INTERNATIONAL MONETARY FUND

UGANDA

September 2017

TECHNICAL ASSISTANCE REPORT—REPORT ON THE PRICES STATISTICS MISSION

This technical assistance report on Uganda was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on July 2014.

INTERNATIONAL MONETARY FUND

Statistics Department

UGANDA

REPORT ON THE PRICES STATISTICS MISSION

June 30–July 18, 2014

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August 11, 2014

CONTENTS   Page

ABBREVIATIONS

AFR	African Department, IMF
BOU	Bank of Uganda
CIF	Cost, Insurance and Freight
CPI	Consumer Price Index
EA	Elementary Aggregate
FOB	Free on Board
HS	Harmonized System of Tariffs and Trade
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification
MPI	Import Price Index
MPS	Import Price Survey
PPI	Producer Price Index
PPS	Producer Price Survey
SDDS	Special Data Dissemination Service
STA	Statistics Department, IMF
SUT	Supply Use Tables
TA	Technical Assistance
TOT	Terms of Trade
URA	Ugandan Revenue Authority
UBI	Uganda Business Inquiry
UBOS	Uganda Bureau of Statistics
VAT	Value Added Tax
XMPI	Export and Import Price Indices
XPI	Export Price Index
XPS	Export Price Survey

EXECUTIVE SUMMARY

In response to a request from the authorities at the Uganda Bureau of Statistics (UBOS) and in consultation with the African Department (AFR), I undertook a technical assistance (TA) mission to Kampala during the period June 30–July 18, 2014 to assist with finalizing the rebased Producer Price Index (PPI) and developing Export and Import Price Indices (XMPI). This activity (15ST053:00) was undertaken within the context of the following project: Prices Statistics STA_UGA_2013_05.

Important aspects for the mission to address included the following: (i) review of the rebased PPI compilation methodology; (ii) assessment of the PPI series and the prices data collected and development of a dissemination strategy; (iii) development of the XMPI compilation methodology and determination of the data sources; (iv) selection of the base period, basket and weights; (v) training of staff on the above; and (vi) preparation of documentation on methodological and computational procedures.

The conceptual basis of the new PPI was ratified, with the scope extended beyond manufacturing to include mining and quarrying and electricity and water industries. The pricing point is ex-factory, ex-mine, etc., with a valuation basis of basic prices. The index will relate to both domestic usage and exports.

In the short to medium term, the scope should be extended to include agriculture, and in the longer-term consideration should be given to incorporating major business service activities.

The XMPI will relate to actual transaction prices for exports and imports of merchandise trade. The pricing point for the Export Price Index (XPI) is Free on Board (FOB) and Cost Insurance Freight (CIF) for the Import Price Index (MPI).

For the PPI, the first level of aggregation will be to the 4-digit International Standard Industrial Classification (ISIC) class level, while for the XMPI it will be to the 8-digit level of the Harmonized System of Tariffs and Trade (HS). The Elementary Aggregate (EA) indices will be calculated using the Jevons geometric mean price index formula. An unweighted EA formula has been selected for the compilation of each index because it would not be feasible to maintain the lower level product and establishment weights to continuously reflect contemporary trading patterns for reasons of data availability and cost. The EA indices will then be progressively aggregated to higher levels in the ISIC and HS structures using the Laspeyres formula.

It is proposed that the new PPI and the XMPI be compiled using a modified and enhanced version of the current PPI Excel-based processing system. Considerable time was spent with the XMPI team explaining the required functionality and a partial compilation of the MPI was undertaken using Excel spreadsheets.

For the PPI, an index structure and weighting pattern have been derived based on the final 2009–10 Supply Use Tables (SUT). Pending the results of further consultation with

major users, it is proposed to continue to compile separate PPIs for total output, domestic sales and exports for analytical purposes.

During the mission, a structure and weighting pattern for the MPI was derived based on the value of imports smoothed over the three years 2011 to 2013, taking a top-down approach at successive levels of the HS structure. 151 8-digit HS items were selected as the index basket.

Monthly price indicators for the PPI are being obtained from a new Producer Price Survey (PPS), using a streamlined questionnaire which obtains timely mid-month prices each month. The sample of establishments selected since the previous mission was reviewed and a fresh sample was selected using modified selection criteria; as a result, the manufacturing sample size reduced from 250 to 176.

Because of corporate funding cuts, there has been a major delay in commencing the program of initialization interviews for the PPS. Also, the early experience with the interviews indicates that there is scope for streamlining the interviewing process. Accordingly, the program is being re-scheduled.

The quarterly price indicators for the MPI will comprise Customs unit values for the relatively homogeneous commodities (sometimes for individual countries or with outliers removed), and survey-based prices from an Import Price Survey (MPS) for the heterogeneous items. The quarterly unit value trends over the period 2011–2013 for the 151 selected 8-digit HS commodities were analyzed and categorized as either *suitable* as price indicators or *unsuitable*, in which case survey-based prices are required.

Monthly prices are being collected retrospectively (from March 2013) during the PPS initialization interviews and for subsequent months via the PPS. It is planned to publish monthly indices at the ISIC Division level and above, separately for total sales, exports and local sales.

For the MPS, a sample of importers needs to be selected for each of the 8-digit items selected for the survey, and a program of initialization interviews conducted to commence the quarterly MPS. During the mission, business rules were developed for the sample selection.

A work program and budget need to be prepared and submitted to senior management to support the XMPI project.

Work programs have been prepared for (i) the further development of the new PPI reflecting the major delay in commencing the program of PPS field interviews, and (ii) the XMPI, including the programs of survey initialization interviews.

Training was provided to the PPI and XMPI work groups on price index concepts and compilation methodology (including splicing and linking techniques), and price survey procedures (see Appendix VII).

Several other East African countries are in the process of developing PPIs and XMPIs. It would be valuable if countries could share experiences through periodic, structured meetings.

I. OVERVIEW

1.   In response to a request from the authorities at the UBOS and in consultation with the AFR, I undertook a TA mission to Kampala during the period June 30–July 18, 2014 to assist with finalizing the rebased PPI and developing XMPI. This activity (15ST053:00) was undertaken within the context of the following project: Prices Statistics STA_UGA_2013_05.

2.   For the new PPI and the XMPI, the conceptual bases were confirmed. The structure and weighting pattern derived for the new PPI was reviewed. For the MPI, an index structure and weighting pattern were derived. The index compilation methodology for each index was determined and work initiated on modifying and enhancing the current PPI processing system which it is proposed be used for compiling each index.

3.   The PPI price indicators are being obtained from a new PPS, using a streamlined questionnaire which obtains timely mid-month prices each month. The sample of manufacturing establishments was reviewed and re-selected during the mission, resulting in a considerable reduction in the sample size.

4.   The major delay in the commencement of the initialization interviews for the new PPS has disrupted the PPI project schedule. Also, the experience with the interviews conducted to date suggests that there is scope for streamlining the interviewing process. Accordingly, a new work program for the further development of the new PPI has been prepared.

5.   The price indicators for the MPI will be a combination of quarterly Customs unit values for the relatively homogeneous commodities, and survey-based prices collected in the MPS for the more heterogeneous commodities.

6.   Business rules to support the selection of the sample of importers for the MPS, and subsequently exporters for the XPS, were developed. A work program has been prepared for the development of the XMPI, including the program of initialization interviews for the MPS and XPS.

7.   Training was provided to the PPI and XMPI work groups on price index concepts and compilation methodology, and price survey procedures.

8.   To assist the authorities and counterparts, this report includes an Executive Summary on the main findings and recommendations. Then, Section I provides an introductory Overview of the PPI and XMPI projects. The remainder of the report is split between PPI and XMPI. For each index, Section II provides a summary of the Statistics Prerequisites. Section III provides an assessment of the Accuracy and Reliability of data sources and methods, while Section IV provides an assessment of Serviceability. The

project implementation plan for the PPI is provided in Appendix I, and for the XMPI in Appendix II. Appendix III contains MPS Field Interviewers' Instructions; Appendix IV provides an example of an Introductory Letter to Importers. Appendix V has an MPS Interview Guide, Appendix VI contains an Example of a Generic MPS questionnaire (as designed for Tanzania) and Appendix VII presents an outline of the PPI/XMPI Training Program.

PRODUCER PRICE INDEX

II. STATISTICS PREREQUISITES

9.   The initialization interviews for the new PPS are being undertaken by experienced UBOS Statistical Assistant field staff. These staff members have been thoroughly trained on the PPS methodology.

10.   The major delay of nearly a year in the commencement of the initialization interviews, resulting from corporate funding cuts, meant that the whole program and timetable for the new PPI needed to be completely revised. In the light of management's goal of publishing the new PPI as soon as practicable in order to meet user demand, and as monthly prices are being requested retrospectively to March 2013 and the time reference period of the new index will be June quarter 2013, it is particularly important that the interview program be completed within a reasonably short time frame The sample of establishments has been reviewed and re-selected and the interview program is being amended accordingly.

III. ACCURACY AND RELIABILITY

A. Statistical Techniques

Conceptual basis

11.   The concepts and definitions to be used for the rebased PPI were reviewed and ratified. They are consistent with the *2008 SNA* and the international *PPI Manual*.

12.   The key elements include:

(i)   the scope of the rebased index has been extended and will relate to actual transaction prices for the gross output of the mining and quarrying, manufacturing and electricity and water industries. In the medium term, it is planned to further extend the scope to cover the output of the agriculture sector, and, potentially, major service industries;

(ii)   the pricing point is therefore ex-mine, ex-factory etc., with a valuation basis of basic prices, exclusive of trade and transport margins and Value Added Tax (VAT); and

(iii)   the scope of the index will relate to both domestic usage and exports, and hence separate prices will need to be collected for exports and domestic usage, as appropriate. For example, if an establishment selected for the PPI sample exports a significant value of goods directly (rather than sold through a wholesaler or retailer) as well as having significant sales on the local market, then transaction prices relating to both markets should be collected. For inflation analysis, it is important that separate indices are published for total output and total output minus exports, at least at the aggregate level (see paragraphs 23-27 below).

Reference base period

13.   The time reference period for the new index will be June quarter 2013 as the new PPS is commencing with prices for the month of March 2013.

Aggregation formula and compilation methodology

14.   The first level of aggregation will be to the 4-digit ISIC class level. The EA indices will be calculated using the Jevons price index formula, i.e., the ratio of the unweighted geometric mean prices (which is identical to the unweighted geometric mean of the price ratios). These EA indices will then be progressively combined to higher levels within the index structure (i.e., 3-digit, 2-digit and 1-digit levels of the ISIC, and the all groups' level) using the Laspeyres formula and the weighting system derived using the methodology described below.

15.   An unweighted EA formula has been selected because it would not be feasible to maintain the lower level product and establishment weights to continuously reflect contemporary trading patterns for reasons of data availability and cost. Of the unweighted EA formula, the IMF recommends a geometric mean formula over the arithmetic mean formulae.

16.   Following further discussions with PPI staff, the previous decision to use the current PPI processing system as the foundation for building a processing system for the compilation of the new PPI was reaffirmed. As well as reviewing the "Access" module of the system (which manages the data capture and product and establishment samples), the EA formula in the Excel-based aggregation module (currently the weighted average of price relatives) will need to be replaced with the Jevons formula.

Weighting base period and frequency of rebasing

17.   The weighting base period is 2009–10, the reference period for the most recent SUT, which is the primary data source for the PPI structure, composition and weights.

18.   It is proposed that the index be fully rebased on a 5-yearly basis, using the latest finalized SUT.

Determination of the index structure, composition and weighting pattern

19.   During the previous mission, a preliminary index structure and weighting pattern were derived for total domestic supply (i.e., gross output) based on the preliminary 2009–10 SUT. The balanced and reconciled SUT were the primary data source, supplemented by the Ugandan Business Inquiry (UBI).

20.   Since the previous mission, the exercise was repeated using the final SUT and the final 2009–10 weights were calculated. Twenty-eight 4-digit ISIC class industries have been selected as the index "basket." A sample of establishments to represent each of the 28 classes for inclusion in the PPS was then selected (see below).

21.   Credibility checks need to be applied to the weights derived by reference to local knowledge and the Ugandan Revenue Authority (URA) information on the "largest taxpayers." Any substantial shifts from the present weights (based on the 2000–01 UBI) need to be justified.

22.   The detailed methodology for the derivation of the overall index structure and weights, using a top-down approach, is fully documented in the June 2013 prices mission report.

23.   The current manufacturing PPI publication has separate tables with index numbers for (i) domestic sales (ii) exports and (iii) total output, each at successive levels of the index industrial hierarchy and total manufacturing. As such, in the index aggregation module, there are separate index structures and weighting patterns for domestic usage, exports and total output at successive levels of the ISIC.

24.   A minimum requirement for analytical purposes (i.e., to use the PPI as a leading indicator of down-stream inflation as articulated in the flow diagram in Appendix III to the June 2013 mission report) is to provide a PPI for total sales (i.e., output) and a PPI for total output excluding exports.

25.   For the rebased PPI, an important decision needed to be taken as to whether to continue to compile the three separate detailed PPI tables, or only provide a market breakdown at the aggregate level.

26.   Previous consultation with the Bank of Uganda (BOU) indicated that the three separate tables are required. If subsequent inquiries conclude that there is strong user demand for the three tables, then separate structures and weighting patterns will need to be developed for exports and domestic usage.

27.   Detailed discussions during the mission devised a methodology for computing the separate exports, and domestic sales, structures and weighting patterns, drawing on the individual establishment information on the percentage of each category of production that was exported as reported in part B of the PPI "Monthly Survey, Initial Survey 2014" form completed during the initialization interviews.

B. Source Data

Price indicators

28.   Under the current PPS, a tailored questionnaire is sent to each establishment included in the sample. The questionnaire is highly complex and covers not only mid-month product prices, but also monthly production total monthly establishment sales. The form relates to the three months of the quarter and fails to provide timely mid-month prices to support the compilation and dissemination of a timely PPI.

29.   Following a recommendation by the previous prices mission, a new PPS has commenced with a separate collection form relating solely to PPI mid-month product prices, which is much more user-friendly and timely.

30.   The decision has also been made to collect mid-month prices on a monthly rather than a quarterly basis. That is, both the periodicity, and the frequency, of the new PPS will be monthly.

31.   Since the last mission, the selection of the sample of establishments to report producer prices was undertaken at the 4-digit ISIC class level using a combination of cut-off and judgmental sampling procedures, as necessary. A general cut-off of 90 percent was applied for this selection, resulting in a sample size of some 250 manufacturing establishments.

32.   The current mission reviewed the sampling criteria, and worked with the PPI team to re-select the sample as this sample size was much larger than that of other East African countries (although this may be justifiable and reflect varying degrees of industry concentration across countries).

33.   First, the regimen of 28 ISIC classes was categorized into 6 large classes (5 percent or more of the total weight), 17 medium classes (between 1 and 5 percent) and 5 small classes (less than 1 percent). Then, a fresh sample of establishments was selected using cut-off sampling techniques. A business rule of 90 percent was applied to the large industries, 70 percent to both the medium and small industries. A significantly smaller sample of 176 manufacturing establishments resulted (which included supplementation by reference to the URA "largest taxpayers" and local knowledge).

34.   An annual review of the sample of establishments should be undertaken to enable the introduction of new businesses or existing ones that that have expanded, and the removal of establishments that have contracted. This can be undertaken by reference to the Uganda Business Register.

35.   In terms of the representativeness of the product samples from each establishment in the PPS, a question should be included on the form, after the question about reasons for any price change, confirming the representativeness of the products: e.g., "Are these products still representative volume sellers?" This question should be

asked during each month's field collection, and replacement products selected as necessary, for splicing into the index compilation system.

Price collection initialization

36.   There was a significant delay in commencing the initialization interviewing program, originally scheduled for completion by the end of September 2013. Cuts in corporate funding meant that resources were only able to be allocated for the initialization project to commence in mid-June 2014. To date, only about one third of the interviews have been conducted and the program needs to be rescheduled and relate to the revised sample of establishments.

37.   The experience to date with the program of initialization interviews suggest that there is scope for streamlining the interviewing procedures. Also, some of the establishments could not be located (presumably because they have changed their address and UBOS records are not up-to-date) and some of the major "manufacturers" (e.g., of meat products) were in fact wholesalers not producers (i.e., they have been incorrectly classified).

38.   A revised program of initialization interviews will be developed taking account of the interviewing experience to date, the revised sample of establishments and a review of the approach to the conduct of the interviews.

39.   The mission assessed the adequacy of a sample of the product specification descriptions obtained during the initialization interviews to date and was satisfied that they would support pricing to constant quality.

40.   Paragraphs 58 to 62 of the June 2013 mission report describe the main steps involved in price collection initialization and the pricing principles, while Appendices IV, V, VI and VII of that report provided detailed supporting documentation.

IV. SERVICEABILITY

A. Periodicity and Timeliness

Periodicity and span of the indices

41.   UBOS has taken the decision to conduct the PPS with a monthly periodicity and frequency. The pricing point will be at the 15th of the month (or the closest previous day on which there was a transaction). The main reason for this decision is to support the UBOS goal of subscribing to the IMF Special Data Dissemination Service (SDDS). Further, the aim is to disseminate the new index on a very timely basis (ideally prior to the release of the CPI) to support its role as a forward-looking indicator for inflation analysis. This will also serve National Accounts needs. Annual indices will be calculated as the simple average of the monthly indices.

42.   During the initialization interviews conducted to date, retrospective monthly prices were collected from March 2013 to March 2014. Shortly it will be necessary to update the price collection from those establishments that have been interviewed and, for those yet to be interviewed, seek more recent prices during the interview.

Publication goals and dissemination policy

43.   It is important that, as a minimum, separate indices are published for total sales, and total sales excluding exports. For total sales, indices at a broad industry dimension should be published, i.e., at least at the 2-digit Division level of ISIC.

44.   If user demand for the compilation of separate exports, and local sales, indices by industry is confirmed (see paragraphs 25–27 above) then, as well as total sales by 2-digit ISIC Division, exports and local sales indices by 2-digit ISIC Division (and higher level aggregations) should also be published.

45.   It is planned to initially compile and publish monthly indices commencing with April 2013, linked as far as possible to the current index, at least in total and at a broad industry level. A broad dissemination plan was discussed.

46.   After a time series has been built up, the index should be re-referenced to a calendar year and ultimately the PPI, CPI and national accounts should be coordinated on a common reference base period.

Training

47.   Comprehensive training was provided on price index concepts and compilation methodology, and price survey initialization and ongoing collection techniques to ensure there was capacity within the office. Particular emphasis was placed on "splicing" to enable the establishment and product samples to be updated without causing a break in the index series, and linking of index series on different time reference periods.

EXPORT AND IMPORT PRICE INDICES

V. STATISTICS PREREQUISITES

48.   In relation to the compilation of the XMPI, a broad strategy was developed for programming to be undertaken to modify and improve the current PPI spreadsheet processing system so that it has the required functionality for the XMPI, as well as the new PPI.

49.   The new XMPI will be hybrid indices using a combination of data sources for the price indicators; Customs unit values for the more homogeneous commodities and survey-based prices for other commodities obtained through XMPS.

50.   Ideally, the XMPS would be implemented through the funding of an intensive program of initialization interviews conducted over a short period of time (say 1–2 months), including the collection of retrospective prices back to the selected time

reference period, to supplement the Customs unit values for the more homogeneous items, and hybrid indices compiled as soon as possible.

51.   If funding is not available for such an intensive interview program, then it may need to be implemented progressively over an extended period. This latter approach has the disadvantage that, as one moves further away from the selected time reference period, it is less practicable to obtain retrospective quarterly prices from importers (and exporters) back to the preferred reference period. Consequently, this may force the selection of a very recent reference period and prevent the compilation of a reasonable time series of index numbers in the short term.

52.   In order to make as much progress as possible in relation to all the phases of index construction during the period of the mission, the focus was placed on the development of an MPI; as such, the documentation relates to imports. The same techniques, principles and procedures will be required to develop an XPI. Experience has shown that the development and maintenance of an MPI is much more complex than an XPI. For example, there is a much larger range of commodities imported than exported, imports tend to be more heterogeneous making the use of unit values less viable, and the pattern of imports is more variable than that of exports and can be more "lumpy."

VI. ACCURACY AND RELIABILITY

A. Statistical Techniques

Conceptual basis

53.   The XMPI will relate to actual transaction prices for exports, and imports, of merchandise trade. The pricing point for the XPI is Free on Board (FOB), and Cost Insurance and Freight (CIF) for the MPI.

Reference base period

54.   The selection of the time reference period for the MPI will be influenced, in part, by the timetable for the implementation of the MPS. While retrospective quarterly commodity unit values are readily available from the Customs system, for the commodities for which survey-based prices are required, it will not be viable to obtain retrospective prices for an extended period (perhaps no more than 4 or 5 quarters), thus limiting the choice of the time reference period to a relatively recent period.

55.   The feasibility of obtaining annual average prices for a recent year to serve as the reference period prices was considered. 2012 has been tentatively selected as the time reference period for the XMPI, though this may need to be changed in the light of the resource situation and the timeframe for the conduct of the initialization interviews. Note that a common reference period is required for the XPI and MPI to facilitate the ready calculation of the Terms of Trade (TOT).

Aggregation formula and compilation methodology

56.   For the compilation of the MPI and XPI, the EA indices will be at the 8-digit level of the HS. As such, unweighted indices will be calculated using the Jevons price index formula, i.e., the ratio of the unweighted price indicators (which will be either survey-based prices or Customs unit values for selected countries or all countries combined). As for the PPI, an unweighted EA formula has been selected because it would not be feasible to maintain the lower level product and establishment weights on a continuous basis.

57.   Then, the EA indices will be aggregated with fixed weights using the Laspeyres formula. The methodology for the calculation of the weights is described in paragraphs. 63–69 below.

58.   A considerable amount of time was spent with XMPI staff on explaining the functionality of the proposed processing system. To ensure there was a clear understanding of the compilation processes, a partial compilation of the MPI was undertaken at all levels of aggregation using Excel spreadsheets.

Weighting base period and frequency of rebasing

59.   A range of time series of annual import patterns was analyzed.

60.   Firstly, the percentage distributions of import values between the 2-digit HS Chapters for each year from 2009 to 2013 were examined. It was found that there was not a clear trend in the pattern of commodity distribution with the relative contribution of different Chapters to total imports fluctuating from year-to-year. Because of the fluctuations, and lack of a clear trend, it was decided to consider smoothing the weights by using averages from more than one year.

61.   Next, the percentage distribution between Chapters was calculated for the average of the three years 2011 to 2013, and the average of the five years 2009 to 2013, and a comparison made of the distribution of the 3-yearly average, the 5-yearly average, and each of the individual years. On balance, it was agreed that the 3-year average was the most credible distribution and judged that it was likely to be broadly representative of import trading patterns over the next few years.

62.   Then, the structure, composition and weighting pattern were derived for the MPI using smoothed import values over the years 2011 to 2013.

Methodology for determining the structure, composition and weighting patterns of the indices

63.   Firstly, the annual HS Chapter import values for 2011 to 2013 were aggregated. Then, a top-down approach was taken in the determination of the index structure and composition and the allocation of the weights. The aim was to maximize the indirect representation of un-priced items in the index, through a chain of representation.

64.   The following steps were applied, using the total value of imports over 2011 to 2013 as the control aggregate:

Step 1: The major 2-digit HS Chapters contributing to the total value of imports, in terms of the sum of the values for the years 2011 to 2013, were selected for direct inclusion in the index. The general business rule applied was to aim to achieve around 80 percent or more direct coverage, depending on the degree of concentration. In reality, all Chapters contributing 1.0 percent or more to total imports were initially selected. Then, the full value of total imports was prorated amongst the selected Chapters. This process resulted in the selection of 19 HS Chapters out of the total of 96. That is, the high degree of concentration of imports at this level of aggregation meant that 19 Chapters accounted for some 86 percent of the total value of imports over the period 2011 to 2013. The table below shows the selected 2-digit items, in size order, and the cumulative percentage of total imports over the period.

HS Chapter		%	Cumulative %
27	Mineral fuels, etc.	23.0	23.0
84	Boilers, machinery, etc.	9.3	32.3
87	Vehicles	9.0	41.3
85	Electrical machinery	8.1	49.5
30	Pharmaceuticals	4.9	54.4
72	Iron and steel	4.3	58.7
15	Fats and oils	4.2	62.9
39	Plastics	4.0	66.9
10	Cereals	2.5	69.4
17	Sugars	2.5	71.9
25	Salt, cement, etc.	2.2	74.1
48	Paper	2.1	76.2
90	Precision instruments	1.8	78.0
63	Other textiles, etc.	1.6	79.6
38	Miscellaneous chemicals	1.4	81.0
22	Beverages	1.2	82.5
73	Articles of iron and steel	1.2	83.7
40	Rubber	1.1	84.8
33	Essential oils	1.1	85.9

Step 2: The process was repeated at the 4-digit Heading level of the HS, selecting the major 4-digit items from each of the selected 2-digit items from Step 1, again aiming for some 80 percent coverage. The process resulted in the selection of 63 items at the 4-digit level. Then, the full adjusted 2-digit values from Step 1 were prorated amongst their selected 4-digit items (i.e., the adjusted 2-digit level values were used as control totals for their respective, selected 4-digit codes).

Step 3: The process was repeated at the 8-digit Commodity level of the HS, selecting the dominant 8-digit items from each of the selected 4-digit items from Step 2, again aiming at high coverage. 151 8-digit items were selected. Then, again the full (adjusted) 4-digit values from Step 2 were used as control totals and prorated amongst their selected 8-digit items.

65.   The result of these processes was the derivation of the structure and composition (the basket) of the MPI and the relative values within the 2-digit, 4-digit and 8-digit hierarchical structure, which form the basis for the fixed weighting pattern. A check at the end of the process confirmed that the total value of the 151 adjusted 8-digit HS items equaled the total value of imports over the period; that is, no values were left "floating."

66.   The rationale for this approach is that the prices of unpriced (not directly represented in the index) items are more likely to move in line with those of similar items (directly represented in the index by price indicators) than to dissimilar items. In general, similar items are grouped together within the classification structure, thus supporting the top-down allocation process described above.

67.   Then, at successive levels, the values at each 8-digit, 4-digit and 2-digit level in the index structure form the weighting pattern for the index construction. All the spreadsheets used for the derivation of the weighting patterns are held by UBOS. For presentation purposes, the weights should be calculated in percentage terms.

68.   In summary, the application of this cut-off approach to sampling achieved both high coverage and high representation of all import transactions in the period, and resulted in the selection of 151 8-digit HS items for pricing (i.e., the index basket). As a check on the accuracy of the calculations, it was verified that the sum of the 151 adjusted (i.e., scaled) 8-digit HS commodities exactly equaled the total value of imports.

69.   This process will be repeated by UBOS for the XPI. Because of the relative trading patterns of imports and exports, a much smaller sample of items will be selected at each HS level for the XPI.

B. Source Data

Price indicators

70.   The next step is to obtain price indicators for each of the selected 8-digit import items. The plan is to use Customs unit values for relatively homogeneous items, whose quarter-to-quarter unit value variations are credible measures of pure price change, and not dominated by shifts in compositional mix.

71.   For the non-homogeneous items, with non-credible unit value patterns, it will be necessary to obtain transaction prices through a quarterly MPS.

72.   Experience has shown that the data quality associated with the use of unit values is potentially improved if country mix is eliminated from the 8-digit unit values, i.e., if individual country unit values are used as the price indicators or, at least outlier countries are removed.

73.   The quarterly unit values for each of the 151 selected HS items were analyzed over the three years 2011 to 2013, and an initial assessment made as to the suitability of

each unit value series as a price indicator. In some cases the smoothing of a few quarters' outlier values greatly improved the credibility of the series.

74.   Then the exercise was repeated by assessing individual country of origin unit values. For some commodities that were initially designated as not suitable, either the selection of unit values for major country/countries of origin, or the removal of outlier country data, rendered the Customs data as suitable, and thus reducing the dependence on price survey data.

75.   The end result of this process was that of the 151 8-digit HS selected for inclusion in the MPI, 45 were designated as having credible price indicators and 106 required survey-based price indicators.

76.   This outcome reflected the dominance of sophisticated machinery and equipment in the import pattern, apart from Mineral fuels (Chapter 27). In particular, Chapter 84 Boilers, Machinery etc., Chapter 87 Vehicles and Chapter 85 Electrical equipment contained 80 of the 106 8-digit commodities selected for the MPS.

77.   Next, a sample of importers needs to be selected from Customs data for each of the 106 HS commodities in the MPS.

78.   A combination of cut-off and judgmental sampling procedures are to be applied. The broad business rules to be applied are:

   (i).   at least two importers are required for each commodity, if possible;
   (ii).   ideally, significant coverage (in value terms) should be achieved, i.e., greater than 50 percent if feasible, particularly for large commodities;
   (iii). if very low concentration, i.e., dominated by a large number of small importers, then select the largest importer then apply a skip interval to select a small, representative sample of small importers;
   (iv).   priority should be given to achieving good coverage and representation of the high value commodities; and
   (v).   or relatively small commodities with low concentration, delete the 8-digit item from the regimen and pro-rate its weight amongst the remaining 8-digit items in the 4-digit Heading.

79.   This sample of importers should now be reviewed in the light of general industry knowledge to ensure it is a comprehensive and representative sample of current trading activity.

80.   An annual review of the sample of importers should be undertaken to enable the introduction of new importers or existing ones that have expanded, and the removal of importers who have contracted.

Price collection initialization/review

81.　To establish direct price collections from major importers (and then exporters), the principles to be applied in the selection of samples of specific products for quarterly price collection are:

(i).　the sampled products are to be representative of a wider range of products in terms of price change over time;

(ii).　they will usually be the importers' largest imports by value;

(iii).　for workload reasons, a manageable number of products (say, restricted to 3 or 4, if possible) should be selected to represent an 8-digit HS item from each importer, especially if an importer has been selected for a large number of items; and

(iv).　in order to price to constant quality over time, and reflect pure price change, full specification of all the price-determining characteristics of the physical product, unit of quantity and transaction details such as the country of origin and the currency of the transaction are required. Note that prices are to be converted in the office to Ugandan Shillings for index compilation.

82.　The following documentation, to support the initialization of direct price collection from samples of importers is contained in appendices to this report. Note that they were prepared in consultation with other countries and should be modified to reflect Ugandan conditions:

(i).　Appendix III presents "MPS Field Interviewers' Instructions," aimed at guiding a field interview program and ongoing price collection;

(ii).　Appendix IV contains an "Introductory Letter to Importers;"

(iii).　Appendix V provides an "MPS Interview Guide" for use during the interview to ensure every topic is covered and to record product and price details; and

(iv).　Appendix VI contains an "Example of a Generic MPS Questionnaire" which should be modified to UBOS standards and used as the basis for the design of the tailored forms.

83.　The main steps involved are:

(i).　contacting each importer to arrange an interview;

(ii).　conducting the interviews. The selected importers need to be interviewed to initialize the ongoing collection. The Field Interviewers' Instructions explain the need to select, for each importer, some three or four (as a general rule of thumb) detailed representative product specifications for each 8-digit code that are suitable for repeat pricing. The interviewer needs to ensure that all the price-determining characteristics of each product are fully specified;

(iii).　undertaking follow-up action, including re-interviews, as necessary;

(iv).　creating a tailored collection form for each importer;

(v).　on an ongoing quarterly basis, delivering the tailored collection forms, undertaking collection control and editing and querying the prices;

(vi). the representativeness of the sample of products should be regularly
confirmed with each importer and updated as necessary; and

(vii). loading the prices (after converting to Shillings) and compiling the indices.

VII. SERVICEABILITY

A. Periodicity and Timeliness

Periodicity and span of the indices

84.   It is proposed that 2012 based XMPI be compiled quarterly from March 2012
and subsequently annually.

Publication goals and dissemination policy

85.   The goal is to publish indices at the 2-digit HS Chapter level together with total
indices, subject to analysis of the data.

86.   Annual and quarterly indexes down to the 8-digit level should be provided to
National Accounts on an as-needs basis, with any necessary caveats.

Five-yearly index rebases

87.   The indices should be fully rebased at least each five years. Each year, the
pattern of imports and exports should be monitored to assess whether significant changes
in trend indicate that rebasing should be undertaken as soon as possible, rather than wait
for five years.

Training

88.   Training on price index concepts and methodology and price collection
initialization and compilation was provided to staff (see Appendix VII). In particular,
emphasis was placed on aspects such as pricing principles (constant quality, transaction
prices, product sampling) and index aggregation processes such as the derivation of EA
indexes, and the application of base weights to calculate indices at higher levels of
aggregation.

Work program

89.   A work program for the development of the indices is provided in Appendix II.
The target completion dates are contingent upon the availability of resources. Because of
the commitment of staff to the conduct of the Population Census, further progress on the
MPI project will be delayed until September 2014.

APPENDIX I: PPI PROJECT TASKS AND TIMETABLE

2014		
1.	Continue the ongoing PPS collection and PPI compilation and publication	ongoing
2.	Consult further with major users on the need for separate exports and local usage tables by industry	end-July
3.	Finalize the new sample of establishments (including rationalizing with the old sample)	end-July
4.	Review the interviewing strategy	end-July
5.	Re-schedule and prioritize the interview program	end-July
6.	Commence interviewing program	beg-Aug
7.	Amend, upgrade and test the PPI processing system	end-Aug*
8.	Commence liaison with Agriculture Directorate	end-Aug
9.	Finalize the new index structure and weights, incl. credibility checks and rationalization of major shifts from the old weighting pattern	end-Sep
10.	If separate exports and local sales tables are needed: – 10.1 derive separate weights, and – 10.2 amend processing system	end-Sep*
11.	Complete the interview program for the new PPS sample and create tailored collection forms	end-Oct*
12.	Conduct the monthly PPS	ongoing
2015		
13.	Compile the new monthly PPI and commence publication for the period April 2013 to February 2015	end-Mar

* Benchmark Actions prior to any further TA on the topic

APPENDIX II: XMPI PROJECT TASKS AND TIMETABLE

2014		
1.	Review MPI structure and weights	end-Sep
2.	Review processing system	end-Sep
3.	Compile Customs-based MPI	end-Sep*
4.	Finalize MPS commodities	end-Oct
5.	Select MPS sample of importers	end-Oct
6.	Finalize survey strategy including collection form	end-Oct
7.	Prepare budget and work plan	end-Oct
8.	Train field staff	end-Nov
9.	Pilot survey	end-Nov
2015		
10.	Conduct program of field interviews	end-Jan*
11.	Replace Customs unit values with survey prices	end-Feb*
12.	Recompile MPI	end-Feb
13.	Progressively repeat above for XPI	end-Mar
14.	Analyze results and develop dissemination strategy	end-Apr
15.	Compile TOT	end-Apr
16.	Ongoing compilation	ongoing

*Benchmark Actions prior to any further TA on the topic

APPENDIX III: MPS FIELD INTERVIEWERS INSTRUCTIONS

INITIAL CONTACT

1.   Send an introductory letter to each selected importer providing a brief summary of the background to the collection and the data requirements (see paragraph 4 below).

2.   For the selected importers, each interviewer should enter as many of the identification details as possible, i.e., business name, address, etc. on an Interview Guide.

3.   Enter the 8-digit HS code(s) and description(s).

TELEPHONE CONTACT

4.   Try to ring an appropriate person at the company. Ask to speak to someone who handles import documentation and explain that we are interested in prices of imported products. Once the right contact has come to the phone, the interviewer should briefly explain the new Import Price Survey as follows:

"The National Bureau of Statistics (NBS) is conducting an import price survey to collect selected product price data from a sample of importers in Tanzania. The workload will be kept to a minimum and prices for a small number of representative, specific products will be requested each quarter. The prices will be consolidated to build MPIs at a broad product level. The price indexes will be used to support inflation management (as they provide up-stream signals of inflationary pressures which can be expected to flow through to households and/or businesses), compile national accounts volume statistics for Tanzania and derive Terms of Trade estimates for the analysis of trade performance and net overseas income. All individual information for each company will be kept strictly confidential as required by law. Only consolidated price index data will be released. The survey is being conducted under the authority of the Statistics Act 2002 and the NBS is seeking your cooperation in the collection of the information needed."

5.   Having explained the above, the interviewer should make an appointment within the next seven days to explain more fully the data to be collected, agree on the products to be priced, and initialize a quarterly mail collection.

INTERVIEW

6.   In the interview, explain the following:

6.1.   The purpose of the new collection – i.e., to help policy makers manage inflation by providing up-stream signals of inflationary pressures, compile national accounts volume estimates and calculate the Terms of Trade for the analysis of trade performance and net overseas income. Explain the nature of MPI data and how it relates to a CPI. That is, as an earlier pricing point in the chain of supply and usage.

6.2.   The scope of the MPI. Initially it will relate to a selection of major items of merchandise trade.

6.3.   Explain the approach to sampling, i.e., the need to selection a small sample of representative specific products (as a rule of thumb, up to three for each 8-digit HS code) from individual importers to provide indicators of price change over time for the importer's broader product range. The products should usually be the company's largest imports in value terms. Give a specific example in the context of the particular company's commodity.

6.4.   Emphasis the importance of tightly specifying all the characteristics of the selected products which influence price – e.g., make, model, size, quality, technical specifications, etc.

6.5.   There is a need to include the unit of quantity, the size lot, and the country/countries of origin. This is to ensure that we obtain fully comparable prices from quarter to quarter and aren't picking up "false" price changes associated with non-comparability. That is, we are measuring pure price change.

PRODUCT PRICES

7.   The following issues relate to the product pricing:

7.1.   Prices recorded must be actual transaction prices, valued on a CIF basis (i.e., inclusive of overseas freight and insurance).

7.2.   Preferably, prices should be as at the 15th of the middle month of the quarter, or the nearest previous trading day (if a holiday).

7.3.   If shipments are infrequent select a shipment for a day as close as possible, but prior to, the 15th of the middle month of the quarter.

7.4.   Seek to obtain prices for the selected products as at the 15th of the middle month of the previous quarter during the interview.

7.5.   Sort out the logistics for the ongoing quarterly collection, confirm contact details, and advise that there may be telephone queries to confirm price changes/obtain reasons, etc. Confirm that the person interviewed is the person who will be filling out the form and is the appropriate person to handle queries.

7.6.   Undertake follow-up action/re-interviewing as necessary.

7.7.   Create a tailored form for each importer.

7.8.   Send out a form for final clearance, explaining that it won't be necessary to report prices until the next quarter (assuming prices for the previous quarter were obtained during the interview).

7.9   Deliver the form each quarter for price collection as arranged with the importer.

APPENDIX IV: INTRODUCTORY LETTER TO IMPORTERS

Dear Sir/Madam,

Quarterly Survey of Import Prices

The National Bureau of Statistics (NBS) is commencing a quarterly import price survey. The prices collected will be used to compile MPIs for a selection of major commodities, which will measure the quarter-to-quarter changes in the prices of imports of these commodities into Tanzania. The indexes will be used for economic analysis and policy purposes and to support the compilation of national accounts volume estimates and the calculation of the Terms of Trade.

A sample of importers has been selected to provide CIF prices for a small selection of representative, specific products once a quarter. The workload will be kept to minimum. Since you are a significant importer, we would appreciate your contributing to this survey.

All information collected for each company will be kept strictly confidential as required by law. Only consolidated price indexes will be released, showing changes in prices for broad categories of commodities.

An NBS officer will shortly contact you by telephone to arrange an appointment to come to your office to explain our requirements more fully. We would like to work with you to select a small number of representative products for quarterly pricing, if possible obtain the CIF prices for these products as at (or close to) the 15th of May 2012, and arrange to commence a regular quarterly collection.

The information will be collected under the authority of the Statistics Act 2002 and will remain confidential to the NBS.

Thank you for your co-operation.

Yours sincerely,

Director General
National Bureau of Statistics

APPENDIX V: INTERVIEW GUIDE

SURVEY OF IMPORT PRICES

Company name: Code:
Address:

Contact name:
Phone:
Email:

A. Introduction

(i) The NSB is commencing a quarterly survey of import prices in order to compile MPIs for selected major imports into Tanzania.

(ii) The indexes will be used for inflation management purposes – it will provide early warning signs of inflationary pressures on the local economy – support the compilation of national accounts volume statistics and the calculation of the Terms of Trade.

(iii) The index will measure quarter-to-quarter changes in the import prices (not the actual price levels, e.g., TZS) of the selected commodities imported.

(iv) Prices will be requested once a quarter (as at the middle of the middle month of each quarter) from a sample of importing companies. Each company will be asked to report CIF (landed) prices for a small number of specific products that are representative of their wider range of products.

(v) The reporting workload will be kept to a minimum.

(vi) The information will be collected under the authority of the Statistics Act 2002 and information relating to an individual company is strictly confidential.

(vii) Only consolidated price indexes showing changes in prices of broad categories of commodities will be released.

(viii) Do you have any questions about the survey?

B. Comments

C. The following is the approach to the sampling of products.

(i) We have selected your company to provide prices relating to the following Harmonized System codes:

No.   Code   HS description
1.
2.
3.
4.
5.

(ii) For each of these 8-digit codes, we would like to work with you to select a small number of specific products from your product range to represent the price change in your broader product range.

(iii) The products are usually the company's largest imports in value terms.

(iv) It is essential that we price identical products over time – therefore the products need to be fully described so that all the characteristics of the product that influence its price are specified (make, model, variety, grade, size, etc.).

(v) For consistency, the main country/countries of origin need/s to be specified.

(vi) Also the unit of quantity (per Kg, tonne, packet, 100, etc.), and the currency of the transaction.

D. Product selection and specification

No.   Code   Product description   Country Unit Currency Price
1.

2.

3.

4.

E. The prices.

(i) CIF prices are required, in the currency of the transaction (to be converted to TZS in the office).

(ii) We would like to obtain prices as at the 15th of the middle month each quarter (i.e., 15th of February, May, August, and November).

(iii) If the 15th is not a trading day, or there are no shipments on that day, please report for the shipment closest, and prior, to that date.

(iv) Could you now provide us with prices for these products as at (or as close as possible prior to) 15 ……… 2012.

F. Confirm arrangements for the ongoing collection.

(i) Explain that a customized/tailored form will be designed for the establishment containing their product descriptions, unit of quantity, etc. This form will be delivered in the middle of each quarter for completion and subsequent collection as possible.

(ii) Advise that you will design the tailored form and send it to you for clearance. If prices are not provided at the interview for 15 …….2012, they will be requested on the form. If they are provided, they will next be requested on the 15 ……..2012 form.

(iii) If prices are provided at the interview, then they don't need to enter them on the form.

APPENDIX VI: EXAMPLE OF A GENERIC MPS QUESTIONNAIRE

The United Republic of Tanzania
Ministry of Finance
National Bureau of Statistics

Quarterly Survey of Import Prices

PART A: Identification of Establishment

_____

_____

PURPOSE: The prices collected in this survey are used to calculate the MPI, which measures changes in prices of import into Tanzania.

COLLECTION AUTHORITY: The information asked for is collected under the authority of the Statistic Act 2002. In accordance with this Act you are required to complete the questionnaire and return it to the undersigned by the due date. The data reported on this questionnaire will be treated in strict confidence, used for statistical purposes only.

CONFIDENTIALITY OF INFORMATION: Your completed form remains confidential to the National Bureau of Statistics.

HELP AVAILABLE: If you have problems completing this form, or feel you may have difficulties in meeting the due date, please contact:

Instructions:

1. In the table below, please record import prices (CIF) per unit in terms of currency of the transaction (e.g., USD, TZS, Euro, etc.).

2. Import prices recorded should be the actual prices paid for a shipment on the 15th of the middle month of the Quarter, e.g., 15th of May for the June quarter. If this is not feasible, prices for a shipment as close as possible, but prior to the 15th of the middle month of the specified quarter, should be recorded.

IMPORT PRICES (CIF)   **Quarter..............................**

HS Code	No.	Full description of items imported	Unit of Quantity (eg. kg, litres, etc.)	Country of origin	Currency of transaction (e.g.USD, TZS, Euro, etc.)	CIF Import Price per unit as at 15th of the month
	01.					
	02.					
	03.					
	04.					
	05.					
	06.					

Yes	No

1. Have the prices of these products changed since the previous quarter?

    If YES, please provide reason(s) for the change(s)?

_____

_____

_____

Name ……………………………..   Title ………………………
Telephone ………………………..   Mobile ……………………………
Email: Signature…………………………
                                             Date……………………………….

THANK YOU FOR YOUR COOPERATION

APPENDIX VII: PPI/XMPI TRAINING PROGRAM

Concepts and methods

1. Documentation
        Mission report
        Ten Steps in PP/TPI (XPI and MPI) Development
        PPI Technical Notes
        Long Term System of Price Indices

2. International XMPI and PPI Manual

3. What a price index does and doesn't measure
        Price movements over time, not levels
        Movements within a geographic area over time
        Temporal (over time) v. spatial (space/location at a point in time) indexes
        International Comparisons Program (ICP)

4. Confidentiality
        Statistics law
        Index nos. not prices
        Broad aggregates
        Publication rules

5. Main elements of a price index
        Time reference period (= 100 or 100.0)
        Arithmetically re-referencing an index (scale, i.e. apply a factor of "100/value of original index in the new reference period" to the time series)
        Prices
            Samples as indicators of a broader range of products
            Market transaction prices
        Collect levels to derive movements/changes over time
        Index structure and regimen (items)
        Weighting base period
        Weights

6. System of PPI, CPI, XPI, MPI – system of production and distribution flows

7. Pricing points

        Output indices
           o selling prices
           o ex-factory, ex-farm, etc.,

   o valuation basis – "basic prices" excluding trade and transport margins and product taxes

  Input indices
   o purchasers' prices
   o valuation basis "purchasers' prices" including trade and transport margins and product taxes

Note that there is an overlap between a CPI and a PPI in terms of householders' transactions in consumer services (e.g., transport, accommodation, business services)

8. Relationship between a CPI, PPI, MPI and XPI
  - PPI and MPI can provide early warning signs of impending downstream household inflation, i.e., upstream signals
  - note consumer goods v. capital goods
  - leakage of exports from domestic system/economy
  - entry of imports into domestic system/economy

9. Analytical value of an MPI and XPI

10. Ten Steps in PPI Development

11. Pricing principles
  Constant quality, quality adjustment
  Specification pricing – product and transaction specs. – transaction pricing
  Transaction prices – include discounts for volume, customer/market, supply and demand
  Don't want "list" or "book" prices – only the starting point in deriving transaction prices

12. Model pricing of unique products
  Refer PPI Technical Notes

13. Sampling - See Technical Notes
   -items for direct pricing
   - establishments
   - products for repeat pricing

14. MPI and XPI objectives, scope and conceptual basis

15. Editing and analysis – see Technical Notes

16. Publication goals

17. Coverage, classification, structure and weighting pattern