covered by the Community textiles policy	1 381		14 106	
Taiwan's share:				
— of total imports	65	3.7	581	3.1
— of imports covered by the textiles policy		4.7		4.1
Share of imports covered by the textiles policy:				
— China	107	7.7	814	5.8
— Hong Kong	106	7.7	1 961	13.9
Imports under OPT arrangements (% of extra-EEC imports of all textile/clothing products)	38	1.5		

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With regard to the other questions on statistics, the situation is as follows:

- (i) GSP imports totalled 215 255 tonnes and 1 258 million ECU in value, i.e. 12 and 6.8 % respectively of the total imports;
- (ii) no ACP country is currently the subject of quantitative restrictions.

2. The growth of international trade in textiles has, over the last few years, been subject

to the erratic movements which have affected the value of certain currencies, especially the dollar. The Commission certainly took account of this situation when preparing the negotiating directives for renewal of the Multifibre Arrangement and during the discussions on them in the Council. The Commission, additionally, may bring the matter before the Council should problems arise which cannot be resolved in the context of these directives.

PUBLICATIONS

Published

BASIC STATISTICS OF THE COMMUNITY — 1986

Theme 1 — Series A: Yearbooks

A selection of the Community's basic statistics and a comparison with a number of other European countries, plus the USA, Canada, Japan and the USSR.

This selection covers the following subjects:

- General statistics
- National accounts, finance and balance of payments
- Population and social conditions
- Industry and services
- Agriculture, forestry and fisheries
- External trade

Format	Pages	Price in BFR	Languages	Order No
A6	293	250	ES	ISBN 92-825-6857-1
			DA	ISBN 92-825-6858-X
			DE	ISBN 92-825-6859-8
			GR	ISBN 92-825-6860-1
			EN	ISBN 92-825-6861-X
			FR	ISBN 92-825-6862-8
			IT	ISBN 92-825-6863-6
			NL	ISBN 92-825-6864-4
			PT	ISBN 92-825-6865-2

NATIONAL ACCOUNTS ESA — AGGREGATES 1960—1985

Theme 2 — Series C: Accounts, surveys and statistics

Results of the principal aggregates of the national accounts drawn up according to ESA (European system of integrated economic accounts). Development and comparison between the Community as a whole (EUR 12), the 12 Member States, the United States of America and Japan.

Format	Pages	Price in BFR	Languages	Order No
A4	140	500	EN/FR/NL	ISBN 92-825-6678-1
A4	140	500	DA/DE/IT	ISBN 92-825-6679-X

PUBLICATIONS

OPERATION OF NUCLEAR POWER STATIONS 1985

Theme 4 — Series C: Accounts, surveys and statistics

This annual publication presents in its first part the main operating statistics for the past year, gives an outline of the structure of the nuclear plant situation, with units on line as well as units under construction and analyses the energy availability particularly according to the age and to the type of reactor.

The second part of the publication gives the monthly operating data for each nuclear power station of the Community as well as the yearly results since the first connection to the grid. The annual load diagrams are also included showing the main reasons for unavailability.

Format	Pages	Price in BFR	Languages	Order No
A4	126	600	EN/FR	ISBN 92-825-6815-6

IRON AND STEEL — STATISTICAL YEARBOOK 1986

Theme 4 — Series A: Yearbooks

Yearly statistics on the structure and the economic situation of the Community's iron and steel industry: employment, size of enterprises, plants, crude steel, iron and scrap balances, production of iron ore, pig-iron, crude steel, finished steel and end products, consumption of raw materials, works deliveries and receipts, external trade of scrap and ECSC products, indirect foreign trade, steel consumption, investments of the iron and steel industry, prices and levy.

Format	Pages	Price in BFR	Languages	Order No
A4	208	1 000	ES/DA/DE/GR/EN/FR/IT/ NL/PT	ISBN 92-825-6634-X

STEEL CONSUMPTION BY USER BRANCH 1970—1984

Theme 4 — Series D: Studies and analyses

This is the first publication from the Statistical Office of the European Communities (SOEC) of detailed statistics on overall Community steel consumption broken down by steel product and user branch. It contains the results of statistical surveys which were first carried out in the present coherent form in 1978 and cover the period 1970—1984.

Format	Pages	Price in BFR	Languages	Order No
A4	79	250	DE/EN/FR	ISBN 92-825-6813-X

STRUCTURE AND ACTIVITY OF INDUSTRY — ANNUAL INQUIRY — MAIN RESULTS 1982/1983

Theme 4 — Series C: Accounts, surveys and statistics

The publication contains the main results for 1982 and 1983 of the coordinated annual inquiry into industrial activity, carried out by the Member States pursuant to a Council Directive of 6 June 1972.

PUBLICATIONS

Format	Pages	Price in BFR	Languages	Order No
A4	286	900	DE/EN/FR	ISBN 92-825-6872-5

GENERAL INDUSTRIAL CLASSIFICATION OF ECONOMIC ACTIVITIES WITHIN THE EUROPEAN COMMUNITIES (NACE)

(Spanish translation of French edition of 1970)

Theme 4 — Series E : Methods

The general industrial classification of economic activities within the European Communities (NACE) is an instrument necessary for the collection and presentation of statistical data which are compiled and harmonized within the scope of the Community.

Different statistics of the Community are covered by regulations or directives referring to NACE.

Format	Pages	Price in BFR	Languages	Order No
A4	100	150	ES	ISBN 92-825-6635-8

AGRICULTURE — STATISTICAL YEARBOOK 1986

Theme 5 — Series A: Yearbooks

This publication is a statistical vade-mecum containing the most important data published by Eurostat in the specialized booklets dealing with agriculture, forestry and fisheries. The general parts give information on the position of the EC in the world: production, trade with non-member countries. The specialized chapters cover the following in particular: land use, structure of agricultural holdings, crop and animal production, supply balance sheets, prices and price indices, agricultural and forestry accounts, and fishing catches and fleets.

Format	Pages	Price in BFR	Languages	Order No
A4	341	750	ES/DA/DE/GR/EN/FR/IT/ NL/PT	ISBN 92-825-6659-5

ECONOMIC ACCOUNTS — AGRICULTURE, FORESTRY 1980—1985

Theme 5 — Series C: Accounts, surveys and statistics

This publication contains the most recent data on agriculture and forestry accounts. This edition includes tables, showing time series for final output, intermediate consumption, value-added and fixed capital formation, for each of the Member States and the Community, in national currencies and in ECU, at current prices (and exchange rates) and at constant prices (and exchange rates). The data relate to the period from 1980 to 1985.

Format	Pages	Price in BFR	Languages	Order No
A4	209	450	ES/DA/DE/GR/EN/FR/IT/ NL/PT	ISBN 92-825-6658-7

PUBLICATIONS

FARM STRUCTURE — 1983 SURVEY: DETAILED RESULTS

(microfiche)

Theme 5 — Series C: Accounts, surveys and statistics

For the first time the results of the farm structure survey have been published on microfiche. All tables of the 1983 survey, on national and regional level, are now available on microfiche.

Price:

- for the complete series, 149 microfiche: BFR 8 000;
- for a complete country, varying number of microfiche: BFR 1 500.

Copies of the microfiche tables are also available on paper at the price of BFR 200 for one demand + BFR 100 for five pages (maximum 20 pages).

FORESTRY STATISTICS — METHODOLOGY

Theme 5 — Series E: Methods

The present volume, dealing with the methodology of forestry statistics, will be followed by a further volume presenting statistical data on forestry. Only the latter volume will be updated each year.

Format	Pages	Price in BFR	Languages	Order No
A4	25	200	ES	ISBN 92-825-6636-6
			DA	ISBN 92-825-6637-4
			DE	ISBN 92-825-6638-2
			GR	ISBN 92-825-6639-0
			EN	ISBN 92-825-6640-4
			FR	ISBN 92-825-6641-2
			IT	ISBN 92-825-6642-0
			NL	ISBN 92-825-6643-9
			PT	ISBN 92-825-6644-7

AGRICULTURAL INCOME — SECTORAL INCOME INDEX ANALYSIS 1986

Theme 5 — Series D: Studies and analysis

This publication presents an analysis of the evolution of agricultural income between 1973 and 1986. The published data for 1986 are the latest available estimates for all Member States except Portugal.

The first two chapters are reserved for the indicators of agricultural income in the Community and for each Member State. The reasons for the evolution of income in 1986 and from 1973 to 1985 are analysed. A short chapter is devoted to the comparison of agricultural income, in absolute terms, between the Member States.

Format	Pages	Price in BFR	Languages	Order No
A4	94	200	DE	ISBN 92-825-6975-6
A4	88	200	EN	ISBN 92-825-6976-5
A4	94	200	FR	ISBN 92-825-6977-2

FOREIGN TRADE: THIRD COUNTRIES — STATISTICAL YEARBOOK 1977—1983
VOLUME A — ACP COUNTRIES

Theme 6 — Series C: Accounts, surveys and statistics

This publication presents the most recent data available to the Statistical Office of the European Communities on the external trade of the ACP States and includes time series dating back to 1977 for certain countries. The yearbook contains statistics for ACP States in West, Central and East Africa, the Caribbean and the Pacific. Trade is analysed by major products and product groups, with a variety of tables reflecting the trends in the principal raw material and primary product exports of the ACP countries and their main destinations.

Format	Pages	Price in BFR	Languages	Order No
A4	664	950	EN/FR	ISBN 92-825-6572-6

FOREIGN TRADE: THIRD COUNTRIES — STATISTICAL YEARBOOK 1977—1983
VOLUME B — MEDITERRANEAN COUNTRIES

Theme 6 — Series C: Accounts, surveys and statistics

This publication presents the most recent data available to the Statistical Office of the European Communities on the external trade of the Mediterranean countries and includes time series dating back to 1977 for most countries. Trade is analysed by major products and product groups, with a variety of tables reflecting the trends in the principal raw material and primary product exports of the Mediterranean countries and their main destinations.

Format	Pages	Price in BFR	Languages	Order No
A4	158	500	EN/FR	ISBN 92-825-6573-4

Volumes A + B: 1 300 BFR

ISBN 92-825-6574-2

GOVERNMENT FINANCING OF RESEARCH AND DEVELOPMENT 1975—1985

Theme 9 — Series C: Accounts, surveys and statistics

This report contains an overall analysis of the public financing of R & D from 1975 to 1985 and a detailed analysis by objectives of this financing in 1985 in the Member States.

Format	Pages	Price in BFR	Languages	Order No
A4	114	400	DA	ISBN 92-825-6829-6
			DE	ISBN 92-825-6830-X
			GR	ISBN 92-825-6831-8
			EN	ISBN 92-825-6832-6
			FR	ISBN 92-825-6833-4
			IT	ISBN 92-825-6834-2
			NL	ISBN 92-825-6835-0

PUBLICATIONS

To be published

EUROSTAT REVIEW 1976—1985

Theme 1 — Series A: Yearbooks

Time series of the principal statistical domains covered by Eurostat. The work is divided into seven sections: 1. General statistics; 2. National accounts, finance and balance of payments; 3. Population and social conditions; 4. Energy and industry; 5. Agriculture, forestry and fisheries; 6. Foreign trade; 7. Services and transport.

The data cover the period 1976 to 1986 and relate to the EC Member States, the United States and Japan. Comparisons between two periods are often expressed in percentages or as an index number. The most important features are shown in graph form.

Format	Pages	Price in BFR	Languages	Order No
A 4	± 240	700	EN/FR/NL	ISBN 92-825-6853-9
A 4	± 240	700	DA/DE/IT	ISBN 92-825-6852-0
A 4	± 240	700	ES/GR/PT	ISBN 92-825-6854-7

EMPLOYMENT AND UNEMPLOYMENT 1987

Theme 3 — Series C: Accounts, surveys and statistics

This yearbook covers in a single volume the following statistical aspects of the labour market:

- population;
- working population and employment according to sex, status and sector of activity;
- gainful employment in industry and the services (NACE and ISIC nomenclatures);
- registered unemployment, vacancies and job placements;
- industrial disputes;
- working hours.

As far as they are available, the data relate to the years from 1970 to 1985 in the 12 Member States of the European Community. The main variables are illustrated by 13 graphs.

Format	Pages	Price in BFR	Languages	Order No
A 4	± 270	850	ES/DA/DE/GR/EN/FR/IT/ NL/PT	ISBN 92-825-6690-0

ENERGY — STATISTICAL YEARBOOK 1985

Theme 4 — Series A: Yearbooks

This yearbook groups in a single publication an extensive volume of statistical information relating to the energy economy of the Community and the Member States, particularly for the most recent year available. The first chapter covers the characteristic data of energy economics in recent years.

The second chapter concerns the overall 'energy supplied' balance-sheets for the Community and each Member State for the most recent year. These balance-sheets are presented in detailed form in specific units and in tonnes oil equivalent, and in a more aggregated form in terajoules and in tonnes oil equivalent.

The third chapter gives historical series for each energy source for the principal aggregates characterizing the structures of energy economics.

Format	Pages	Price in BFR	Languages	Order No
A 4	± 320	800	ES/DA/DE/GR/EN/FR/IT/ NL/PT	ISBN 92-825-6873-5

Periodicals ¹

► Monthly bulletins

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Theme 1 — Series B: Short-term trends

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Four kinds of information are published in *Eurostatistics*.

- (i) an article 'In brief' which looks at the latest trends in the data available;
- (ii) a visual presentation of the most important economic series for the Community, the 12 Member States, the USA and Japan;
- (iii) tables of 'Short-term data' harmonized by Eurostat on the basis of common criteria for the 12 Member States and comparisons with the USA and Japan;
- (iv) 'Country tables' with a selection of the most important economic indicators allowing a rapid overview of the economic and social situation in each country.

Format	Pages	Price in BFR	Languages	Order No
A 4	94	2 000 ann. sub.	DE/EN/FR	ISSN 0252-8266

REPORTS ON ACP COUNTRIES

Theme 1 — Series C: Accounts, surveys and statistics

Eurostat's series of 'Reports on ACP countries' are based on reports compiled by the Statistical Office of the Federal Republic of Germany, and published in that institutions' 'Statistik des Auslandes' (Statistics of foreign countries) series. The aim is to provide detailed information on these countries, about which the general public in the European Community is very poorly informed, at a time when ACP-EEC relations are intensifying and improving as a result, in particular, of the conclusion of the 3rd Lomé Convention.

To make this information available to a wider international readership Eurostat is publishing this European version in French and English (and possibly, at a later stage, in Spanish).

Format	Pages	Price in BFR	Languages	Order No
C 5	100	2 800 ann. sub.	EN/FR	

¹ From 1 January 1987 a supplement with translations of those languages which are not published regularly, will be added to one of the first issues of the year in order to enable all readers to understand the contents of the periodical bulletins. The languages mentioned in the following pages are the languages in which the periodicals are regularly published.

PUBLICATIONS

CONSUMER PRICE INDICES — MONTHLY

Theme 2 — Series B: Short-term trends

This bulletin can be obtained by subscription which includes:

- (i) 12 monthly issues giving the general index;
- (ii) 4 quarterly issues (supplement) showing the evolution of the consumer price indices for the 8 main groups of consumption as well as for the 20 sub-groups on the base 1980 = 100.

The quarterly supplements will appear in March, June, September and December and will contain monthly and annual figures for 1982 to 1987 for the 12 EC countries and the United States.

Format	Pages	Price in BFR	Languages	Order No
A 4	45	ann. sub. 1 700	EN	ISSN 1010-2779
			FR	ISSN 1010-2787

ECU INFORMATION — MONTHLY

Theme 2 — Series B: Short-term trends

This new publication supplies a series of ECU indicators which refer to the official and private use of the ECU.

The monthly evolution of the ECU exchange rate and the bilateral divergencies of the currencies participating in the exchange rate mechanism of the EMS are shown. The latter is presented as a graphic.

Price indices adapted to the ECU and EC currencies are calculated also. Concerning the capital markets, two tables are devoted to the interests and issues of securities denominated in ECU.

Format	Pages	Price in BFR	Languages	Order No
A 4	9		DE	
A 4	9		EN	
A 4	9		FR	

UNEMPLOYMENT — MONTHLY

Theme 3 — Series B: Short-term trends

The monthly bulletin gives information about the situation on the labour market in the enlarged Community.

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A 4	10	900 ann. sub.	DE	ISSN 0252-9890
A 4	10	900 ann. sub.	EN	ISSN 0252-9920
A 4	10	900 ann. sub.	FR	ISSN 0252-9912
A 4	10	900 ann. sub.	IT	ISSN 0252-9904

*ENERGY — MONTHLY STATISTICS***Theme 4 — Series B: Short-term trends**

Rapid update of the principal statistical series characterizing the short-term trend in the energy economy (coal, oil, gas, electrical energy) including graphs. Some new series have been introduced. They cover all energy sources, statistics in value and factors influencing the energy market.

Format	Pages	Price in BFR	Languages	Order No
A 4	70	2 300 ann. sub.	EN/FR	ISSN 0258-3569

*INDUSTRIAL TRENDS — MONTHLY STATISTICS***Theme 4 — Series B: Short-term trends**

This publication provides information, updated monthly, on industrial activity in the European Community. The first chapter gives indices for industrial production, turnover, new orders, number of employees, wages and salaries. The data are given for each industrial branch and for industry as a whole, and include indices for the value of imports and exports for these branches.

Chapter 2 contains indicators on the situation in the building and civil engineering sector. A further chapter gives producer price indices for manufacturing industry.

Statistics which are not published regularly may be given in an annex or in the form of an additional chapter in some issues. There are also supplements dealing with methodology and for retrospective series. The main results are illustrated by numerous graphs.

The data are taken directly from the ICG domain of the Cronos data bank between the 20th and 25th of each month and the bulletin appears at the beginning of the following month.

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A 4	60	1 800 ann. sub.	DE/EN/FR	ISSN 0258-1922

*IRON AND STEEL — MONTHLY***Theme 4 — Series B: Short-term trends**

Short-term economic statistics (monthly) on production of pig-iron, crude steel, steel mill products, consumption and receipts of scrap and number of short-time workers.

Format	Pages	Price in BFR	Languages	Order No
A 4	21	1 400 ann. sub.	DE/EN/FR	ISSN 0348-7559

*EXTERNAL TRADE — MONTHLY STATISTICS***Theme 6 — Series B: Short-term trends**

General summary of foreign trade of the European Community by country and by product. Trends in EC trade by country and by product. Trade of the main non-EC countries. Indices.

Format	Pages	Price in BFR	Languages	Order No
A 4	160	4 000 ann. sub.	EN/FR	ISSN 0378-3723

PUBLICATIONS

TRENDS IN THE DISTRIBUTIVE TRADES — RETAIL SALES — REGISTRATION OF CARS

Theme 7 — Series B: Short-term trends

A new publication, replacing that published up to December 1986 entitled *Retail sales — Index numbers*. This bulletin continues the publication of volume indices for all retail sales in nine Community countries, the United States and Japan. Every three months monthly indices are also published for the volume of retail sales in three groups of products — food, clothing and household equipment. Finally, every three months the publication contains indices for the number of registrations of new private cars and commercial vehicles in all 12 Member States.

Format	Pages	Price in BFR	Languages	Order No
A 4	14	600 ann. sub.	EN/FR	ISSN 1010-1748
A 4	14	600 ann. sub.	ES/DE	ISSN 1010-1756

► Quarterly bulletins

QUARTERLY NATIONAL ACCOUNTS ESA

Theme 2 — Series B: Short-term trends

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A 4	9	400 ann. sub.	DE	ISSN 1010-1780
A 4	9	400 ann. sub.	EN	ISSN 1010-1764
A 4	9	400 ann. sub.	FR	ISSN 1010-1772

MONEY AND FINANCE

Theme 2 — Series B: Short-term trends

This publication consists of two parts: one containing a number of structural financial indicators, covering the period 1976 to 1986 and a second part in which annual, quarterly and monthly time-series data will be provided. The structural indicators will refer to the evolution of certain financial aggregates in relation to the GDP, the consolidated balance sheets of credit institutions, the money supply, the public finance, the exchange rates and the foreign reserves.

As regards the time-series, they contain data for the short-term economic analysis and cover the following subjects: money supply, capital markets, public finance, interest rates, exchange rates and official reserves. Moreover, a chapter of the bulletin will provide statistics related to the European Monetary System.

Format	Pages	Price in BFR	Languages	Order No
A 4	80	1 600 ann. sub.	DE/EN/FR	ISSN 0255-6510

*BALANCE OF PAYMENTS — QUARTERLY DATA***Theme 2 — Series B: Short-term trends**

This publication provides the latest available quarterly and annual data on the global balance of payments (flows) of each European Community country, as well as for the Community as a whole (EUR 10 and EUR 12) and of the United States and Japan. The publication includes comparative tables with the main balance items of a certain number of industrialized countries. Issue No 3 of each year contains also as annex the historical global data on the 12 last years.

The data are expressed in millions of European currency units (Mio ECU); they are presented according to the Eurostat's balance-of-payments schema and cover the three latest annual and the nine latest quarterly available periods.

Format	Pages	Price in BFR	Languages	Order No
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*INDUSTRIAL PRODUCTION — QUARTERLY STATISTICS***Theme 4 — Series B: Short-term trends**

Statistics of industrial production by product. Annual and quarterly data on production of industrial products in the Member States of the EC.

Format	Pages	Price in BFR	Languages	Order No
A 4	200	1 000 ann. sub.	DE/EN/FR	ISSN 0254-0649

*IRON AND STEEL — QUARTERLY STATISTICS***Theme 4 — Series B: Short-term trends**

Annual, quarterly and monthly statistics on employment, consumption of raw materials, production of iron ore, pig-iron, crude steel, finished steel products and end products, on works deliveries and receipts, stocks, on external and internal ECSC steel and scrap trade and on apparent steel consumption.

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A 4	75	3 100 ann. sub.	DE/EN/FR	ISSN 0378-7672

*ANIMAL PRODUCTION — QUARTERLY STATISTICS***Theme 5 — Series B: Short-term trends**

Statistics on:

1. meat: slaughterings, external trade and gross indigenous production in head of livestock and tonnes;
2. eggs and poultry: eggs placed in incubation, chicks hatched, external trade and chicks placed;
3. milk and milk products: milk collected, milk products obtained, survey results, supply balance sheets, forecasts, etc.

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A 4	130	2 200 ann. sub.	DE/EN/FR	ISSN 0250-6580

PUBLICATIONS

CROP PRODUCTION — QUARTERLY STATISTICS

Theme 5 — Series B: Short-term trends

The most recent data on:

1. land use, arable crops (areas, yields and production) and fruit and vegetable production;
2. weather conditions;
3. supply balance sheets, plant products and fruit.

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A 4	180	2 200 ann. sub.	EN/FR	ISSN 0378-3588

AGRICULTURAL PRICES

Microfiche

Theme 5 — Series B: Short-term trends

The microfiche for agricultural prices contain the monthly 'selling prices of crop products', 'selling prices of animal products' and 'purchase prices of the means of agricultural production' for the Member States of the Community (without Portugal). Agricultural prices for Portugal are expected to become available during the next few years. All data are also stored in the Cronos data bank (PRAG domain). The monthly prices in the microfiche cover the past two years. Where no monthly series exist, the tables show the annual prices for 1977 to 1986 inclusive. The prices are expressed in national currencies and in ECU.

The selling prices of crop and animal products comprise prices for the major products at the agricultural producer level, and also the prices of a number of processed products of the dairy industry. The purchase prices of the means of agricultural production relate to the prices paid by farmers for feedingstuffs, fertilizers and fuels.

Format	Pages	Price in BFR	Languages	Order No
A 4		1 800 ann. sub.	DE/EN/FR/IT	ISSN 0254-3834

NIMEXE-EXTERNAL TRADE STATISTICS — PRODUCTS-COUNTRIES SCE 1111/1112

Microfiche

Theme 6 — Series B: Short-term trends

Special-trade imports and/or exports on the basis of the nomenclature of goods for the external trade statistics of the European Communities and for statistics on trade between Member States (Nimexe) with the following characteristics:

- values and quantities (Nimexe 6);
- supplementary units (Nimexe 6 US);
- all statistical systems together;

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- no threshold;
- quarterly coverage (cumulative data, January-March, January-June, January-September, January-December).

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- supplementary units (Nimexe 6 US);
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Theme 6 — Series B: Short-term trends

Special-trade imports and/or exports on the basis of the nomenclature of goods for the external trade statistics of the European Community and for statistics on trade between the Member States (Nimexe) with the following characteristics:

- values and quantities (Nimexe 6/4/2);
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- no threshold;
- quarterly coverage (cumulative data, January-March, January-June, January-September, January-December).

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Theme 6 — Series B: Short-term trends

Special-trade imports and/or exports on the basis of the nomenclature of goods for the external trade statistics of the European Community and for statistics on trade between Member States (Nimexe) with the following characteristics:

- values and quantities (Nimexe 6/4/2 — processing traffic);
- breakdown according to statistical system;
- no threshold;
- quarterly coverage (cumulative data, January-March, January-June, January-September, January-December).

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Theme 6 — Series B: Short-term trends

Special-trade imports and/or exports of the Member States of the European Community on the basis of the United Nations Standard International Trade Classification (SITC, rev. 2). These statistics are based on Nimexe data and have the following characteristics:

- values and quantities (SITC 5);
- supplementary units (SITC 5 US);
- all statistical systems together;
- no threshold;
- quarterly coverage (cumulative data, January-March, January-June, January-September, January-December).

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SITC-EXTERNAL TRADE STATISTICS — COUNTRIES-PRODUCTS SCE 2311

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Theme 6 — Series B: Short-term trends

Special-trade imports and/or exports of the Member States of the European Community on the basis of the United Standard International Trade Classification (SITC, rev. 2). These statistics are based on Nimexe data and have the following characteristics:

- values and quantities (SITC 5/4/3/2/1);
- all statistical systems together;

- no threshold;
- quarterly coverage (cumulative data, January-March, January-June, January-September, January-December).

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IMPORTS UNDER THE GENERALIZED SYSTEM OF PREFERENCES (GSP) BY PRODUCT AND BY COUNTRY BENEFITING THEREFROM

Microfiche

Theme 6 — Series B: Short-term trends

The European Economic Community grants generalized tariff preferences, under agreements concluded within the framework of the United Nations Conference on Trade and Development (Unctad), for imports of certain products originating in developing countries.

In this publication Eurostat provides data on total imports and imports at preferential rates into each Member State, by value, broken down by group of products and developing country.

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EARNINGS — INDUSTRY AND SERVICES

Theme 3 — Series B: Short-term trends

This publication which is updated every six months contains harmonized data on manual workers' hourly earnings in industry, and non-manual workers' monthly earnings in industry, commerce, banking and insurance. These data are broken down by industrial groups according to NACE, by sex and, for certain countries, by region. In addition, this publication shows, for manual and non-manual workers combined and broken down by industrial group, some data on total hourly costs in industry (results of the three-yearly Community surveys and updated estimates for intermediate years).

Format	Pages	Price in BFR	Languages	Order No
A 4	250	1 800 ann. sub.	DE/EN/FR	ISSN 0259/0492

EC AGRICULTURAL PRICE INDICES (OUTPUT AND INPUT)

Theme 5 — Series B: Short-term trends

This publication shows the trend of the monthly EC indices of producer prices of agricultural products and of purchase prices of the means of agricultural production during the last 13 months for the European Community (without Portugal) and the individual Member States. In order to eliminate the effect of different rates of inflation in the Community, the nominal agricultural price indices are deflated using the consumer

PUBLICATIONS

price index. The publication contains both nominal and deflated price indices. Each price index is the result of a base-weighted (Laspeyres) calculation using value weights determined for the base year 1980 for a fixed basket of agricultural products (output index) and a selection of goods and services (input index). 1980 also serves as the reference year. No 1-1987 of this publication shows in addition the trend of the annual price indices from 1975 to 1986. A brief commentary on the most recent developments, various summaries containing rates of change and a number of diagrams can be found before the index tables. A weighting scheme by country and product is also included.

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ENERGY — STATISTICAL YEARBOOK 1985

Theme 4 — Series A: Yearbooks

This yearbook groups in a single publication an extensive volume of statistical information relating to the energy economy of the Community and the Member States, particularly for the most recent year available.

The first chapter covers the characteristic data of energy economics in recent years.

The second chapter concerns the overall 'energy supplied' balance-sheets for the Community and each Member State for the most recent year. These balance-sheets are presented in detailed form in specific units and in tonnes oil equivalent, and in a more aggregated form in terajoules and in tonnes oil equivalent.

The third chapter gives historical series for each energy source for the principal aggregates characterizing the structures of energy economics.

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Theme 3 — Series C: Accounts, surveys and statistics

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- gainful employment in industry and the services (NACE and ISIC nomenclatures);
- registered unemployment, vacancies and job placements;
- industrial disputes;
- working hours.

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