FOR INFORMATION

FO/DIS/17/146

September 14, 2017

To: Members of the Executive Board

From: The Secretary

Subject: **Uganda—Technical Assistance Report—Report on the Prices Statistics Mission 2015—May 4–22, 2015**

Board Action:	Executive Directors' **information**
Publication:	Yes, after Thursday, September 21, 2017
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INTERNATIONAL MONETARY FUND

Statistics Department

UGANDA

REPORT ON THE PRICES STATISTICS MISSION

May 4–22, 2015

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July 2015

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ACRONYMS

CIPI	Construction inputs price index
EA	Elementary aggregate
H&R PPI	Hotels and restaurants producer price index
H&R PPS	Hotels and restaurants producer price survey
HS	Harmonized System of Tariffs and Trade
ISIC	International Standard Industrial Classification of all Economic Activities
KNBS	Kenya National Bureau of Statistics
MPI	Import price index
MPS	Import price survey
NISR	National Institute of Statistics Rwanda
PPI	Producer price index
PPI-M	Producer price index – Manufacturing
PPS	Producer price survey
TA	Technical assistance
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 and in consultation with the IMF's African Department, I undertook a technical assistance mission to Kampala during the period May 4–22, 2015 to provide advice in relation to developing export and import price indices (XMPI) and rebasing the construction industry price index (CIPI) and the hotels and restaurants producer price index (H&R PPI).

Important aspects for the mission to address included the following: (1) review of the import price index (MPI) commodity selection criteria and compilation methodology; (2) development of the Import Price Survey (MPS) and Export Price Survey (XPS) methodology; (3) development of the methodology for integrating MPS and XPS data with Customs data; (4) finalization of the XMPI compilation procedures, including imputation of missing prices; (5) determination of the strategy for the rebase of the CIPI and H&R PPI; (6) training of staff on the above; and (7) preparation of documentation on methodological and computational procedures.

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

The survey methodology was determined covering the form design, selection of the sample of importers, conduct of the initialization interviews, and the selection of samples of representative, specific products for regular pricing. Detailed documentation was provided.

A prototype of an Excel-based compilation system was prepared, which will form the basis for the development of an operational system of spreadsheets for the ongoing quarterly compilation of the MPI and the export price index.

It is now planned to commence the MPS through a program of initialization interviews conducted over the period mid-July to end-September 2015, including the collection of retrospective quarterly prices back to June quarter 2013 to supplement the Customs unit values for the more homogeneous commodities, and hybrid indices compiled as soon as practical on a reference base of 2009.

In relation to the CIPI rebase, consultation with key stakeholders is required in order to determine the most appropriate data sources for (1) price indicators for materials, labor, and leasing charges; and (2) the derivation of representative industry and commodity weights.

The scope of the CIPI needs to be reviewed. The scope of Civil Works should be extended to include additional activities, such as the generation and distribution of electricity and gas.

The H&R PPI rebase will firstly involve the redesign of the price survey including the collection form for the ongoing price collection, and a form for the initial collection of commodity sales values for a recent year to support the derivation of commodity weights.

A sample of hotels and restaurants needs to be selected for the major International Standard Industrial Classification classes, based on Uganda Business Inquiry gross output data by establishment, using a combination of cut-off sampling and the application of a skip interval to randomly select a sample of the smaller establishments.

Initialization interviews are required to establish the ongoing price collection, and obtain a recent year's commodity sales data on a one-off basis to support the calculation of industry and commodity weights, and the ongoing compilation of the rebased index and publication of long-term linked series.

A short summary of progress on the rebase of producer price index – manufacturing is presented, and the tasks required to be completed before the new index can be published were identified. Additional technical assistance was provided, particularly in relation to linking the new and old indices to provide long-term series.

Work programs have been prepared for (1) the XMPI, including the programs of survey initialization interviews; and (2) the H&R PPI. A detailed itemization of the tasks and timetable for the rebase of the CIPI cannot be developed until the required investigations and consultations have been undertaken to determine the index scope and the optimum data sources for the index weights and price indicators.

Training was provided on price index concepts and compilation methodology, and price survey procedures.

I. INTRODUCTION

1. In response to a request from the authorities at the Uganda Bureau of Statistics (UBOS) and in consultation with the IMF's African Department, I undertook a technical assistance (TA) mission to Kampala during the period May 4–22, 2015 to provide advice in developing export and import price indices (XMPI) and rebasing the construction industry price index (CIPI) and hotels and restaurants producer price index (H&R PPI).

2. The conceptual basis for the new XMPI was confirmed. For the import price index (MPI), the index structure and weighting pattern derived during the previous mission were assessed as remaining representative of contemporary trading patterns.

3. The price indicators for the MPI will be a combination of quarterly Customs unit values for the relatively homogeneous Harmonized System of Tariffs and Trade (HS) commodities included in the index, and survey-based prices collected in the import price survey (MPS) for the more heterogeneous commodities.

4. The survey methodology was determined covering form design, selection of the sample of importers, conduct of the initialization interviews, and the selection of samples of representative, specific products for regular pricing. Detailed documentation was provided.

5. The MPS is scheduled to commence through a program of initialization interviews conducted over the period mid-July to end-September 2015, including the collection of retrospective quarterly prices back to June quarter 2013, and hybrid indices compiled as soon as practical.

6. The index compilation methodology for each index was determined and work initiated on developing an operational linked spreadsheet processing system, based on basic prototypes developed and discussed. The index HS based structure and weights for imports, and then exports, will need to be loaded onto the system.

7. A reference base period of 2009 was selected so that a sufficiently long time series of the new XMPI are compiled.

8. In order to rebase the CIPI, extensive consultation with key stakeholders first needs to be undertaken to determine the primary purpose basis of the index and formulate its conceptual basis (including its scope).

9. The most appropriate data sources for the price indicators for materials, labor, and leasing charges need to be identified. Then, the optimum data sources need to be determined for the derivation of representative industry and commodity weights.

10. Finally, the compilation methodology should be reviewed.

11. For the H&R PPI to be rebased, the price survey needs to be redesigned, including the collection form for the ongoing price collection, as well as a form for the initial collection of commodity sales values for a recent year to support the derivation of commodity weights.

12. A sample of hotels and restaurants needs to be selected for the major International Standard Industrial Classification (ISIC) classes, based on Uganda Business Inquiry (UBI) gross output data by establishment, using a combination of cut-off sampling and the application of a skip interval to randomly select a sample of the smaller establishments.

13. Initialization interviews are required to establish the ongoing price collection, and obtain a recent year's commodity sales data on a one-off basis.

14. Industry and commodity weights can then be calculated and loaded onto the spreadsheet system which will be based on the system designed for producer price index – manufacturing (PPI-M). Ongoing compilation of the rebased index can be undertaken and long-term linked series published.

15. To assist the authorities and counterparts, this report includes an executive summary on the main findings and recommendations. Section I provides an introductory overview of the XMPI, CIPI, and H&R PPI projects. The remainder of the report is split between XMPI, H&R PPI, and CIPI. 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. A short review of progress on PPI-M was undertaken and is summarized in the report. The project implementation plan for the XMPI is provided in Appendix I. Appendix II contains MPS field interviewers' instructions; Appendix III provides an example of an introductory letter to importers; Appendix IV has an MPS Interview Guide; and Appendix V contains an example of a generic MPS Questionnaire (as designed for Tanzania). Appendix VI contains the project implementation plan for the H&R PPI.

II. EXPORT AND IMPORT PRICE INDICES

A. Statistics Prerequisites

16. Limited progress has been made on the development of the XMPI as a result of the involvement of Trade Unit staff on the 2014 Population Census activities, as well as resource constraints. The program of initialization interviews for the MPS has not yet commenced.

17. In relation to the compilation of the MPI, basic Excel spreadsheet prototypes were used for a small sample of products for the following: (i) the calculation of price relatives for eight-digit HS commodities derived using the Jevons geometric mean formula; and (ii) the progressive aggregation to higher levels in the index structure through the application of fixed weights using the Laspeyres formula.

18. An operational system of linked spreadsheets now needs to be developed, based on these prototypes, to support the initial, and then the ongoing quarterly compilation of the MPI, and the export price index (XPI).

19. 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 the heterogeneous commodities, obtained through the export and import price survey.

20. It is planned to initiate the MPS through a program of initialization interviews conducted over the period mid-July to end-September 2015, including the collection of retrospective quarterly prices back to the June quarter 2013 to supplement the Customs unit values for the more homogeneous items,and hybrid indices compiled as soon as practical. It is not considered feasible to obtain retrospective prices over a longer period.

21. In order to make as much progress as possible on all the phases of index construction during the mission, the focus was placed on the development of an MPI, so the documentation in this report 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."

B. Accuracy and Reliability

Statistical techniques

Conceptual basis

22. The XMPI will relate to actual transaction prices for exports, and imports, of merchandise trade. The pricing point for the XPI is f.o.b. and c.i.f. for the MPI.

Reference base period

23. Careful consideration was given to the selection of the reference period for the indices. The most expedient approach would have been to select a fairly recent period (e.g., 2013–14 or 2014–15) so that retrospective quarterly prices could be fairly readily obtained back to the base period through the price surveys for those commodities for which Customs unit values are not credible price indicators.

24. However, in order to optimize the utility of the new indices, on balance it was decided to select 2009–10 as the time reference period in order to be consistent with other

economic indices and to provide a sufficiently long time series to support inflation analysis and national accounts deflation.

25. Therefore, for those commodities requiring survey prices, retrospective indices will be compiled based on a mixture of (i) back prices obtained during the initialization interviews (to June quarter 2013); and (ii) unit values for the period from June quarter 2013 back to September quarter 2009, adjusted to remove outliers and modified in the light of the survey price performance (see (i) above).

26. Note that a common reference period is required for the XPI and MPI to facilitate the ready calculation of the Terms of Trade.

Aggregation formula and compilation methodology

27. For the compilation of the MPI and XPI, the elementary aggregate (EA) indices will be at the eight-digit level of the HS. As such, unweighted indices will be calculated using the Jevons price index formula, that is, the geometric mean of the price indicators (which will be either survey-based prices or Customs unit values for selected countries, or all countries combined). 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.

28. 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 32–35 below.

Weighting base period and frequency of rebasing

29. During the previous mission, a range of time series of annual import patterns was analyzed. On balance, it was agreed that the three-year average for 2011–13 was the most credible distribution and judged that it was likely to be broadly representative of import trading patterns over the next few years.

30. Then, the structure, composition, and weighting pattern were derived for the MPI using smoothed import values over the years 2011–13.

31. During the current mission, it was decided to retain the results of this analysis for the compilation of the MPI. Consideration was given to updating the analysis to incorporate 2014 imports data; however, on balance, it was rejected because of problems with the 2014 Customs data associated with the change in the definition of c.i.f. to relate to the East African border rather than the Ugandan border.

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

32. Firstly, the annual HS Chapter import values were aggregated across the years 2011–13. 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 enable unpriced maximized items to be indirectly represented in the index through the allocation of their weights to those of similar priced items.

33. More details on the methodology for the derivation of the structure, composition, and weights is provided in the previous report.

34. The result of this analysis was the derivation of the structure and composition (the basket) of the MPI and the relative values within the two-digit, four-digit and eight-digit hierarchical structure, which form the basis for the fixed weighting pattern. One hundred and fifty-one eight-digit HS commodities were selected as the index basket.

35. 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 HS commodities will be required at each HS level for the XPI.

Source data

Price indicators

36. The next step will be to obtain price indicators for each of the selected eight-digit import commodities. The plan is 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.

37. For the non-homogeneous commodities, with noncredible unit value patterns, it will be necessary to obtain transaction prices through a quarterly MPS.

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

39. The quarterly unit values for each of the 151 selected HS commodities were analyzed over the three years 2011–13, 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.

40. 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 or smoothing of outlier country data rendered the Customs data suitable, and thus reduced the dependence on price survey data.

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

42. The trend in each of the unit value series for the 45 commodities selected to have unit value-based price indicators was analyzed over the period back to the March quarter 2009, and further smoothing of volatile series, or removal of particular country data, was undertaken. This work needs to be reviewed and finalized.

43. For the 106 commodities requiring survey prices, retrospective indices will be compiled based on a mixture of (i) back prices obtained during the initialization interviews (back to June quarter 2013) and (ii) unit values for the period from June quarter 2013 back to March quarter 2009, adjusted to remove outliers and smoothed and modified in the light of the survey price performance (see (i) above).

44. When unit values for a particular commodity are replaced with survey-based prices, it is necessary to link the unit value-based and survey-based EA commodity prices to form a continuous series. This requires the retrospective application of a factor calculated as the ratio of the survey-based EA price, and the unit value-based EA price, for a particular overlap quarter. The methodology for this process was explained during the mission.

45. Alternative methods of imputing missing observations were also covered (e.g., carry-forward, use movements in the prices of other related products from the same, or other, importers, or project the recent trend).

46. For the conduct of an MPS, a sample of importers needs to be selected from Customs data for each of the 106 HS commodities in the survey.

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

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. for relatively small commodities with low concentration, delete the eight-digit item from the regimen and pro-rate its weight amongs the remaining eight-digit items in the four-digit heading.

48. During the mission, the initial selection of the sample of importers was undertaken by Trade Unit staff. The result was the selection of about 500 importers; this is excessive, and the sample needs to be rigorously reviewed and cut back by at least 50 percent, preferably to less than 200 importers.

49. The review of the initial sample selection should include (i) removing importers where there is a large number for a HS commodity; (ii) aiming for lower coverage of the medium and small HS commodities; and (iii) eliminating small HS commodities that have no dominant importers and reallocating their weight on a prorated basis to other commodities in the same four-digit HS heading.

50. 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

51. 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 as follows:

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. if possible, they should be regularly imported;

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

v. 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 (U Sh) for index compilation.

52. 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 II presents "MPS Field Interviewers' Instructions," aimed at guiding a field interview program and ongoing price collection;

ii. Appendix III contains an "Introductory Letter to Importers;"

iii. Appendix IV 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 V 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.

53. 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 eight-digit HS 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, converting to Ugandan shillings, and compiling the indices.

C. Serviceability

Periodicity and timeliness

Periodicity and span of the indices

54. It is planned that 2009–10 based XMPI be compiled quarterly from September 2009, and annually from 2009–10.

Publication goals and dissemination policy

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

56. Annual and quarterly indices down to the eight-digit HS commodity level should be provided to national accounts on an as-needed basis, with any necessary additional comments about the data.

Five-yearly index rebases

57. The indices should be fully rebased at least every 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

58. Training on price index concepts and methodology and price collection initialization and compilation was provided to staff during the previous mission. During the current mission, aspects such as survey methodology, transaction pricing, product sampling and index aggregation processes, including the derivation of EA indices based on a both survey prices and unit values, and the application of base weights to calculate indices at higher levels of aggregation, were discussed.

Work program

59. A work program for the development of the indices is provided in Appendix I. With the completion of the 2014 Population Census, it is anticipated that funding and staff resources will be available to progress the XMPI project.

III. CONSTRUCTION INDUSTRY PRICE INDEX

A. Statistics Prerequisites

60. Once decisions have been made as to the data sources for the new index weights and the future price indicators following industry and government consultation, then a work program can be developed and resource requirements estimated. If it is decided that (i) a survey of the value of materials used by construction companies is required to derive the weights, and (ii) new monthly or quarterly surveys of material prices are required to obtain ongoing price indicators on the correct conceptual basis, then substantial financial and staff resources will be needed for the rebase.

B. Accuracy and Reliability

Statistical techniques

Conceptual basis

61. Key elements of the concepts were ratified. However, an assessment will need to be undertaken as to whether the producer price survey (PPS) prices relating to manufacturers' output prices (ex-factory) at *basic prices* are adequate price indicators for the required input prices at *purchasers' prices* required for the CIPI. Also, an analysis of whether the PPS prices relate to the appropriate transaction for the CIPI (i.e., who do construction companies purchase materials from and what is the pricing basis (e.g., ex-factory, ex-wholesaler)).

62. Similarly, the suitability of import prices on a c.i.f. basis as indicators of construction industry purchasers' prices needs to be assessed. If suitable, MPS prices could be used as the indicators.

63. Also, the scope of the index should be reviewed; in particular, what other major civil works should be included in addition to roads and water (e.g., electricity and gas generation and distribution).

Reference base period

64. This cannot be determined until the above issues relating to the future data sources for the weights and the price indicators are resolved.

Aggregation formula and compilation methodology

65. Price data from a range of sources is used to compile the "basic heading" indices each month (i.e., timber, paint, etc.). The main sources are EAs (compiled using the Jevons formula) from the producer price index (PPI), consumer price index, and External Trade Statistics. Prices of bitumen and diesel are collected directly from oil companies, and wages and equipment hire charges from construction companies.

66. Price relatives are calculated for the individual product prices collected from the oil companies and wages from construction companies and then aggregated to the basic heading level using the Jevons formula.

67. Subsequently, basic heading (or commodity) indices are aggregated to composite indices (i.e., indices for broad sectors of the overall construction industry (i.e., building and civil works)), and subcategories; see paragraph 72 for the current index structure and weighting pattern. The basic heading indices are weighted together using the modified Laspeyres formula.

Weighting base period and frequency of rebasing

68. The selection of the weighting base period for the rebased CIPI will depend upon the data source/sources to be used for the re-weighting (see below). In the future, the index should be rebased on the basis of every five years.

Methodology for determining the structure, composition, and weighting pattern of the index

69. The upper level weights for the present CIPI were calculated in 2007 using data provided by a range of organizations including the Ministry of Works and Transport and Road Agency Formation Unit investment/expenditure records for road projects, Kampala City Council building approval records for building construction, Directorate of Water Development and National Water and Sewerage Corporation records for water projects, and UBOS national accounts.

70. These weights are shown in Table 1 below.

Table 1. Current CIPI Structure and Weighting Pattern

Whole Sector (100%)				
All Buildings (80%)		Civil Works (20%)		
Residential (30%)	Nonresidential (50%)	Roads paved (10%)	Roads gravel (5%)	Water (5%)
Formal (15%)				
Own account (15%)				

Source: Ministry of Works and Transport and Road Agency Formation Unit, Uganda.

71. Separate weighting patterns were then derived for the basic headings (commodities) used in each of the types of construction works. These weights were derived from Bills of Quantities of a number of typical projects within each category. The quantities were multiplied by the prevailing prices at the time (2005–06). The Bills of Quantities were obtained from contractors, quantity surveyors, and contract committees in various government departments.

72. For the recalculation of the weights relating to a more recent and representative period for the planned rebase of the CIPI, careful consideration needs to be given to the methodology and the adequacy of the data sources used for the present index based on consultation with major users (see above).

73. During an IMF mission to Kenya in mid-2013 to provide TA on the rebase of their CIPI (previously known as the building materials price index), it was decided to conduct an input survey of construction contractors to obtain 2013 expenditure data on materials, labor,

and leasing of machinery and equipment to enable the calculation of detailed weighting patterns for each sector.

74. It is recommended that, assuming that the Kenya National Bureau of Statistics (KNBS) proceeded with the methodology proposed during the 2013 mission (which would need to first be confirmed with the KNBS), a study tour to the KNBS should be undertaken to evaluate their methodology, compare it with the previous UBOS methodology used for the derivation of weights, and learn from their experience before making a final decision on the methodology to adopt for the rebase.

75. During an IMF mission to Rwanda in March 2015, the National Institute of Statistics Rwanda (NISR) developed plans to develop a CIPI from first principles. The industry and commodity weights were to be derived from their annual Integrated Business Enterprise Survey, which collects information on revenue by type of project (residential, nonresidential and civil engineering) and expenses (hire of equipment, type of building materials, etc.). The plan was to cross classify the commodity and industry data to obtain the required weighting patterns. It is recommended that follow up be undertaken with the NISR to enquire about their experience, and a careful analysis be undertaken as to whether data on expenses are classified in sufficient detail in the Ugandan industrial surveys (UBI and Annual Business Inquiry) to support this exercise.

Source data

Price indicators

76. Currently, the main source of materials prices for the CIPI is basic prices (i.e., ex-factory) from the PPS. However, research needs to be undertaken to determine whether the PPS prices relating to manufacturers' output prices (ex-factory) at *basic prices* are adequate price indicators for the input prices at *purchasers' prices* required for the CIPI.

77. Also, there should be an analysis of whether the PPS prices relate to the appropriate transaction for the CIPI (i.e., if construction companies purchase materials direct from manufacturers, or if they purchase from wholesalers and pay value-added tax (VAT), wholesale margins, and transport costs), and in cases where they do purchase direct from manufacturers, whether the PPS price measures the appropriate transaction (i.e., sales to construction companies rather than sales to wholesalers). If different buyers pay different prices, it may be necessary to add additional specifications onto some PPS forms (i.e., prices of sales to construction companies).

78. As a result of this analysis, it may be necessary to conduct some price collection direct from building materials wholesalers in order to reflect the inclusion of VAT, freight, and wholesale margins in the transaction prices.

79. Equipment leasing charges are currently collected from construction companies; it may be more appropriate and efficient to collect these prices from the owners of the equipment (because there will be relatively few of them and they are an independent source).

80. It is recommended that a thorough review of the data and the data sources for the CIPI prices be undertaken because of the sensitivity of indices to inaccuracies in the price indicators. Also, as part of the proposed study tour to the KNBS, and consultation with the NISR, these source data issues for the price indicators should be explored and an understanding of their experience gained. It may also be possible to share experiences with other African countries.

Price collection initialization/review

81. Depending on the outcome of the review recommended above, new price collections may need to be initialized.

C. Serviceability

Periodicity and timeliness

Periodicity and span of the indices

82. The CIPI should continue to be compiled monthly and, ideally, published on a timely basis each month.

83. The rebased index should be linked to the current index at the publication level to provide long-term series.

Publication goals and dissemination policy

84. At some point, the index should be arithmetically re-referenced to a common period used for all UBOS economic indices.

Training

85. All the above issues were discussed with the staff who will be involved with the CIPI rebase.

Work program

86. Following the investigations, consultation, and research recommended above, UBOS will be able to develop a viable work program and budget for the project implementation.

87. The key elements of an overall work program will include the following:

i. Research and consultation to determine the most appropriate data sources for price indicators for materials at purchasers' prices, labor and leasing charges.

ii. Investigation, and consultation, to determine the optimum data sources and methodology for deriving representative industry, and commodity, weights.

iii. A review of the scope of the CIPI. For example, should the scope of Civil Works be extended to include activities such as the generation and distribution of electricity and gas?

iv. The conduct of a study tour to the KNBS, assuming progress has been made on the development of their CIPI, and consultation with NISR.

v. A review of the compilation methodology and comparison with the PPI-M spreadsheet system.

IV. HOTELS AND RESTAURANTS PRODUCER PRICE INDEX

A. Statistics Prerequisites

88. Funding has been approved for the rebase of the H&R PPI during 2015–16. A work plan now needs to be prepared.

89. Staff and financial resources will be required to complete the development of the index structure and weighting pattern, develop the compilation spreadsheet system, redesign the H&R Producer Price Survey (H&R PPS), select the sample of hotels and restaurants, commence the price survey through a program of initialization interviews, and conduct the ongoing price collection and index compilation.

90. Detailed information on gross output for the commodities in the index will need to be obtained from the sample of hotels and restaurants to assist in the derivation of the index weighting pattern.

91. Much discussion was undertaken as to whether separate regional indices should be compiled. On balance, it is recommended that the short-term goal should be to focus on developing a rebased national index. Potentially, regional indices could be developed in the longer term if it was clear that there was user demand, but a much larger sample of hotels and restaurants would be required for the price survey, separate regional weighting patterns would need to be compiled in addition to the national weighting pattern.

B. Accuracy and Reliability

Statistical techniques

Conceptual basis

92. The conceptual basis of the rebased index was ratified. It will continue to relate to actual transaction prices for sales of accommodation and catering services. The pricing point will be ex-hotel/restaurant and the pricing basis will be basic prices exclusive of VAT and after any discounts, and include any subsidies.

Reference base period

93. Because of the seasonal, or irregular, nature of many of the commodity prices, it will be necessary to "normalize" the base period prices by taking a twelve-month average of the prices. That is, the reference base period will relate to a full year, not a single quarter or month. (This is a good practice for price statistics in general.)

94. Currently, monthly prices are collected each quarter, and quarterly average prices computed. Funding permitting, it is proposed that the monthly prices be collected on a monthly basis, and timely monthly indices be compiled and published.

95. The new samples of hotels and restaurants, and specific products, for the rebased index will contain many businesses and products that were not in the current index, so it is proposed to adopt a recent year as the reference base period in order to keep to a minimum the need to seek retrospective prices. Depending on the timing of the initialization interviews, and the feasibility of obtaining retrospective prices, 2014–15 may be suitable as the reference period.

Aggregation formula and compilation methodology

96. It is proposed that the processing system for the H&R PPI be based on the system of spreadsheets developed for the compilation of the rebased PPI-M.

97. As such, the first level of aggregation will be to combine the individual product prices collected in the H&R PPS to the index commodity level. The EA indices will be calculated using the Jevons price index formula. These EA indices will then be progressively combined to higher levels within the index structure and the total index using the Laspeyres formula and the weighting system derived using the methodology described below.

98. An unweighted EA formula has been selected because it would not be feasible to first compile and then maintain 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.

Weighting base period and frequency of rebasing

99. The higher level index weights will be based on 2009 Supply Use Tables data for "Accommodation" and "Catering Services." More detailed weights will need to be derived from commodity data to be obtained from the sample of hotels and restaurants selected for the ongoing monthly price survey for a recent year (say, 2014).

Methodology for determining the structure, composition, and weighting pattern of the index

100. It is proposed that, as for the current H&R PPI, the more detailed commodity weights be derived from sales data collected from the sample of hotels and restaurants selected for the price survey.

101. Subject to consultation with the hotels and restaurants during the collection of the weighting data, it is proposed to use basically the same index structure as for the current index. This has the advantage of readily allowing the linking of the old and new indices to produce continuous long-term trends.

102. This current structure is as follows:

Industry Group and commodity

1. Accommodation

    1.1 Hotel accommodation (rooms, suites, etc.)

    1.2 Other hotel services (e.g., conference halls)

2. Catering services

    2.1 Food and snacks

        2.1.1 Buffet

        2.1.2 A' la carte

        2.1.3 Snacks

    2.2 Drinks

        2.2.1 Beer

        2.2.2 Soft drinks

        2.2.3 Wines and Spirits

103. The Supply Use Tables only provided gross output data for "Accommodation" and "Catering."

104. UBI gross output data revealed that, at the four-digit ISIC class level, the dominant industries were:

i. ISIC 5510 Accommodation – room services: U Sh222 billion

ii. ISIC 5610 Food : U Sh22.5 billion

iii. ISIC 5630 Beverages : U Sh8.5 billion

105. The calculation of lower level commodity weights will be based on data on revenue by commodity obtained from the sample of hotels and restaurants selected for the price survey.

Source data

Price indicators

106. The current H&R PPS seeks mid-month price data for specific, representative products for the above commodities shown in paragraph 102 above.

107. The collection is conducted quarterly and the current form also seeks sales and other data which are not available until after the end of the quarter.

108. It is proposed that the new PPS form be reviewed, redesigned, and simplified. It should relate to price data only, collected on a monthly basis. Also, as the pricing point is at the 15th of each month, the data can be obtained immediately after the pricing point, and timely monthly indices compiled and published.

109. A new sample of hotels and restaurants needs to be selected based on 2009–10 UBI data for establishment gross output by ISIC class, using a combination of cut-off and judgmental sampling, as appropriate.

110. During the mission, data for ISIC class 5510 – Accommodation room services, was examined. The establishment data by gross output was sorted from largest to smallest and the cumulative values, and percentages, calculated. The establishments with gross output of 1 percent or more of gross output were selected: 26 establishments accounted for over 80 percent of total ISIC class gross output.

111. In order to provide representation of small hotels and restaurants, a further selection was made based on the application of a skip interval. A further 10 establishments were selected to represent the price experience of the very large number of small establishments that may sell products of a different nature or have a different price experience from the larger hotels and restaurants.

112. This analysis needs to be reviewed and extended to the other selected ISIC classes (i.e., 5610 and 5630).

113. The next step is to ensure that there is "reasonable" geographic representation across the four regions, and to reconcile the new sample with the old sample, to ensure that establishments in the old sample are not unnecessarily discarded.

114. An annual review of the sample of hotels and restaurants should be undertaken to enable the introduction of new businesses or existing ones that have expanded, and the removal of businesses that have contracted.

Price collection initialization/review

115. To establish direct price collections from the selected hotels and restaurants, interviews need to be conducted to either (i) initiate a new collection from establishments new to the price survey, or (ii) review and update the sample of products priced from establishments already in the survey.

116. In selecting the sample of products for monthly pricing the following principles should be applied:

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

ii. they will usually be the establishments' largest product sales by value;

iii. for workload reasons, a manageable number of products should be selected to represent a commodity; 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 product, unit of quantity, etc. are required.

C. Serviceability

Periodicity and timeliness

Periodicity and span of the indices

117. It is proposed that the rebased H&R PPI have a reference base of either 2014 or 2015 depending on the timing of the conduct of the initialization/review interviews, and be compiled monthly either from January 2014 or January 2015.

Publication goals and dissemination policy

118. It is planned to publish monthly indices at the commodity level in the index structure (see paragraph 102 above).

119. It should be linked to the old indices at each level of aggregation to provide long-term series.

Five-yearly rebases

120. The indices should be fully rebased every five years.

Training

121. Price collection staff need to be provided with training on the index concepts and briefed on the index construction methodology.

Work program

122. A broad work program is provided in Appendix VI.

V. PRODUCER PRICE INDEX – MANUFACTURING

123. The opportunity was taken during the mission to undertake a brief review of the progress on rebasing PPI-M, identifying the tasks required to be undertaken prior to publication. Additional TA was also provided.

124. The main tasks that need to be completed in order to publish the new rebased indices are as follows:

i. complete the compilation of the indices for the period September quarter 2013 to December quarter 2014;

ii. prepare the publication manuscript format and content for December 2014 for internal UBOS analysis:

- main features
- conceptual notes
- graphs
- tables of index numbers and percentage changes
- appendix with long-term linked indices at broad level, including advice that more detail is available on request.

i. complete the data gathering in the field for March quarter 2015;

ii. finalize the data loading and index compilation for March quarter 2015;

iii. initiate the price collection for June quarter 2015;

iv. load all data and compile June quarter 2015 indices;

v. finalize publication manuscript for June quarter 2015;

vi. publish new rebased PPI-M from September quarter 2013 to June quarter 2015 in July 2015.

125. The methodology for linking the new September quarter 2013 rebased PPI-M indices to the old September quarter 2004 indices was discussed in detail. The link is to be effected retrospectively by calculating link factors as the ratio of the new index to the old index for an overlap quarter.

126. As it is planned to effectively revise the old index back to the start of the new index (i.e., to September quarter 2013), then the link factors should be based on September quarter 2013 indices. The links should be undertaken at each level of the index structure in the publication, that is, at the two-digit division level of ISIC and total manufacturing, separately for domestic sales and exports, by applying the relevant link factors retrospectively to the old index series.

127. In the longer term, the scope of the PPI should be extended to include utilities and agriculture. The Agriculture Section has commenced initial investigations into the development of an agriculture PPI.

Appendix I. XMPI Project Tasks And Timetable

Target date: 2015

1. Review MPI structure and weights.	May 22
2. Develop linked spreadsheet processing system based on prototype:	August 31
2.1. Calculation of EA commodity indices (price relatives) based on the Jevons Geometric Mean formula.	
2.2. Aggregation to higher levels in the index structure using Laspeyresformula and fixed weights.	
2.3. Load all weights.	
3. Review and complete the analysis/adjustment of series for the 45 commodities selected to use unit values in the MPI.	June 15
4. Select sample of importers for the 106 commodities in the MPS.	June 15
5. Compile, and analyze, unit value-based MPI.	June 30
6. Finalize survey strategy including collection form design and procedure for collecting retrospective quarterly prices back to June 2013.	June 30
7. Prepare budget and work plan and submit to management.	June 30
8. Train field staff.	July 14
9. Conduct pilot survey.	August 7
10. Undertake intensive program of field interviews.	September 30
11. Replace unit values with survey prices for 106 commodities.	November 30
11.1. Convert to UGS.	
11.2. Link survey prices to unit value series for EAs at June 2013.	
11.3. Adjust unit values back to Mar 2009 based on trends in survey prices over June 2013 to June 2015.	
12. Recompile MPI.	December 15
13. Ongoing quarterly compilation.	
14. Progressively repeat above for XPI.	ASAP

Appendix II. 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 eight-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 import price indexes 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 7 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 policymakers 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 consumer price index. 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 eight-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 are not 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 middle month of each previous quarter from June 2013 to 2015 during/or after 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.

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

Appendix III. Introductory Letter to Importers

Dear Sir/Madam,

Quarterly Survey of Import Prices

The National Bureau of Statistics is commencing a quarterly import price survey. The prices collected will be used to compile Import Price Indexes 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 c.i.f. 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.

A National Bureau of Statistics 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 c.i.f. 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 National Bureau of Statistics.

Thank you for your co-operation.

Yours sincerely,

Director General
National Bureau of Statistics

Appendix IV. Interview Guide

SURVEY OF IMPORT PRICES

Company name: Code:
Address:

Contact name:
Phone:
Email:

A. Introduction

(i) The National Bureau of Statistics is commencing a quarterly survey of import prices in order to compile import price indexes 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., Tanzanian shillings)) 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 c.i.f. (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 eight-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, tone, 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) C.i.f. prices are required, in the currency of the transaction (to be converted to Tanzanian shillings 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 do not need to enter them on the form.

Appendix V. Example of 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 Import Price Index, 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 (c.i.f.) per unit in terms of currency of the transaction (e.g., US. dollar, Tanzanian shilling, 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 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 (c.i.f.) Quarter.....

HS Code	No.	Full description of items imported	Unit of Quantity (eg., kg, litres, etc.)	Country of origin	Currency of transaction (e.g., U.S. dollar, Tanzanian shilling, euro, etc.)	c.i.f. 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 ……..
Telephone ……..
Email:

Title ……
Mobile ……
Signature……
Date…….

THANK YOU FOR YOUR COOPERATION

Appendix VI. H&R PPI Project Tasks and Timetable

Target date: 2015

1. Finalize development of index structure.	May 29
2. Design H&R PPS, incl. price collection form and commodity weights form.	June 5
3. Calculate high level industry weights from UBI gross output data.	June 5
4. Select samples of hotels and restaurants for each ISIC class.	June 5
5. Conduct initialization interviews incl. collection of commodity sales data.	End-September
6. Calculate industry and commodity weights.	Early October
7. Loads all descriptors and weights onto spreadsheet system.	Mid-October
8. Ongoing price collection and index compilation.	Ongoing
9. Link old and new series.	March 2016
10. Publish new linked indices.	March 2016
11. Ongoing price collection, index compilation, and publication.	Ongoing