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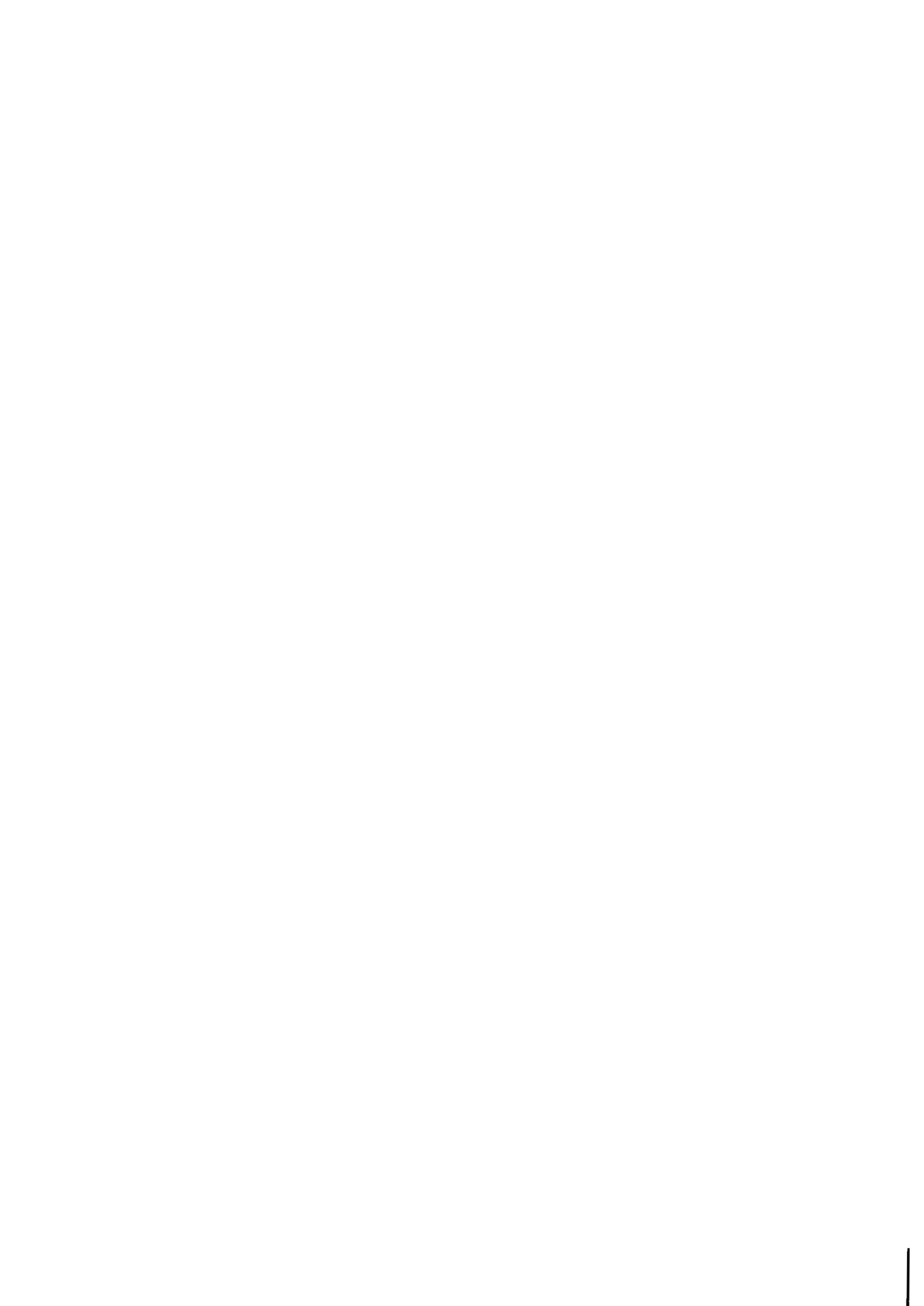
MANUAL FOR AN INTERNATIONAL TRADE
DATA BASE ON THE IBM COMPUTER OF
THE HUNGARIAN ACADEMY OF SCIENCES

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PREFACE

This manual has been prepared to allow IIASA economists to access an international trade data base stored on the IBM computer at the Hungarian Academy of Sciences in Budapest. It describes the contents of the data base and the capabilities of the data-handling program, and explains how the data base may be accessed from IIASA via the Gateway system. It is hoped that the information made available in this way will be useful in the work on economic structural change currently in progress at IIASA.

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Patterns of Economic Structural
Change and Industrial Adjustment



INTRODUCTION

A two-year research project dealing with the structural analysis of international trade and the related development alternatives was completed in Hungary in 1981 (see Nagy, 1982). It was based on trade data provided on tape by the UNCTAD Statistical Unit; these data represent a slightly amended and updated version of the statistics published in the UNCTAD Handbook (1979).

The trade data were regrouped according to the eleven import/export regions and six commodity classes considered in the model. Data for selected years were chosen from the time series 1955-1977 and six scenarios for 1990 were generated as described in Nagy (1982).

The data were processed and the computations performed at the Computing Center of the Hungarian Planning Commission. To make the data available to the Patterns of Economic Structural Change and Industrial Adjustment Project at IIASA, the data base was transferred to the IBM computer of the Hungarian Academy of Sciences, which may be accessed via the IIASA Gateway.

This Manual describes the contents of the data base and the capabilities of the data-handling program, and explains how the data base may be accessed from IIASA.

An updated trade statistics tape is expected from UNCTAD in the near future; this should include information for 1980. We intend to transfer this new data base to IIASA with an adapted handling program in the early part of 1983. When this is complete a new Manual will be issued to replace this one.

I. DATA

The data base contains trade flow values $x_{ijk}^{(t)}$ in current prices in US dollars, where i indicates the exporting region, j the importing region, k the commodity group and t the year. The data are stored in three-dimensional matrices for each year, as shown in Figure 1, where

$$x_{i.k} = \sum_{j=1}^n x_{ijk}$$

$$x_{.jk} = \sum_{i=1}^n x_{ijk}$$

$$x_{..k} = \sum_{i=1}^n \sum_{j=1}^n x_{ijk}$$

$$x_{ij.} = \sum_{k=1}^1 x_{ijk} \quad .$$

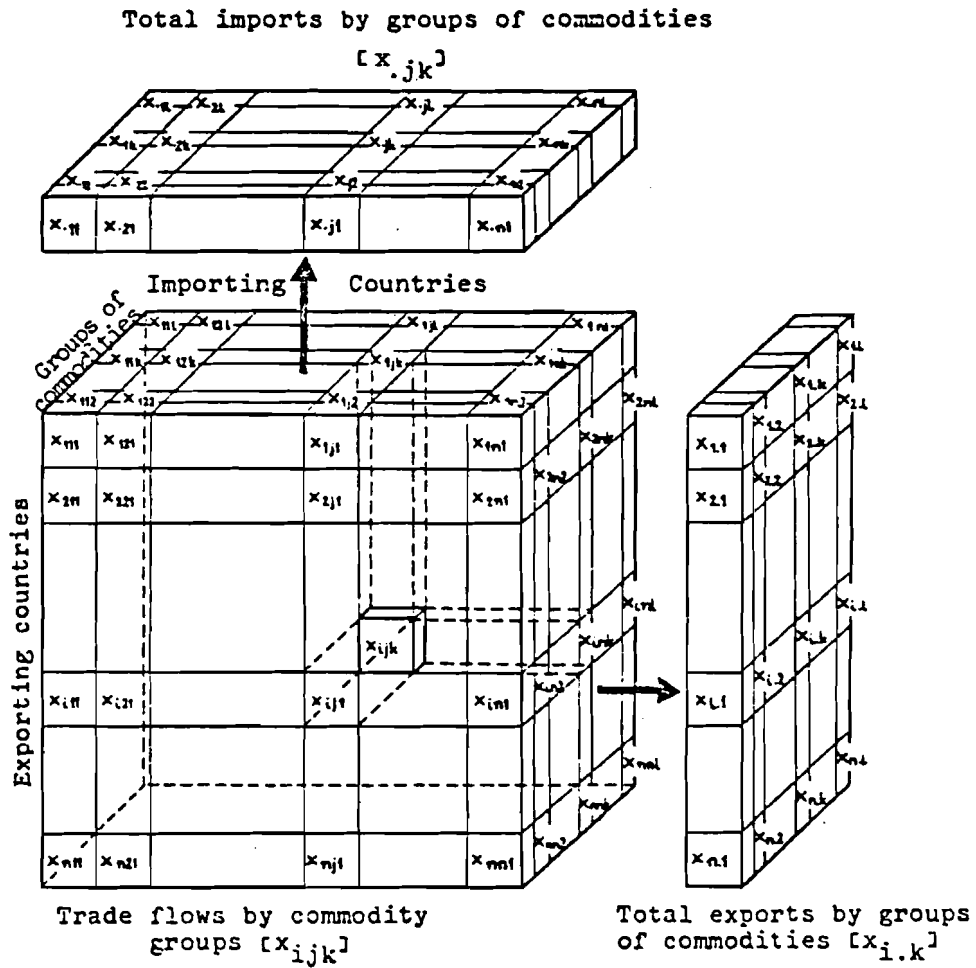


Figure 1. The three-dimensional matrix of trade flows.

Ia. Regional Disaggregation

Eleven import/export regions are included in the data base; these are listed together with their reference codes in the following table.

No.	Regions	Code
1	Soviet Union	SU
2	Eastern Europe	EE
3	Centrally planned Asia	SA
4	Western Europe	WE
5	North America	NA
6	Japan	JP
7	Other developed countries	OD
8	Latin America	LA
9	Africa	AF
10	Western Asia	WA
11	East Asia and Oceania	AS
12	Total socialist countries (1-3)	TS
13	Total developed countries (4-7)	TD
14	Total developing countries (8-11)	TG
15	Total world trade (1-11)	TW

Ib. Commodity Disaggregation

Six commodity groups are included in the data base; these are listed together with their reference codes in the following table.

No.	Commodity groups	SITC*	Code
1	Food and agricultural materials	0+1+4+2-27-28	AGRPROD
2	Minerals and metals	27+28+67+68	MINMET
3	Fuels	3	FUELS
4	Chemicals	5	CHEM
5	Other manufactured goods	6+8-67-68	OTMAN
6	Machinery	7+9	MACH
7	Primary products	0+1+2+3+4+67+68	PRIM
8	Manufactures	5+6-67-68+7+8+9	MANUF
9	Total world trade	0+...+9	TW

*Standard International Trade Classification.

Ic. Years

The data base contains statistics for the following years:

- 1955-1970: every fifth year
- 1971-1977: every year
- 1990: six different forecasts denoted A,B,Z,PU,PP,PM
(see Nagy, 1982).

II. THE DATA-BASE HANDLING PROGRAM

IIa. The Types of Matrices Generated

The data-base handling program is capable of generating not only the simple three-dimensional trade flow matrix illustrated in Figure 1, but also various other matrices based on these data. The types of matrices available, together with their reference codes, are listed in the following table.

No.	Matrix	Code	Contents
1	Trade flows	X	$x_{ijk}(t)$
2	Export shares	A	$(x_{ijk}(t)/x_{i.k}(t))*100$
3	Import shares	B	$(x_{ijk}(t)/x_{.jk}(t))*100$
4	Commodity shares	C	$(x_{ijk}(t)/x_{ij.}(t))*100$
5	Total trade shares	Z	$(x_{ijk}(t)/x_{..k}(t))*100$
6	Trade intensity indicators	D	$\delta_{ijk}(t) = \frac{x_{ijk}(t)x_{..k}(t)}{x_{i.k}(t)x_{.jk}(t)}$
7	Rate of growth	R	$[x_{ijk}(t_1)/x_{ijk}(t_0)]^{1/(t_1-t_0)} - 1] * 100$
8	Trade balances	S	$x_{ijk}(t) - x_{jik}(t)$
9	Exp/imp shares	Q	$(x_{ijk}(t)/x_{jik}(t))*100$

IIb. The Matrix Cross-Sections Displayed

The information from these three-dimensional matrices is displayed in the form of two-dimensional cross-sections through the matrices. These cross-sections are described, and their reference codes given, in the following table.

No.	Code	Rows	Columns
1	I/J	Exporting regions	Importing regions
2	I/K	Exporting regions	Commodities.
3	J/K	Importing regions	Commodities

IIc. Computing Methods

Several negative values are found within the data base. These arise from errors in the UNCTAD data, and are most commonly found for the region EE and the commodity group MANUF.

The original data are used everywhere except in matrices D and R. In these cases it was necessary to replace the negative values by zeros in order to make computation possible. In matrix D, the diagonal elements of the trade flow data have also been modified so that $\delta_{ijk} = 1$ for regions SU, SA, and JP.

III. USE OF THE DATA-BASE HANDLING PROGRAM

This section explains how a user logged on to the IIASA VAX can access the trade-flow data base stored on the IBM at the Hungarian Academy of Sciences in Budapest. The commands that the IIASA user has to enter are indicated by underlining; the responses of the machine appear without underlines. Each command should be followed by a carriage return, and \square represents a space.

Step 1. Connect to the IBM computer

```
rlogin  $\square$ gateway
PROF5
SELECT,4255
CONNECTED TO IBM
```

Step 2. Log on to the IBM computer

Obtain the account number and password for your virtual machine from Albert Labadi in Computer Services. When the IBM is expecting a command it prompts with R;

Step 3. Create a temporary disc and copy files

```
tdef
ac  $\square$ 191  $\square$ b
copy  $\square$ mind  $\square$ exec  $\square$ b  $\square$   $\square$   $\square$   $\square$ a
```

mind

TAPE 18K481 ATTACHED AS 181 FOR

mind2

Step 4. *Edit the parameter file of the program*

eumindLadat

Use of the IBM editor - see Section VI

Parameters of the program - see Section IV

Step 5. *Execute the program and type the results*

mind1

typeumindurest

typeumind1urest

Step 6. *If there are more requests, return to Step 4*

Step 7. *Disconnect from IBM computer and IIASA gateway*

logoff

[CONTROL]P

CLR

[ESC]Q

IV. PARAMETERS OF THE PROGRAM

Each line of the parameter file is a request for a table, except for the last, which marks the end of the requests and contains only a zero. The lines are composed of a series of two-character numbers separated from each other by a space. The numbers are interpreted as follows:

The first number defines the type of matrix requested (see IIa).

The second number specifies the cross-section required (see IIb).

The third number specifies the factor held constant (the commodity for which the I/J table is required, or the importing or exporting region for which the I/K or J/K tables are wanted) (see Ia or Ib).

The fourth and subsequent numbers are used to select data for specific years. The last two characters of the year are used unless the alternatives A,B,Z,PU,PP and PM are requested, in which

case the numbers 90,91,92,93,94 and 95 (respectively) are taken. Pairs of years must be specified if matrix R is to be calculated.

Example

U1U1U1U1U55U60U70U71

This represents a request for a trade-flow matrix, in I/J cross-section, for food and agricultural materials in years 1955, 1960, 1970, 1971.

V. ERROR MESSAGES

Message	Interpretation
HIBA 1	The 1st or 2nd number is wrong
HIBA 2	The 3rd number is wrong
HIBA 3	The 4th or a subsequent number is wrong
HIBA 4	Too many numbers given
HIBA 5	Not enough numbers given
HIBA 6	The number of years given for matrix R is odd
HIBA 7	The first date given for matrix R is later than the second

VI. USE OF THE IBM EDITOR

Command	Meaning
<u>n</u>	Go to the next line
<u>u</u>	Go to the previous line
<u>top</u>	Go to the beginning of the file
<u>b</u>	Go to the end of the file
<u>del</u>	Delete the line
<u>i</u>	Change from edit mode to input mode
<u>carriage return</u>	Change from input mode to edit mode
<u>filenew</u>	Change the name of the file to "filenew"
<u>c/some old text/ some new text</u>	Change "some old text" to "some new text"

REFERENCES

- Nagy, A. (1982) International Trade Alternatives for 1990. Collaborative Paper CP-82-71, International Institute for Applied Systems Analysis, Laxenburg.
- UNCTAD (1979) Handbook of International Trade and Development Statistics, U.N., New York, 1979.