

**User's Manual for the SADCC Cereals
Trade Database Compiled by the
University of Zimbabwe and
Michigan State University**

by

David S. Kingsbury

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**USER'S MANUAL FOR THE SADCC CEREALS TRADE DATABASE COMPILED
BY THE UNIVERSITY OF ZIMBABWE AND MICHIGAN STATE UNIVERSITY**

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I. INTRODUCTION

A. The Research Project

In an effort to contribute to the knowledge base on SADCC¹ agricultural marketing and trade, the Department of Agricultural Economics and Extension of the University of Zimbabwe (UZ), in collaboration with Michigan State University (MSU), initiated a research project in mid-1987 to explore constraints on and potentials for expanded trade in the SADCC region.

The general objectives of the research project were as follows:

1. To describe current and historical patterns of agricultural trade: within the SADCC region; between SADCC countries and South Africa; and between SADCC countries and the rest of the world, with particular emphasis on food grains, and farm inputs such as fertilizer, seed, and machinery;
2. To determine the extent to which there is an economic basis for trade within the SADCC region, given current prices and transportation costs;
3. To evaluate alternative domestic agricultural and macro-economic policies which have impacts on trade and food security;
4. To identify present constraints on expanded trade in commodities relevant to food security (both intra-regionally and internationally), focussing on transactions costs and risk;

¹The Southern African Development Coordination Conference. Member states are Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia, and Zimbabwe.

5. To analyze the potential for a number of policies and programs to expand trade in agricultural commodities and inputs, thereby improving food security in the SADCC region.

To partially address Objective 1, two databases were constructed on trade of three staple grains (maize, wheat, and rice) for the years 1970-1985. The first database includes information on trade quantities by destination and source country. The second database covers estimates of total annual imports by country from six different data sources. Using this second database, it is possible to separate out food aid from commercial imports on an annual basis.

Section II identifies data sources. The following section discusses general problems in constructing trade databases as well as problems specific to Southern Africa trade data. Section IV outlines criteria for selecting one source of data over another. The final section documents procedures for maintaining the trade database on any IBM-compatible micro-computer system. It describes data entry, data manipulation, and output generation procedures for utilizing two SPSS/PC+ system files as well as recommended procedures for updating the database. Appendices A through D contain SPSS/PC+ log files used to generate variable transformations and trade matrices. Appendix E lists names and descriptions of files included on the two micro-computer diskettes accompanying this manual.

II. DATA SOURCES

Trade data are often presented in a format that only lists total imports and exports for individual countries. Yet to be most useful, it is important to include in a trade database information by source of imports and destination of exports. Table 1 summarizes sources used in constructing the SADCC Cereals Trade Database, commodities and years covered, and the number of times data from each source were used in compiling the database.

A. United Nations Tapes

The United Nations Statistical Office (UNSO) maintains a database on trade quantities and values by destination and source of exports and imports. Flows are recorded on a calendar year basis. The UN depends on member country trade reports to develop their database, and makes no effort to revise the data obtained, nor resolve discrepancies between importer and exporter source quantities.

B. The Economic Research Service

Economists in the Economic Research Service (ERS) of the United States Department of Agriculture (USDA) have attempted to reconcile trade data from various sources using the UN series as a base. They use the following procedure for constructing trade matrices for imports. Each importing country is listed with its corresponding trading partner nations. If there is only importing country data for a particular trading transaction in a given year, it is entered into the matrix. If there is only exporting country data, that number is entered into the matrix. If there are both importer and exporter source data, the importer number is entered and the percent difference between the two figures is noted.² After this is accomplished, data from additional sources such as country trade yearbooks and international trade organization documents are added (Hiemstra and Mackie, 1986).

²Data from importers are generally preferred over exporter data because customs officials usually pay closer attention to imports than to exports. This is explained by the relatively greater abundance of duties and quantitative controls on the import side (FAO, 1984).

Table 1
Data Sources for the UZ/MSU SADCC Cereals Trade Database

Data Source	Commodities*	Years Covered	Type of Year	Number of Entries	Percent of Total
UN Tapes	M,W,R	1970-85	Calendar	324	29.4%
ERS Tapes (Reconciled)	M,W,R	1970-85	Calendar	318	28.9%
WFP Documents	W,R	1982-85	July/June	126	11.4%
FAO "Export of Cereals by Dest. and Source"	M,W,R	1981-85	July/June	119	10.8%
ERS Tapes	M,W,R	1970-85	Calendar	87	8.0%
CSO - Zimbabwe	M,W,R	1978-85	Calendar	72	6.5%
NAMBOARD/NMC - Zambia	M,W,R	1980-85	Calendar	31	2.8%
FAO "Food Aid In Figures"	M,W,R	1981,1984	July/June	15	1.4%
US Ag. Attaché Cables	R	1985	Calendar	6	0.5%
Trade Yearbook - Malawi	M,W,R	1981-83	Calendar	3	0.3%
TOTAL				1101	100.0%

* M = Maize
W = Wheat
R = Rice

Source: Author's calculations.

C. National Sources

Published national trade yearbooks, computer print-outs from central statistical offices, and internal documents of parastatal cereals marketing boards are also important sources of trade data. It was possible to acquire such detailed trade data in Zimbabwe and Zambia for several years. The Central Statistical Office (CSO) in Zimbabwe maintains an up-to-date computerized database on monthly imports and exports of all commodities. However CSO officials claimed that records are only reliable since Independence. This is due to the sensitivity of trade statistics during the Unilateral Declaration of Independence period (UDI) when Rhodesia was subject to trade sanctions.

Some of the Zambian data were obtained from grain marketing parastatals. NAMBOARD³ provided import data for maize from 1983-1986. Data on wheat and rice imports were obtained from the National Milling Company (NMC). These two parastatals have an official monopoly on trade of these commodities.

Malawi's "Annual Statement of External Trade" is one of the few trade yearbooks which lists sources and destinations by commodity. Some data included in the destination and source database came from this publication.

D. Additional Sources

Beginning in 1981, the Food and Agriculture Organization of the United Nations (FAO) has annually published a statistical bulletin entitled "Exports of Cereals by Destination and Source". Quantity flows of wheat and wheat flour, maize, rice, barley, sorghum, oats, and rye are recorded on a July/June basis. All importing countries that report to the FAO are listed whereas only the leading exporting countries are explicitly identified.⁴

Data for food aid transactions were also obtained for several years from the FAO publication "Food Aid in Figures". Food aid source and destination quantities are published on a July/June basis for wheat, rice, coarse grains, dairy products, and edible oils.

³The National Agricultural Marketing Board.

⁴However there is an "others" column which lists aggregated quantities for minor exporters. Disaggregated source and destination figures from this column were obtained during a visit to the FAO in July 1987.

United States agricultural attachés stationed in embassies around the world also generate annual outlook reports for internal USDA use. These reports often have statistical annexes with detailed trade data. Some of the South African data came from this source.

The World Food Programme (WFP) also has a great deal of internal documentation on food aid flows and trilateral transactions available upon request. Destination and source of quantities of wheat, rice, coarse grains, and a variety of non-cereal products are included on a July/June basis.

III. STRENGTHS AND LIMITATIONS OF THE DATABASE

A. General Problems With Trade Data

The reasons for discrepancies in importer/exporter trade volume reportings are well-documented (Hiemstra and Mackie, 1986; FAO, 1984). Among the reasons often cited are:

1. Non-receipt of reporting documents by the exporting country;
2. Trading partners may classify and/or aggregate commodities differently;
3. Trading partners may define imports and exports differently;
4. Data processing lags which may result in trading partners assigning a transaction to different reporting periods;
5. Storage, processing, and transshipment may make determination of commodity origin and ultimate destination problematic;
6. Customs officials may give greater scrutiny to import documentation due to the greater array of regulations associated with imports.

While the above problems are associated with destination and source data, there are also difficulties with alternative sources of aggregated total import/export data. An International Food Policy Research Institute study compared FAO and Foreign Agricultural Service (FAS)⁵ figures on world imports and exports of individual countries (Paulino and Tseng, 1980). The researchers found that 60% of the 1200 pairs of FAO and FAS data on cereals imports in 1965, 1970, and 1975 diverged by more than 20%. Reasons given for these discrepancies were:

1. The FAO reported on a calendar year basis while the FAS reported on a marketing year basis;
2. The FAO reported data for many small countries that the FAS ignored;
3. Both organizations modify official national data if they feel such numbers to be unrealistic. Because this is inevitably a rather ad hoc process, total figures diverge between the two agencies.

⁵A division of the USDA.

The largest discrepancies involved data for Africa, Oceania, and the USSR.

B. Trade Data Problems Specific to Southern Africa

Because Southern Africa is such a politically volatile region of the world, detailed information on trade flows is sensitive for some countries. Because of its status as an international pariah, the Republic of South Africa has refused to release trade data for individual African nations since 1977. Only aggregate figures for total trade with Africa are provided. Moreover, trade with the BLS countries,⁶ which together with South Africa, comprise the South African Customs Union (SACU), are considered domestic transactions by South Africa.⁷ Therefore, they do not appear in the aggregate trade statistics.

Table 2
South African Unmilled Maize Exports,
1979/80 - 1983/84

Destination	Thousand Metric Tons			% of Total Maize Exports		
	White	Yellow	Total	White	Yellow	Total
Japan	1902	4103	6005	54.7%	36.3%	40.6%
Taiwan	0	2283	2283	0.0%	20.2%	15.4%
United Kingdom	28	663	691	0.8%	5.9%	4.7%
Hong Kong	0	246	246	0.0%	2.2%	1.7%
Reunion	0	142	142	0.0%	1.3%	1.0%
Italy	13	117	130	0.4%	1.0%	0.9%
Spain	0	133	133	0.0%	1.2%	0.9%
West Germany	8	87	95	0.2%	0.8%	0.6%
Netherlands	0	39	39	0.0%	0.3%	0.3%
Portugal	22	11	33	0.6%	0.1%	0.2%
Unspecified	1501	3483	4984	43.2%	30.8%	33.7%
Total	1544	4258	5802	26.6%	73.4%	100.0%

Source: Maize Board, "Report on Maize 1984," Pretoria.

⁶Botswana, Lesotho, and Swaziland.

⁷Trade with Namibia is also considered a domestic transaction.

There is considerable evidence that commodity flows to other African countries (including the BLS nations and Namibia) are quite large. Table 2 shows aggregated 1979/80 to 1983/84 white and yellow maize export quantities for South Africa. "Unspecified" (which is probably for the most part the SADCC countries and Zaire) is second only to Japan in volume of export sales for both white and yellow maize. Table 3 provides an indication of the magnitude of BLS and Namibian trade volumes for maize and maize products during the 1982/83 to 1986/87 period. Even in years when white maize exports to the rest of the world were insignificant, volumes to the BLS states and Namibia were quite substantial.

To some extent, the failure of South Africa to report trade statistics can be overcome by acquiring data from trading partners. For the most part, SADCC government statistical bureaus do not appear to conceal information on trade with South Africa.

Information on trade was also suppressed during the UDI period when Rhodesia was subject to a series of trade embargoes. As a result, the Zimbabwean CSO has no computer records of trade prior to 1978, and the 1978 and 1979 data are not believed to be reliable by CSO officials.⁸ UN data also give what must be a rather incomplete picture of Rhodesian trade flows in the 1970's.

Apart from political reasons for under-reporting, the administrative capacity to collect and process trade data in a timely and accurate manner is very uneven from one country to another. While the Zimbabwean CSO has an excellent system for compiling up-to-date trade statistics, the Zambian CSO has not published an annual trade yearbook since 1979.⁹ In war-torn Mozambique and Angola, the situation is even worse.

One result of this inconsistency in reporting capability is that UN data lose a great deal of validity. Even when data are reported in a timely manner, the UN may fail to record them accurately. Either the reporting country has the data and fails to supply them, or the UN somehow fails to

⁸Personal communication from the CSO, July 1987.

⁹As of December 1987, the Zambian CSO was working on a trade yearbook for 1985 which was supposed to be released sometime in 1988. There is no processed trade information for the years 1980-1984 at the CSO.

Table 3

South African Maize and Maize Product Exports
to the BLS Countries and Namibia, 1982/83 - 1986/87
(Thousand Metric Tons)

Year	BLS and Namibia	Rest of World	Total	BLS as % of Total
1982/83				
White Maize	195	1561	1756	11.1%
Yellow Maize	27	2804	2831	1.0%
Total	222	4365	4587	4.8%
1983/84				
White Maize	191	196	387	49.4%
Yellow Maize	57	118	175	32.6%
Total	248	314	562	44.1%
1984/85				
White Maize	253	5	258	98.1%
Yellow Maize	155	18	173	89.6%
Total	408	23	431	94.7%
1985/86				
White Maize	403	4	407	99.0%
Yellow Maize	44	539	583	7.5%
Total	447	543	990	45.2%
1986/87				
White Maize	162	11	173	93.6%
Yellow Maize	73	3071	3144	2.3%
Total	235	3082	3317	7.1%

Note: "Maize products" are comprised of maize meal grinded to various degrees of fineness, maize flour, and grits.

Source: Maize Board, "Report on Maize and Buckwheat", Pretoria, various years.

tabulate the data quickly and correctly. Table 4 illustrates these problems. Reliable data for Zimbabwe and Zambia are compared with UN reportings for unmilled maize trade in 1984. In the Zimbabwean case, data were supplied by the CSO which is the agency that would presumably report to the UN. In the Zambian case, the data source is NAMBOARD. As discussed above, the Zambian CSO would not have been able to provide this information to the UN.

Table 4
Unmilled Maize Imports by Data Source,
Zambia and Zimbabwe, 1984
(Metric Tons)

Exporting Country	Importing Country			
	Zambia:		Zimbabwe:	
	NAMBOARD	UN	CSO	UN
Malawi	97,270	0	50,000	0
USA	0	31,100	43,099	40,943
Argentina	1,404	0	102,943	61,800
Indonesia	0	0	10,038	0
Thailand	0	0	65,861	0
Total Imports	98,674	31,100	271,941	102,743

Sources: NAMBOARD and UN Trade Tapes for Zambian data;
CSO and UN Tapes for Zimbabwean data.

As can be seen, not only do total imports widely diverge, but the UN data even fails to reveal the existence of trade in five cases reported by the national sources. The result is that the UN database only detects 32% of Zambian maize imports and 38% of Zimbabwean maize imports for this particular year.

Table 4 also helps to illustrate a further complication which relates to the recording of trilateral food aid transactions. The 31,100 MT figure (a United States export to Zambia according to the UN) was actually a trilateral food aid transaction. The physical source of the commodity was Malawi but because it was financed by the United States, the UN recorded it as a United

States export. The UN failed however to report additional Malawian exports to Zambia of 29,850 MT of commercial sales and 35,300 MT of food aid financed by the European Community (EC), WFP and the Dutch which are also part of the 97,270 MT figure reported by NAMBOARD. Thus unedited UN figures tend to underestimate the extent of intra-regional movement of maize either because they incorrectly assign the physical source of a commodity when it is a trilateral food aid transaction,¹⁰ or because they even fail to detect the existence of trade -- regardless of whether it is a commercial or a food aid transaction.

Table 5 compares total SADCC import figures of maize, wheat, and rice from two sources -- the FAO trade tapes and the UZ/MSU database. Clearly, it was easier to obtain destination and source data for more recent years (1981-85) than for the 1970's. This is largely because spotty UN data had to be relied upon more heavily for trade in the more distant past. For more recent years, a variety of data sources were available -- leading to a more complete picture of trade patterns.

Finally there is the problem of unrecorded parallel market cross-border trade. Although there are no reliable estimates of the extent of unofficial cereals trade, there is much anecdotal evidence of substantial movement of agricultural products and inputs across a number of borders. Zambia's borders with Zaire, Namibia, and Malawi are among those often cited as being especially porous.¹¹

In light of the above discussion of trade data problems, it may seem to the reader that any attempt at an historical reconstruction of trade patterns among the SADCC nations is a fruitless task. This is not entirely true. While time-consuming, first hand collection of the data at national statistical agencies, parastatals, and donor organizations can lead to significant improvements in accuracy and completeness when compared with UN data. It also depends on the use for which the data is intended. While it would be imprudent to employ these data in a quantitative model which requires great accuracy in the data for the generation of precise results,

¹⁰This is not a problem for wheat and rice which have not been involved in intra-regional trilateral food aid movements.

¹¹See Chapter V of Kingsbury (1989).

Table 5

Comparison of FAO and UZ/MSU SADCC Cereals Import Totals 1970-1985
(Thousand Metric Tons)

Year	Maize		Wheat		Rice		Total Cereals		UZ/MSU Total as % of FAO Total
	FAO	UZ/MSU	FAO	UZ/MSU	FAO	UZ/MSU	FAO	UZ/MSU	
1970	199	192	422	373	21	9	642	574	89.5%
1971	320	321	436	318	22	16	778	655	84.2%
1972	226	136	487	388	16	10	729	534	73.2%
1973	48	2	438	195	16	153	502	350	69.7%
1974	289	305	491	222	81	34	861	561	65.2%
1975	390	270	628	278	83	48	1101	597	54.2%
1976	121	81	421	282	72	22	613	385	62.8%
1977	101	97	470	302	144	36	714	434	60.8%
1978	236	133	448	212	148	56	832	401	48.2%
1979	388	212	591	277	163	33	1141	521	45.7%
1980	1069	652	703	314	226	55	1998	1021	51.1%
1981	572	589	637	539	151	120	1360	1248	91.8%
1982	469	493	614	482	259	273	1342	1248	93.0%
1983	506	457	569	518	254	234	1329	1209	91.0%
1984	1119	935	805	904	249	443	2173	2283	105.0%
1985	654	825	728	510	251	329	1632	1664	101.9%

Source: FAO Trade Tapes and UZ/MSU SADCC Cereals Trade Database.

these data can be useful in describing approximate trade patterns and rough historical trends. They can also be useful for identifying questions for closer examination such as:

- If trade which had been fairly regular between two countries in a commodity abruptly stopped in one year, why may this be so?
- If very small quantities of a commodity are consistently traded between two countries in the face of substantial deficits for one country and significant surpluses for the other, what is constraining the expansion of trade?
- To what extent is the "SADCC market" synonymous with the "Southern African market" for agricultural products? Does it make sense to classify certain SADCC countries as part of the Southern African market when South-South trade links may be stronger with other regions of Africa or the world? Examples are Tanzania's links with other East African countries and Angola's trade links with South American nations like Argentina. Alternatively Zaire, which is not a member of SADCC, has historically traded quite heavily in grains with some of the SADCC nations such as Zambia and Zimbabwe.

IV. DECISION RULES FOR SELECTING DATA SOURCES

As discussed in Section II, principal sources of trade data were the UN, ERS, WFP, FAO, and national documents. Because there were several different data sources, a set of rules had to be established for ranking the dependability of data sources.

Importer data were usually preferred over exporter data in keeping with the FAO's stance that importer data is generally more reliable. Thus if importer data were available, they were entered in the matrices. If only exporter data were available, these numbers were entered. There were two exceptions to this procedure. One exception would be if the exporting country had better reporting capability than the importer. An example would be choosing Zimbabwean export data over Angolan or Mozambiquean import data that had been supplied to the UN. The other exception would be if the exporter data came from a reliable national source whereas the importer data was from the UN (see decision rule 1 below).

If importer or exporter data were available from several sources, the following decision rules governed selection of one source over another:

1. Data coming directly from national sources were preferred over all other sources regardless of whether they were importer or exporter data. If both importer and exporter data were available from national sources, importer data were selected over exporter data in keeping with the FAO findings. The author was of the opinion that individual government sources were generally better at tracking information on their own trade than international organizations such as the UN which reports on over 100 countries around the world and is dependent on national sources for data anyway. The discussion related to Table 4 above confirms that serious gaps exist in the UN data.
2. The ERS was viewed as the second most credible and complete source for the database because attempts at revision of the UN data had been made.
3. The unedited UN data was viewed as the third most reliable source.
4. The FAO publication "Exports of Cereals by Destination and Source" reports data on a July/June basis whereas the UN and most of the national sources report on a calendar year basis. Therefore these data were used only if no other data source existed for either of the two years in question. If chosen, these data were entered in the first of the two years (for example, 1985/86 data

were entered for 1985). Admittedly, this is rather arbitrary, but better than deleting the trade flow altogether.

5. FAO "Food Aid in Figures" data and WFP internal documentation are also reported on a July/June basis. These sources only superceded a UN number if the food aid quantity reported was greater than the UN figure for the same transaction. If not, it was ignored. Other than this, the same rules were followed as for data from the "Exports of Cereals by Destination and Source" series.

V. COMPUTERIZING THE DATABASES: DATA ENTRY, DATA MANIPULATION, AND TABLE GENERATION

A. Choice of Computer Software

It was decided to create and maintain the trade database in SPSS/PC+ (Version 2.0) because data entry, statistical operations, and most output presentation functions could all be easily handled using this program. A database manager (such as Dbase III) could also have been used, but has the drawback of not being able to perform statistical calculations that one might need for analysis.

SPSS/PC+ is a statistical analysis package. SPSS/PC+ allows one to perform such basic statistical operations as means, frequencies, cross tabulations, analysis of variance, and regressions. It can also handle basic data and file transformations such as aggregating variables and merging files. Data Entry II is a separate stand-alone package, but interacts with SPSS/PC+. Data Entry II allows one to create data files, define variables and codes, and enter data. Several add-on packages are also available. With Tables, one can organize output in a variety of ways which facilitate analysis and final presentation in reports. Other add-on packages include Advanced Statistics, Trends, and Graphics. The flexibility of SPSS/PC+ is enhanced by the ease with which it is possible to move between these various programs.

B. The Database on Trade by Destination and Source

1. Data Entry, Variable Names, and Coding

A SPSS/PC+ system file (entitled CERTRADE.SYS) using Data Entry II was first created, as described below. Data from the most reliable source were then entered into this system file directly from data source hard copy.¹² For example, Zimbabwean maize export data for each available year were first

¹²A systematic approach for future updating of the existing database files is discussed in Section V.B.4.

entered.¹³ Next, import data from other national sources (say, NAMBOARD in Zambia) were reviewed. If both the Zimbabwean CSO and NAMBOARD provided data on the same transaction, and figures conflicted, the Zimbabwean figure was left unaltered in the database while the NAMBOARD figure was not entered. If NAMBOARD identified a transaction that the Zimbabwean CSO failed to record, the NAMBOARD figure was added to the database. Data reconciliation and data entry for maize proceeded in this fashion down to the least dependable data source. The same procedure was then repeated for other commodities.

Table 6
Excerpted Data From Data File
'CERTRADE.SYS'

YEAR	COMM	IMCTY	EXCTY	QTY	SOURCE
70	1	51	1	21.500	1
70	1	7	11	14.345	1
70	1	8	7	20.000	2
70	1	5	11	0.006	1
70	1	1	10	0.016	1

Table 6 presents a portion of the SPSS/PC+ system file created. The six variables defined in this file are:

YEAR = year of a trading transaction;
 COMM = commodity traded (maize, wheat, or rice);
 IMCTY = the importing country;
 EXCTY = the exporting country;
 QTY = quantity traded (in thousand metric tons);
 SOURCE = the source of the data.

Codes for COMM, IMCTY/EXCTY, and SOURCE are identified in Table 7. IMCTY/EXCTY codes require some explanation. An importing country is always identifiable. Sometimes the exporting country can not be identified, but there is evidence of a trade flow financed by an international agency (WFP,

¹³The Zimbabwean CSO was considered the most reliable data source of all available sources (regardless of whether importing or exporting) when the database was first constructed.

Table 7

Codes for SPSS/PC+ Data Entry
for the System File 'CERTRADE.SYS'

Country Codes for Coding IMCTY and EXCTY

1=Angola	26=France	51=Zaire
2=Botswana	27=Hong Kong	52=Australia
3=Lesotho	28=India	53=North Korea
4=Malawi	29=Indonesia	54=WFP
5=Mozambique	30=Italy	55=Caritas
6=Swaziland	31=Japan	56=Care
7=Tanzania	32=Kampuchea	57=Catholic Relief
8=Zambia	33=Kenya	58=Austria
9=Zimbabwe	34=Kuwait	59=Iran
10=RSA	35=Madagascar	60=Greece
11=USA	36=Netherlands	61=Norway
12=Albania	37=Nicaragua	62=Switzerland
13=Algeria	40=Pakistan	63=Israel
14=Argentina	41=Paraguay	64=Other Africa
15=Belgium/Luxembourg	42=Singapore	65=Bangladesh
16=Brazil	43=Spain	89=Unspecified
17=Bulgaria	44=Sweden	
18=Burma	45=Thailand	
19=Canada	46=United Kingdom	
20=China(PRC)	47=Uruguay	
21=Columbia	48=USSR	
22=Denmark	49=West Germany	
23=EC	50=Yugoslavia	
24=El Salvador		
25=Finland		

Commodity Codes
for Coding COMM

1=Maize
2=Wheat
3=Rice

Data Source Codes
for Coding SOURCE

1=UN Tapes
2=ERS-Arthur Mackie
3=ERS Tapes
4=FAO-"Food Aid In Figures"
5=FAO-"Export of Cereals by Destination and Source"
6=Zimbabwe National Data
7=Zambia National Data
8=Malawi National Data
9=US Ag Attache Reports
10=WFP Documents

Caritas, Care, and Catholic Relief Services). In such cases, the international agency was coded as the exporting country (codes 54 - 57). Another instance was when a data source identified a trade flow, but did not specify the exporter (code 89).

Returning to Table 6 and using Table 7 codes, the first case of data can be read as follows: In 1970 (YEAR), Zaire (IMCTY) imported 21,500 MT (QTY) of maize (COMM) from Angola (EXCTY). All variables except SOURCE are required to uniquely define an observation.

In entering data, there was often a great deal of repetition in values for some of the variables. For example, there could be 20 cases with the year 1985, the commodity traded being maize, the exporter being Zimbabwe, and the data source being the Zimbabwean CSO. To save time, SKIP AND FILL commands contained in Data Entry II were employed so that hitting the return key would automatically enter the correct value. For this example, appropriate SKIP AND FILL rules are: YEAR=85; COMM=1; EXCTY=9; and SOURCE=6. Only IMCTY and QTY values would be manually entered.

2. Data Manipulation

Using SPSS/PC+, the data can be transformed to provide insights into the nature of recent Southern African trade patterns. Among the questions that were addressed¹⁴ for each commodity by manipulating CERTRADE.SYS are:

- Which of the SADCC nations are major importers and exporters in any given year?
- Which countries have been major exporters to the SADCC nations?
- What has been the proportion of intra-regional trade in overall trade?

In the future, it would also be possible to run SPSS/PC+ statistical procedures on the data such as time series regressions (REGRESSION), correlations (CORRELATION) comparing imports of different countries over time, and several other procedures. The exact form of these analysis procedures, and additional data needs would depend on the objectives of the analyst.

¹⁴See Chapter IV of Kingsbury (1989).

3. Trade Matrix Table Generation

The SPSS Tables add-on package was used for creating tables because it is a powerful tool for easily generating large numbers of tables which can be presented in different ways. Such output greatly aided in presenting data in a way that facilitated addressing the questions identified in Section V.B.2.

Tables 8, 9, and 10 are examples of three types of tables generated by Tables from the trade data. Table 8 shows Southern African imports of a single commodity for a single year. Southern African nations (SADCC and South Africa) that imported in that year are listed horizontally while exporting nations appear vertically. Tables were done for each commodity in each year (1970-1985). Quantities traded are identified in the body of the table. In Table 9, a time series of imports is generated for a single country. Tables were formulated for each commodity and for each of the nine SADCC countries and South Africa. In Table 10, a time series of exports is generated for a single country. To determine which countries are major exporters to SADCC, the AGGREGATE command in SPSS/PC+ can first be used to generate total quantities exported by each country by year and commodity. After examining these data, the analyst can decide which countries are worth including when generating tables.

Appendices A, B, and C present the SPSS/PC+ log files necessary to generate each type of table described above. In the appendices, output file names are identified on the SET LISTING command line. Once these output files were created, they were edited and printed in Word Perfect (Version 4.2).¹⁵

For Tables 9 and 10, it is necessary to generate an additional column for "Total Imports" and Total Exports." This is done using the FTOTAL command in Tables.

4. Recommended Procedures for Updating the Database

The original steps involved in taking raw uncoded data, coding them, and transferring them to the CERTRADE.SYS file were rather ad hoc. To make this process more systematic in the future, an intermediate step is recommended

¹⁵Word Perfect was preferred for final editing because it is easier to delete unwanted output, adjust print-type, and set page numbering and margins than with Tables.

Table 8

Southern Africa Maize Imports
(In Thousand Metric Tons)

Year	Importing Country					
	Angola	Malawi	Mozambique	Tanzania	Zambia	South Africa
1970						
Exporting Country						
Angola	.	.	7.705	.	10.200	.
Tanzania	.	.	.	.	20.000	.
Zambia	.	.	.	.	.	.001
Zimbabwe	.	87.200	.	.	.	.
South africa	.016	5.080	.	.	.002	.
USA	12.877	.	.006	14.345	12.515	1.771
Brazil	.	.	3.500	.	.	.
Italy	.	.	.	.	.100	.
Kenya	.	.064	.	.	18.561	.
Total Imports	12.893	92.344	11.211	14.345	61.378	1.772

Source: UZ/MSU SADCC Cereals Trade Database.

Table 9

Southern Africa Maize Imports
(In Thousand Metric Tons)

Year	Importing Country							Total Imports	
	Malawi	Mozambique	Zambia	Zimbabwe	South Africa	USA	EEC		Kenya	Unspec.
1970	.	.	87.200	5.080	.	.	.064	.	92.344
1971	.	.100	.108	.020	.	.	.	.	.228
1972	.	.	.117	.005	.	.	.	.	.122
1973	.	.	.086	.	.	.	.	.	.086
1974	.	.	.258	.015	.	.	.	.	.273
1975	.	.	20.549	.011	.	.	.	.	20.560
1976	.	.	18.566	2.707	.	.	.	.	21.273
1977	5.029	5.029
1978	.	.	5.600	.200	.	.	.	.	5.800
1979	1.091	.	.	.	1.091
1980	.	.	.	10.052	1.107	6.000	.	.	17.159
1981	.	.	28.472	14.500	13.365	31.100	.	.	115.909
1982	.245	.	.697	.068	.143	9.000	.	.	10.153
1983	.	.	.044	.	.	5.000	.	.	5.044
1984	.	.	.	43.800	.	33.000	.	.	76.800
1985	40.400	.	.	40.400

Source: UZ/MSU SADCC Cereals Trade Database.

Table 10

Exports of Maize to Southern Africa
(In Thousand Metric Tons)

Exporting Country Malawi	Importing Country					Total Exports
	Botswana	Mozam- bique	Tanzania	Zambia	Zimbabwe	
Year						
1971	.	.	.	4.652	.	4.652
1972	.	.	12.733	.	.	12.733
1973	.	.	.	1.149	.023	1.172
1974	.	.	19.660	.	.	19.660
1975	.	.	15.962	.	.	15.962
1979	.	.	.	13.350	.	13.350
1982	.	.049	.	.	.	.049
1983	.	15.141	21.000	40.200	.001	76.342
1984	.	5.000	.	97.270	50.000	152.270
1985	6.500	3.137	.	44.949	.	57.722
1986	.	.	.	2.532	.	2.532

Source: UZ/MSU SADCC Cereals Trade Database.

whereby the analyst first enters raw data onto a form similar to the one shown in Table 11. Because COMM, IMCTY, EXCTY, and SOURCE must be coded before entry into the system file, two columns are assigned to each of these variables -- one for the alphanumeric description, the other for numeric coding (using codes from Table 7).

It is suggested that these forms be filled out fully (using the procedures for data reconciliation laid out in Sections IV and V.A) before entering data into the micro-computer system file. YEAR, COMM, and IMCTY designations in the upper left hand corner of Table 11 are included as sorting devices. For example, if only 1987 Zambian maize imports appear on a given page (or set of pages), this eases the data reconciliation process as years, countries, and commodities are not mixed together on the same page. This also facilitates data entry because SKIP AND FILL rules can easily be defined for each page for YEAR, COMM, and IMCTY.

Once the system file is fully updated for a given commodity, the Appendix A - C log files may be run again to generate new sets of output tables. If transactions appear that involve importing/exporting countries and/or data sources not previously included in the database, a code must be assigned to the new country/data source and entered in the Dictionary sub-program of Data Entry II. Coding is also necessary for years prior to 1970 or after 1986 (i.e. to make '87' appear as '1987' in the output tables).

C. Database on Annual Import Totals From Different Data Sources

1. Data Entry, Variable Names, and Coding

Time series data on annual import totals from different data sources were also entered into a system file named TOTALIM.SYS. Data were collected for maize, wheat, and rice from 1970-86 for the nine SADCC countries, Zaire, and South Africa. The data sources were: FAS; national data; ERS; the FAO trade tapes; and "Food Aid In Figures."

Because all raw data from each data source are entered, there is no complicated data reconciliation process as is the case with destination and source data.

The system file consists of five variables with YEAR, COMM, IMCTY, and QTY having similar variable and value labels as for CERTRADE.SYS. The variable label for SOURCE is "Data Source for Total Annual Imports" with

value labels corresponding to the various data sources. Codes for TOTALIM.SYS are presented in Table 12.

2. Data Manipulation

The TOTALIM.SYS database can be used to provide information on the following questions:

- What discrepancies are there among the various data sources?
- How has the importance of food aid evolved as a portion of overall trade of each cereal?
- If price series data are available, how has the commercial import and food aid bills evolved over time? Is food aid more or less available to SADCC nations when international prices are high?

3. Trade Matrix Table Generation

Table 13 is an example of one table generated from this database. Log files used to generate tables by data source are presented in Appendix E.

4. Recommended Procedures for Updating the Database

A variation of the data entry form presented in Table 11 can be used for updating the IMTOTAL.SYS file. Because most data sources present annual import data in time series format, it is probably best to sort by commodity, importing country, and data source -- placing years and quantities in the body of the form. A suggested format is presented in Table 14.

Table 12

Codes for SPSS/PC+ Data Entry
for the System File 'TOTALIM.SYS'

Country Codes for Coding IMCTY	Data Source Codes for Coding SOURCE
1=Angola	94=FAS Totals
2=Botswana	95=National Totals
3=Lesotho	96=ERS Totals
4=Malawi	97=FAO Totals
5=Mozambique	98="Food Aid In Figures" Totals
6=Swaziland	99=UZ/MSU Totals
7=Tanzania	
8=Zambia	
9=Zimbabwe	
10=RSA	
51=Zaire	

Commodity Codes for Coding COMM
1=Maize
2=Wheat
3=Rice

Table 13

Southern Africa Wheat Imports (In Thousand Metric Tons)

Importing Country
Zambia

Year	Data Source For Total Annual Imports					
	FAS	National	ERS	FAO	FAF	MSU-UZ
1970	85.000	.	106.900	106.900		106.900
1971	87.000	.	103.700	82.600		71.202
1972	93.000	.	114.700	114.700		110.100
1973	103.000	.	90.300	83.300		73.801
1974	126.000	.	126.000	89.700	4.300	89.505
1975	125.000	157.262	160.000	160.000	5.000	162.307
1976	125.000	94.371	97.200	97.200	27.500	71.400
1977	145.000	98.584	96.600	96.600	12.700	123.200
1978	130.000	41.584	102.200	90.000	40.700	100.600
1979	70.000	75.053	102.400	102.000	40.000	101.700
1980	64.000	53.755	178.900	178.900	19.100	92.755
1981	132.000	130.351	133.900	131.300	90.200	129.351
1982	78.000	85.265	130.400	130.400	63.300	100.215
1983	82.000	91.824	85.300	85.300	10.000	86.824
1984	81.000	61.021	85.500	85.500	46.000	69.020
1985	61.000	59.956	77.100	77.100	.	53.647
1986	70.000	59.490	45.500	.	.	59.490

APPENDIX A: SPSS/PC+ LOG FILES FOR GENERATING TABLES FOR CEREALS
IMPORTS BY YEAR (SEE TABLE 8)

The SPSS/PC+ log file below is entitled MAIMYR.LOG and can be used for generating tables for Southern African imports by year. To create similar log files for wheat and rice (WHIMYR.LOG and RIIMYR.LOG), it is necessary to change the number following COMM EQ, the LISTING file name, and the table title (TTITLE).¹⁶

```
SET LENGTH=NONE.
SET WIDTH=132.
SET SCREEN=OFF.
GET FILE='CERTRADE.SYS'.
SELECT IF (YEAR GE 70 AND YEAR LE 85).
SELECT IF (COMM EQ 1 AND IMCTY LE 10).
SET LISTING='MAIMYR.OUT'/BOXSTRING='  '.
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120)
  /TABLE=QTY>EXCTY BY IMCTY BY YEAR
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
```

¹⁶In each appendix, places where such changes are required appear in bold print.

APPENDIX B: SPSS/PC+ LOG FILES FOR GENERATING TABLES FOR CEREALS
IMPORTS BY COUNTRY (SEE TABLE 9)

The SPSS/PC+ log file below is entitled MAIMTS.LOG and can be used for generating time series tables for sources of each SADCC country's maize imports. To create similar log files for wheat and rice (WHIMTS.LOG and RIIMTS.LOG), it is necessary to change the number following COMM EQ, the LISTING file name, and the table title (TTITLE). It is also necessary to run a series of PROCESS IF statements so that output tables include only those exporting countries that have traded with the specified importing country. If the importing country were identified on the SELECT IF line instead, all exporting countries would be included in each importing country table, even if they had never traded with the particular importing country. Output tables would then be unnecessarily large.

```
SET LENGTH=NONE.
SET WIDTH=132.
SET SCREEN=OFF.
GET FILE='CERTRADE.SYS'.
SELECT IF (COMM EQ 1).
SET LISTING='MAIMTS.OUT'/BOXSTRING=' '.
PROCESS IF (IMCTY=1).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,9)
  /FTOTAL= T1 'TOTAL IMPORTS'
  /TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=2).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,9)
  /FTOTAL= T1 'TOTAL IMPORTS'
  /TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=3).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,9)
  /FTOTAL= T1 'TOTAL IMPORTS'
  /TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=4).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,9)
  /FTOTAL= T1 'TOTAL IMPORTS'
```

```

/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=5).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,9)
/FTOTAL= T1 'TOTAL IMPORTS'
/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=6).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,9)
/FTOTAL= T1 'TOTAL IMPORTS'
/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=7).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,9)
/FTOTAL= T1 'TOTAL IMPORTS'
/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=8).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,9)
/FTOTAL= T1 'TOTAL IMPORTS'
/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=9).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,9)
/FTOTAL= T1 'TOTAL IMPORTS'
/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=10).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,9)
/FTOTAL= T1 'TOTAL IMPORTS'
/TABLE=QTY>YEAR BY EXCTY + T1 BY IMCTY
/STATISTICS=SUM((F7.3)')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.

```

**APPENDIX C: SPSS/PC+ LOG FILES FOR GENERATING TABLES FOR CEREALS
EXPORTS BY COUNTRY (SEE TABLE 10)**

To determine which countries are major exporters to SADCC, it is helpful to first run the following AGGREGATE log file for each commodity.

```
SET LENGTH=NONE.  
SET WIDTH=132.  
SET SCREEN=OFF.  
GET FILE='CERTRADE.SYS'.  
SELECT IF (IMCTY LE 9).  
AGGREGATE OUTFILE=*  
    /BREAK=YEAR COMM EXCTY  
    /TOTALIM=SUM(QTY).  
FORMATS TOTALIM (F7.3).  
SAVE OUTFILE='TOTALEX.SYS'.
```

This new system file can then be examined on screen (or a LIST command can be executed for printing out hard copy). Once it is decided which exporters to include, a variation of the SPSS/PC+ log file below (MAEXYR.LOG) can be used for generating time series tables for sources of each SADCC country's maize imports from major exporters. To create similar log files for wheat and rice (RIEXYR.LOG), it is necessary to change the number following COMM EQ, LISTING file name, and the table title (TTITLE). To include other exporters, it is also necessary to adjust the PROCESS IF statements accordingly and repeat the TABLES commands each time as in Appendix B.¹⁷

```
SET LENGTH=NONE.  
SET WIDTH=132.  
SET SCREEN=OFF.  
GET FILE='CERTRADE.SYS'.  
SELECT IF (COMM EQ 1 AND IMCTY LE 10).  
SET LISTING='MAEXYR.OUT'/BOXSTRING='  '.  
PROCESS IF (EXCTY=1).  
TABLES OBSERVATION=QTY  
    /FORMAT=MARGINS(1,120) CWIDTH(6,9)  
    /FTOTAL= T1 'TOTAL EXPORTS'  
    /TABLE=QTY>YEAR BY IMCTY + T1 BY EXCTY  
    /STATISTICS=SUM((F7.3)''')  
    /TTITLE 'EXPORTERS OF MAIZE TO SOUTHERN AFRICA (IN THOUSAND METRIC  
TONS)'.
```

¹⁷The log files contained on disk include a large number of exporters. They are not presented here in order to save space.

**APPENDIX D: SPSS/PC+ LOG FILES FOR GENERATING TOTAL ANNUAL
IMPORTS BY DATA SOURCE (SEE TABLE 12)**

To incorporate the UZ/MSU total annual import figures (the 'Total Imports' column in Table 9), it is necessary to generate a new system file by running an AGGREGATE command on the CERTRADE.SYS data, and performing a JOIN ADD operation to merge the UZ/MSU cases with the cases from other data sources contained in TOTALIM.SYS.

The AGGREGATE log file is:

```
SET LENGTH=NONE.  
SET WIDTH=132.  
SET SCREEN=OFF.  
GET FILE='CERTRADE.SYS'.  
SELECT IF (IMCTY LE 10 OR IMCTY EQ 51).  
AGGREGATE OUTFILE=*  
  /BREAK=YEAR COMM IMCTY  
  /UZMSU=SUM(QTY).  
FORMATS UZMSU (F7.3).  
SAVE OUTFILE='UZMSU.SYS'.
```

The JOIN ADD log file is:

```
SET LENGTH=NONE.  
SET WIDTH=132.  
SET SCREEN=OFF.  
GET FILE='TOTALIM.SYS'.  
JOIN ADD FILE=*  
  /FILE='UZMSU.SYS'  
  /RENAME (UZMSU=QTY)  
  /BY YEAR COMM IMCTY  
SAVE OUTFILE='NTOTALIM.SYS'.
```

When updating the TOTALIM.SYS, it is strongly advised to give the new system file a different name (NTOTALIM.SYS). This safeguards against deleting the original file, and replacing it with an incorrect new system file. Once the new file has been checked, the old file can be deleted, and the new file can be renamed TOTALIM.SYS.

Once the UZ/MSU data has been incorporated into TOTALIM.SYS, the following log file (TOTMAIM.LOG) is used for generating total annual maize imports for each SADCC country, South Africa, and Zaire, by data source. Performing similar operations for wheat (TOTWHIM.LOG) and rice (TOTRIIM.LOG) require modifying COMM EQ, SET LISTING, and TTITLE specifications.

```

SET LENGTH=NONE.
SET WIDTH=132.
SET SCREEN=OFF.
GET FILE='TOTALIM.SYS'.
SELECT IF (COMM EQ 1 AND EXCTY GE 94).
SET LISTING='TOTMIM.OUT'/BOXSTRING=' '.
PROCESS IF (IMCTY=1).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=2).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=3).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=4).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=5).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=6).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=7).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY
  /STATISTICS=SUM((F7.3)')
  /TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=8).
TABLES OBSERVATION=QTY
  /FORMAT=MARGINS(1,120) CWIDTH(6,10)
  /TABLE=QTY>YEAR BY EXCTY BY IMCTY

```

```
/STATISTICS=SUM((F7.3)''')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=9).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,10)
/TABLE=QTY>YEAR BY EXCTY BY IMCTY
/STATISTICS=SUM((F7.3)''')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=10).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,10)
/TABLE=QTY>YEAR BY EXCTY BY IMCTY
/STATISTICS=SUM((F7.3)''')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.
PROCESS IF (IMCTY=51).
TABLES OBSERVATION=QTY
/FORMAT=MARGINS(1,120) CWIDTH(6,10)
/TABLE=QTY>YEAR BY EXCTY BY IMCTY
/STATISTICS=SUM((F7.3)''')
/TTITLE 'SOUTHERN AFRICA MAIZE IMPORTS (IN THOUSAND METRIC TONS)'.

```

APPENDIX E: FILES INCLUDED ON ACCOMPANYING FLOPPY DISKS

DISK 1 - FILES FOR USE ON THE DESTINATION AND SOURCE DATABASE

CERTRADE.SYS - SPSS/PC+ system file containing trade data by source and destination.

MAIMYR.LOG, WHIMYR.LOG, RIIMYR.LOG - ASCII format log files for generating output similar to that contained in Table 8 for maize, wheat, and rice.

MAIMYR.OUT, WHIMYR.OUT, RIIMYR.OUT - Word Perfect (Version 4.2) files containing output generated by MAIMYR.LOG, WHIMYR.LOG, and RIIMYR.LOG.

MAIMTS.LOG, WHIMTS.LOG, RIIMTS.LOG - ASCII format log files for generating output similar to that contained in Table 9 for maize, wheat, and rice.

MAIMTS.OUT, WHIMTS.OUT, RIIMTS.OUT - Word Perfect (Version 4.2) files containing output generated by MAIMTS.LOG, WHIMTS.LOG, and RIIMTS.LOG.

MAEXYR.LOG, WHEXYR.LOG, RIEXYR.LOG - ASCII format log files for generating output similar to that contained in Table 10 for maize, wheat, and rice.

MAEXYR.OUT, WHEXYR.OUT, RIEXYR.OUT - Word Perfect (Version 4.2) files containing output generated by MAEXYR.LOG, WHEXYR.LOG, and RIEXYR.LOG.

DISK 2 - FILES FOR USE ON THE TOTAL ANNUAL IMPORTS DATABASE

TOTALIM.SYS - SPSS/PC+ system file containing data on total annual imports from different data sources.

UZMSU.LOG - ASCII format log file for aggregating CERTRADE.SYS total annual imports for inclusion into TOTALIM.SYS.

NTOTALIM.LOG - ASCII format log file for joining UZ/MSU annual import totals to import totals from other data sources contained on IMTOTAL.SYS.

TOTMAIM.LOG, TOTWHIM.LOG, TOTRIIM.LOG - ASCII format log files for generating annual import volumes by data source for maize, wheat, and rice.

TOTMAIM.OUT, TOTWHIM.OUT, TOTRIIM.OUT - Word Perfect (Version 4.2) files containing output generated by TOTMAIM.LOG, TOTWHIM.LOG, and TOTRIIM.LOG.

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