



Mission Report

from a short-term mission on final data quality control and reporting IAF
2002/3

From 17 September to 31 December 2003

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1 EXECUTIVE SUMMARY

According to the Terms of Reference the consultant should:

- Guide the final quality consistency control and document this part of the data-processing process,
- Revise a tabulation plan for the final report and for the final results publication
- Ensure the comparisons between IAF 2002/03 and IAF 1996/97. Conceptualise the final report framework and structure
- Train INE staff in data analysis and IAF report production

The following major results have been achieved:

- The results of IAF 2002/3 are ready; they can be used for analysing;
- The final report on IAF 2002/3, including comparison with IAF 1996/7, is ready;
- A data show, based on the main results of the inquiry, has been elaborated and presented in an internal meeting to INE-staff, it may be used for presenting of the results to the users;
- The data show is available in www.ine.gov.mz;
- The tables with final data of IAF 2002/3 are ready for publishing;
- The draft of the methodological report is ready;
- INE-staff working on household surveys is more qualified for consistency control and analysing.

Recommendations

Summing up the data validation process, it can be said that in general terms the quality of final data is good. However, data collection on gross entrepreneurial income and transfers received and paid, need a better solution in the future. A test to collect data on savings is recommended.

Data on auto consumption and imputed rent have a decisive impact on the household income as well as expenditure. The accuracy of these data depends strongly on the capacity of the enumerator. The enumerators should be better trained in using the balance. It should be tested whether questions on the cost of construction and the age of the houses could deliver a better basis for imputing the rent.

For practical reasons daily expenditure were collected in Metical while monthly expenditure and income in 1,000 Metical. The practical experience has shown that the different unit caused errors. The author recommends in future using the same unit in all parts of the questionnaire.

The fieldwork of IAF 2002/3 was linked with very high logistic costs. In preparing a new survey it should be carefully considered to use the method of cluster sampling for selecting the households.

The IAF 2002/3 delivers a huge amount of price information but it shows also the urgent need to revise the consumer price indices. This will put the measurement of changes in cost of living over time on a more reliable basis. The author recommends making efforts aiming at collecting prices in rural areas.

The IAF 2002/3 has proved that the staff of INE is able to prepare and execute efficiently such surveys. There exists also a group of people with good experience in data validation. However, the personal working on data analysis needs further strengthening in number and quality.

Sumário executivo

Segundo os [Termos de Referência](#) o consultor devia

- Guiar o controlo final de qualidade de dados e documentar esta parte do processo de processamento de dados,
- Revisar o plano de quadros para o relatório final e a publicação de resultados finais,
- Assegurar a comparação entre o IAF 2002/3 e IAF 1996/7,
- Elaborar uma concepção e a estrutura para o relatório final,
- Treinar os trabalhadores do INE em análise de dados e produção de relatórios sobre o IAF.

Os principais resultados atingidos durante a consultoria:

- Os resultados do IAF 2002/3 estão prontos e podem servir de base para trabalho analítico;
- O relatório final do IAF 2002/3, incluindo comparações com resultados do IAF 1996/7, está pronto;
- Os resultados principais do Inquérito foram apresentados numa reunião de quadros superiores do INE;
- A apresentação de resultados principais está já no Internet do INE;
- Os quadros com os resultados finais do IAF 2002/3 estão prontos para a publicação;
- O relatório metodológico do Inquérito está na fase de draft;
- O pessoal do INE na área de inquéritos aos agregados familiares está melhor qualificado em validação e análise de dados.

Recomendações

Resumindo o processo de validação de dados, pode-se constatar, que em termos gerais, a qualidade de dados é boa. Contudo, a recolha de dados sobre o valor líquido de negócios e as transferências precisa de uma melhor solução no futuro. Recomenda-se também um teste de recolha de dados sobre a poupança do agregado familiar.

Os dados sobre o autoconsumo e a renda imputada têm um impacto decisivo sobre as receitas e despesas do agregado familiar. A qualidade destes dados

depende muito da capacidade do inquiridor. Recomenda-se melhorar o treino dos inquiridores como usar a balança. Recomenda-se testar, se a introdução de perguntas sobre o custo de construção e a idade de casa no questionário poderia fornecer uma melhor base para a estimativa da renda das casas usadas pelos proprietários.

Por motivos práticos, foram recolhidos dados sobre as despesas diárias em Meticais enquanto que sobre despesas mensais e anuais em 1000 Meticais. A experiência prática mostrou que o uso de diferentes unidades causou erros. O autor recomenda em futuros inquéritos usar uma unidade única.

O trabalho de campo do IAF 2002/3 estava ligado a elevados custos de logística. Recomenda-se testar a selecção dos agregados familiares em conglomerados para baixar o custo de inquérito.

O IAF 2002/3 forneceu muita informação sobre preços ao consumidor. Contudo, mostrou a necessidade de revisar o Índice de Preços ao Consumidor. Assim, consegue-se uma melhor base para a análise de mudanças no custo de vida. O autor recomenda fazer esforços no sentido de recolher preços nas áreas rurais.

O IAF 2002/3 provou mais uma vez que o pessoal de INE é capaz de preparar e executar este tipo de inquéritos com eficiência. Existe também um grupo de pessoas com boa experiência em validação de dados. Contudo, o pessoal que trabalha na análise de resultados destes inquéritos precisa ser reforçado em termos de quantidade e qualidade.

2 INTRODUCTION

The author of the report is an expert on household surveys with more than 40 years of experience. He organized the first nation-wide household survey in Iraq in 1970-72. In Mozambique he has assisted the process of revival of the government statistics since 1976, i.e. from soon after the independence of the country. His main contribution was the assistance to the preparation and execution of the Census of Population in 1980 and 1997. As an UNDP expert he organized the household surveys in 1991-1993 in Maputo and the provincial capitals. Because of the Census 1997 he was not involved in the process of the preparation and execution of the Household Survey (IAF) in 1996/7, but participated in the report writing.

He assisted the preparation of IAF 2002/3 from the beginning, i.e. designing the questionnaires, elaboration of manuals, training of personal and the planning of the pilot survey (but not the analysis of the pilot survey). He did not participate in the supervision of the fieldwork during the survey. In March-April 2003 he participated in the validation of the data for the first 6 months of the survey and the elaboration of a report on the preliminary results. According to his Terms of Reference for the present mission the author assisted in the data quality control and report writing as well as training of personal.

3 ACTIVITIES DURING THE MISSION

3.1 Situation at the beginning of the mission

The data collection was finished before the author arrived. According to the sampling techniques applied to IAF 2002/3 a sample size of 8,727 households had been selected in 858 enumeration areas to ensure representative results on the national and provincial level. 7,984 households out of the selected sample were interviewed. This gives the very high response rate of 90.5% among the original sample.

In addition, interviews were obtained among a representative group of reserves as 3 households had been selected as reserve in each enumeration area. In total 665 households, who were absent during the period of data collection and 51 households which refused, were substituted with households from this reserve. Finally the total number of households covered by the survey reached 8,700, i.e. 99.7% of the originally calculated sample size.

The data entry had also been finished and data validation was in progress. The consultant on data processing, Jim Otto, who arrived 2 weeks earlier, had produced a set of tables with preliminary results. The analysis of these tables showed the need to continue and intensify the quality control

3.2 Data validation

The most common errors were linked to quantities and prices. One reason was omissions, for instance, quantity had been recorded but not the value. Another type of error was of inconsistent entries since the value of expenditure on some items was too small or too large in relation to the quantity. In some cases the decimal point was put at the wrong place. Some enumerators did not pay attention to the fact that in the questionnaire on monthly expenditure, the value had to be written in 1,000 Meticals. Thus, a box of matches with a price of 1,000 Meticals got a value of 1,000,000. Especially in rural areas, but also to a lower degree in urban, people use local units of measurement instead of standard units. Although the enumerators had a balance to convert the local units into standard ones, some did not use the balance or had problems with calculation.

The cleaning of these errors was done using price limits based on local market prices. On the basis of quantity bought and amount paid an average price was calculated and compared to the price limit. The listed differences served as basis to consult the questionnaire and correct the data. Thus, most of the errors could be corrected. Some errors were corrected only after supervision visits in the field by the staff of INE.

Another type of error was linked with the calculation of the own consumption i.e. items produced and consumed by the household. The questionnaire referred to the consumption during the day before the interview. There were a total of 1,337 observations with quantity and no value out of 57,373 observations (2.3%). The values for these observations were imputed using a unit price for the product as close as possible in time and space to the case of missing data. The unit price was calculated as an average on the basis of the data collected with the Questionnaire on Daily Expenditure and the Community Questionnaire. The same procedure was used for income in kind.

The most difficult question was the estimation of rent for owner occupied houses. There is to say, that especially in rural areas it is not a common habit to rent houses. According to the manual the head of household living in its own house should estimate the value, which he would have got if he had rented it out. In rural areas the data recorded ranged from 1,000 to 8,000,000 Meticais per month and in urban areas from 10,000 to 36,000,000 Meticais. To solve the problem a model using data on the building material, facilities on water supply, sanitation and energy was used to impute the rent for different types of housing in rural and urban areas.

The validation was done by a group of people especially prepared for that task and assisted by the short-term consultant on data processing and quality control, Mr. James Otto. More details on data validation and preparation of survey results can be found in his mission report. The group got permanent assistance from the author. Today they are able to do this kind of scrutiny without further assistance. However, most of these persons were contracted on a temporary base and will thus leave INE when the job is finished. There is a danger that their experience will get lost. It would be desirable if some of them could be recruited as permanent staff.

3.3 Comparison with IAF 1996/7

Although IAF 1996/7 was based on a similar concept as the actual one, the comparison was very complicated. The main problem came from the fact that 6 years have passed and people can hardly remember what was done. The questionnaires had been destroyed and data records were not complete. Many different people participated in the data processing and practically no documentation existed.

The comparison of the results from the two surveys was also linked with some methodological differences.

A different definition of urban and rural areas was used. In 1996/7 only the 11 provincial capitals including Maputo City were considered urban and the rest of the country was rural. In 2002/3 the urban area includes all 23 cities and 68 towns. This definition responds to the official territorial division of the country. The Law 6/86 defined which areas belong to urban and which are rural. It is to say, that the infra-structure in these small towns and to a great extent also in the cities is not much different of that in rural areas. Therefore nearly half of the population in the urban area works in agriculture. For practical reasons and to ensure the comparability the IAF 2002/3 data were recalculated using the area definition from 1996/7. According to the actual definition the share of the population in urban areas in 2002/3 amounts to 32.1% of the total population, but using the 1996/7 definition the urban population would be only 19.8%. In 1996/7 the urban share was calculated as 18.5%.

The use of different classifications was another problem. In 2002/3 the CLASSIFICATION OF INDIVIDUAL CONSUMPTION BY PURPOSE (COICOP-HBS), adopted to the conditions of Mozambique (CCIO), was used to classify goods and services. The COICOP-HSB consists of 12 major groups. The classification used in 1996/7 was based on the SNA classification, which consisted of 8 major groups. This fact had been taken into consideration in the data comparisons.

During the period between the two surveys Mozambique experienced a high inflation. The consumer price indexes (CPI) calculated by INE is not representative for the country because it is based only on the 3 major cities. CPI does not exist for rural areas. Major changes in the structure of consumption do not find an adequate reflection in the indexes. For instance, habitation is still represented by rent paid for houses in government ownership. In 1996/7 this rent was extremely low. In the meantime a great part of these houses have been privatised and have now a rent incomparable higher than before. Transportation is represented by bicycle only although the number of cars has risen considerably. Under these circumstances, instead of the CPI, the deflator used by National Accounts for consumption comparisons was used to convert expenditures at current prices into constant prices.

3.4 Report writing

A working group was created to analyse the survey data and write the reports. The group worked under the leadership of the Director of the

Directorate of Demographic, Vital and Social Statistics, Fátima Zacarias. Members of the group were: Cassiano Soda Chipembe (Chief of the Department of Demographic Studies), Firmino Guiliche (Chief of the Department of Prices e Conjuncture), Elísio Mazive, Creva Carlos, Duce Pedro, Teigland Jon (Long term consultant) and the author. It is to stress that the group worked as a team and had regular meetings to evaluate the progress of the work. But at the same time the National Demographic and Health Survey (IDS) took place and some of the members of the group had to participate in supervision visits in the provinces. This resulted in a delay in elaborating the Final Report on the Results of IAF. On the other hand there was given heavy pressure for fast survey results and the finishing the Final Report. The draft of the report was ready by the end of November. At the time for the mission, work was going on to give the report its final shape. The publication was expected for January 2004. In fact, having the Final Report published 6 month after finishing the data collection, was only possible by concentrating technical assistance on producing results rather than building capacity. During the process of writing the report the consultant was in constant contact with the group members to discuss problems and transmit his experience. The qualifying of personal was mainly performed by “learning by doing”. As a result the staff linked to household surveys is now better qualified in data analysis. However, the personal working on data analysis needs further strengthening in number and quality.

The consultant had the possibility to present the main results in an internal meeting with the staff of INE. Participants of the workshop were: Dr. Loureiro, President of INE, Director Fátima Zacarias, Director Arao Balate and other leading staff of INE and also Mr. Hans-Erik Altvall, Team leader Scanstat. The data-show, prepared by the consultant is available in the internet, www.ine.gov.mz. Because of Christmas and the New Year it was not reasonable to organize a workshop with the users of the information in December. But the data show seems to be a good instrument that can be used for such a meeting later by INE.

A set of tables including the main results of IAF 2002/3 was prepared and may be published next month. This includes tables on population, occupation, housing, education, health and other indicators. Tables including estimates of mean household and per capita expenditures at the national, urban/rural, geographic zone, provincial and expenditure quintile level and similar tables on income were added.

A first draft of a report on the methodology and the instruments used in the survey was prepared.

Separate reports on victimization and communities are being prepared under the guidance of Mr. Jon Teigland, Long-term consultant in demographic and social statistics, who was in constant contact with the author.

All documentation and data are available on a CD-ROM and may be used for more analysis. The consultant suggested continuing the analytical work preparing reports on special aspects of living conditions, using data from IAF but also from other sources.

4 RECOMMENDATIONS

Data on auto consumption and imputed rent have a decisive impact on the household income as well as expenditure. The share of auto consumption in the total income amounts to 51% in rural and 8% in urban areas. The value of the imputed rent amounts to 5% and 18% respectively. The accuracy of these data depends strongly on the capacity of the enumerator. This should be taken into consideration when preparing new surveys. The enumerators should be better trained on how to use the balance. It should be tested whether questions on the cost of construction and the age of the houses could deliver a better basis for imputing the rent.

For practical reasons daily expenditure have been collected in Metical while monthly expenditure and income in 1,000 Metical. The practical experience has shown that the different unit caused errors. The author recommends in future using the same unit in all parts of the questionnaire.

Summing up the data validation process, it can be said that in general terms the quality of final data is good. However, several problems need a better solution in future surveys. This concerns data on gross entrepreneurial income and transfers received and paid. A test to collect data on savings is recommended.

The fieldwork of IAF 2002/3 was linked with very high logistic costs. It should be carefully considered to use the method of cluster sampling for selecting the households, when a new survey is prepared.

The IAF 2002/3 delivers a huge amount of price information but it shows also the urgent need to revise the consumer price indices. The structure of weights will change drastically. This will put the measurement of changes in cost of living over time on a more reliable basis. The author recommends to make efforts that aim at collection of prices in rural areas.

In the past INE has given much attention and spent relatively more time on preparing and executing new household surveys than on analyzing the output. The IAF 2002/3 has proved that the staff of INE is able to prepare and execute efficiently such surveys. There also exists a group of people with good experience in data validation. The author recommends focusing more on the qualifying of the staff in analytical work.

APPENDIX 1. Persons met

INE

Mr. João Dias Loreiro, President

Mr. Manuel da Costa Gaspar, Vice-President

Mr. Arão Balate, Director of the Directorate of Census and Survey

Ms. Fátima Zacarias, Director of the Directorate of Demographic, Vital and Social Statistics

Mr. Cristovão Muahio, Chef of Department of Sampling and Methodology

Mr. Firmino Guiliche, Chef of the Price and Conjuncture Department

Mr. Cassiano Soda Chipembe, Chef of the Department of Demographic and Social Studies

Mr. David Megill, Consultant in sampling

Mr. Jim –Otto, Consultant in data processing

Mr. Hans-Erik Altvall, Team leader Scanstat

Mr. Jon Teigland, Long-term consultant in demographic and social statistics

Ministry of Planning and Finance

Mr. Arndt Channing, Consultant in Poverty studies

APPENDIX 2. TERMS OF REFERENCE

TERMS OF REFERENCE

Within the Scandinavian Support Program

For a 12-week mission in September/October/November 2003

on Final data quality control and reporting IAF 2002/03

Background

INE is in the process of finalizing the second national household budget survey (IAF 2002/03). One main objective with this survey is to establish an updated and improved base for evaluating living conditions and poverty in Mozambique, and especially the changes that have taken place from 1996/97. Other major objectives are to collect necessary data for updating and change the base year for the national accounts and adjust price index.

This survey covers a full year (July 2002- June 2003). But after the first 6 months of data were collected, a thorough quality check of errors and consistency was done with assistance partly in the shape of gap filing from 3 short-term experts who visited INE in March/April 2003. The same consultants participated in the preparatory work of the survey and will return for another short-term mission. A preliminary report on some important findings were also prepared and published as a working paper. Limited time made it, however, necessary to postpone:

- Quality control of one important part of IAF 2002/03; data collected by the community questionnaire.
- Comparisons with the IAF 1996/97 and QUIBB-surveys.

After June 2003 when the collection of new IAF-data is finished, a final quality control is needed, including a documentation of the consistency testing process. It is also necessary to make a tabulation plan for the final report, which should include comparisons also between IAF 1996/97 and 2002/03 and continue to systematically develop INE's competence.

The short-term mission presented in this document is one of three planned missions in September/October 2003 that will help INE with the final quality control and planning of the main report with results from IAF 2002/03 and changes from 1996/97. The second, on data processing, is also funded through the Scandinavian Programme, while the third mission on sampling issues is funded through another donor.

A fourth short-term mission, funded by the Scandinavian Programme with linkages to this mission is planned to take place towards the end of this mission. The fourth mission will focus on Review of methods form poverty

monitoring and carry out in house training on poverty monitoring and analysis.

Main reasons for the mission

During the data processing mission in March/April 2003 the staff of INE got an introduction to the quality control of the new IAF-data. However, the quality control was done only for the first six months. It remains the last six months. Although two members of INE's staff have later on also participated at a workshop in Tanzania, where they were trained in how data can be organized for producing standard tables, the process of production has to be assisted. Also, since the preliminary report (for first six months) didn't cover all the questionnaires, the tabulation plan has to be revised and tables for the final report have to be adequately selected. The competence in control of data consistency and analytical competence is, however, limited. It is, therefore, necessary to have the help of short-term expertise that can assist INE to:

- Guide the final quality consistency control and document this part of the data-processing process,
- Revise a tabulation plan for the final report and for final results publication
- Ensure the comparisons between IAF 2002/03 and IAF 1996/97. This process includes:
 - a) Review of concepts and definitions
 - b) Link the IAF 97 goods and services classification (CNBS) to the IAF 02-03 classification (COICOP)
 - c) Harmonization of the definition of Urban/rural to enable the comparison between IAF 97 and IAF 02-03
 - d) Documentation of the procedures for comparison
 - Conceptualize the final report framework and structure

He should also

- Train INE staff in data analysis and IAF report production

Benefactors of the mission

The mission will benefit the decision makers and other users that depend on rapid and reliable statistics on level of living and poverty in Mozambique by reducing production time and improving data quality. INE-staff working with analysis of household data and preparing final reports will improve their qualifications in the area.

Objectives of the mission

Enhance INE's capacity in data quality control, in writing reports and in analyzing data

Activities by the Consultant

- Carry out the training activities according to a preliminary programme that INE has prepared with assistance from the Long Term Consultant for Social Statistics and has been agreed with the Consultant
- Have the overall responsibility for advising the production of the final report from IAF 2002/03. This will include:
 - § Check quality controls that have been done by INEs staff on data from the final 6 months of IAF 2002/03 and secure consistency with the first 6 months together with James Otto.
 - § Document the data consistency process
 - § Revise the tabulation plan for the final report and for publication of final results
 - § Plan and accomplish the comparisons of IAF 1996/97 and IAF 2002/03, which include changes in definitions of household income and expenditure categories. This will imply a definition of methodology to compare data from two sources using two distinct classifications of goods and services and using different definitions of geographical areas.
 - § Prepare the final report and simultaneously capacitate the INE Staff on data analysis and reporting
 - § Presents methods and results at a workshop for the main user interests

Expected results

- Data that has high quality and are easy to use as base for the main report from IAF 2002/03 and later analytical work at INE and at other institutions
- Tables compiled for publication of final results
- IAF 2002-3 final report
- INE-staff is more qualified for consistency control and producing final reports from household surveys.
- Recommendations for coming HBS's

Tasks to be done by INE to facilitate the mission

- Analyze INE's need for in house training that can be carried out by the consultant, jointly with the LTA for social Statistics
- Have finished the data-punching processing before the consultant, including the community data
- Supply good working conditions for the consultant

Consultant and Counterpart

Consultant:
Erwin Triebkorn, Germany

Main counterparts:

Fátima Zacarias and Arão Balate

Timing of the mission

12 weeks September/October/November 2003, with the arrival one week after Jim Otto

Report

The consultant will prepare a final report that has been discussed and agreed with INE before leaving Maputo. The structure of the report should be according Danida format and be ready for printing. The counterpart at INE has to ensure that the final report also has at least a summary in Portuguese if the main report is in English or vice versa.

These Terms of Reference were prepared by

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Approved by/in the name of the President of INE

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