



# UGANDA

## TECHNICAL ASSISTANCE REPORT—REPORT ON THE PRICES STATISTICS MISSION

September 2017

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 January 2016.

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**International Monetary Fund**  
**Washington, D.C.**

**INTERNATIONAL MONETARY FUND**

Statistics Department



**UGANDA**

**REPORT ON THE PRICES STATISTICS MISSION**

January 11–29, 2016

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**March 2016**

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**ABBREVIATIONS**

AFR	African Department, IMF
BOU	Bank of Uganda
CIF	Cost, Insurance and Freight
CPI	Consumer Price Index
EAC	East Africa Community
FOB	Free on Board
H&R-PPI	Hotels and Restaurants PPI
HS	Harmonized System of Tariffs and Trade
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification
IT	Information Technology
MPI	Import Price index
MPS	Import Price Survey
PPI	Producer Price Index
PPI-M	Producer Price Index-Manufacturing
PPS	Producer Price Survey
SDDS	Special Data Dissemination Service
STA	Statistics Department, IMF
SUT	Supply Use Tables
TA	Technical Assistance
UBI	Uganda Business Inquiry
UBOS	Uganda Bureau of Statistics
UHOA	Ugandan Hotel Owners' Association
UMA	Ugandan Manufacturers' Association
URA	Ugandan Revenue Authority
VAT	Value Added Tax
XMPI	Export and Import Price Indices
XPI	Export Price Index

## EXECUTIVE SUMMARY

- The mission objectives included: (i) review and finalize the structure and weighting pattern of the export-import price indexes (XMPI) and the hotels and restaurants Producer Price Index (H&R-PPI); (ii) review progress on determining the optimum data sources for the weights and prices for the construction inputs price index (CIPI); (iii) analyze all the survey-based prices collected to date, including the adequacy of the product specifications and review the collection strategy; (iv) discuss frequency of weight updates (including the CPI basket); (v) review the index compilation systems and procedures; (vi) prepare dissemination strategies and documentation; and (vii) provide additional training to staff.
- In relation to the XMPI, the structure and weighting pattern for the Import Price index (MPI) developed during the previous mission were reviewed and confirmed. Accordingly, plans were developed for the conduct of an import price survey including form design and the selection of a sample of importers.
- In terms of Producer Price Indices, the short-term priorities of Uganda Bureau of Statistics (UBOS) are to complete the rebasing of the PPI for manufacturing (PPI-M) and H&R-PPI. Unfortunately, resource cuts had delayed the process but new corresponding dates of June 30 and October 7, 2016 have now been set for the release of the rebased indices.
- For the H&R-PPI, the conceptual basis of the index was reviewed and confirmed. A new index structure and weighting pattern were derived based on data from the 2009 Supply and Use Tables (SUT) and Uganda Business Inquiry (UBI) gross output. On the other hand, the rebasing of the CIPI was seen as having lower priority and has been rescheduled to late 2016.
- Work programs have been drafted and agreed for (i) the development of XMPI, (ii) the completion of the PPI-M rebase, and (iii) the completion of the H&R-PPI rebase.
- Further training was provided on price index concepts and compilation methodology (including splicing and linking techniques), and price survey procedures.

## INTRODUCTION

1. In response to a request from the authorities at the UBOS and in consultation with the African Department, IMF (AFR), I undertook a TA mission to Kampala during the period January 11–29, 2016 to further provide advice and training on the development and compilation of export-import price indexes (XMPI), and review the work done on the rebasing of the CIPI and the H&R PPI.
2. For the new XMPI, hybrid indices will be compiled with the price indicators being a combination of quarterly Customs unit values for the relatively homogeneous commodities and survey-based specification prices collected in price surveys of importers (and then exporters) for the more heterogeneous commodities.
3. In terms of Producer Price Indices, the short-term priorities of UBOS are to complete the rebasing of PPI-M and H&R-PPI. The rebasing of the CIPI has a lower priority.
4. For the H&R-PPI, the conceptual basis of the index was reviewed and confirmed. The reference base period will be 2015.
5. Training was provided on price index concepts and compilation methodology, and price survey procedures.

## EXPORT AND IMPORT PRICE INDICES

### I. STATISTICS PREREQUISITES

6. 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 XMPS.
7. UBOS has commenced work on the development of the MPI including pre-testing the conduct of the survey initialization interview program to commence the collection of quarterly prices.
8. Interviews were conducted with a sample of 40 importers to test the strategy for the conduct of the program and evaluate respondent cooperation in the provision of current period and retrospective prices. Important information was gained which will support the conduct of the full interview program scheduled to be conducted over the period March 15 to May 15, 2016.
9. Product specifications and prices for the March, June, and September quarters of 2015 were obtained from 30 of the 40 importers; there were 10 refusals. All the data has been loaded onto the Excel spreadsheet compilation system. The product specifications and prices

obtained during the pre-test were analyzed during the mission and, with few exceptions, assessed as being sound.

10. Recent work which has been undertaken on the development of the fully operational system of linked spreadsheets now needs to be completed to support the initial and ongoing quarterly compilation of the MPI, and the XPI.

11. During the conduct of the program of initialization interviews, retrospective quarterly prices back to the March quarter 2015 will be obtained to supplement the Customs unit values for the more homogeneous items, and then hybrid indices compiled as soon as practical. It is not considered feasible to obtain retrospective prices over a longer period.

12. The XMPI documentation focuses on the development of an MPI. However, the same techniques, principles and procedures will be required to develop an XPI, which will be much less complex than the development of an MPI.

## **II. ACCURACY AND RELIABILITY**

### **A. Statistical Techniques**

#### *Conceptual basis*

13. As determined during the previous mission, 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*

14. In order to optimize the utility of the new indices, it was decided that 2009/10 should be the time reference period in order to be consistent with other economic indices and to provide a reasonable time series to support inflation analysis and national accounts deflation.

15. 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 March quarter 2015) and (ii) unit values for the period from March quarter 2015 back to Sept. quarter 2009, adjusted to remove outliers and modified in the light of the survey price performance.

#### *Aggregation formula and compilation methodology*

16. For the compilation of the MPI and XPI, the EA indices will be at the 8-digit level of the HS. Unweighted indices will be calculated using the Jevons price index formula, i.e., 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).



17. Then, the EA indices will be aggregated with fixed weights using the Laspeyres formula.

18. Work which has been undertaken on the development of the fully operational system of linked spreadsheets now needs to be completed to support the initial and ongoing quarterly compilation of the MPI and the XPI. The current Excel spreadsheet system was reviewed.

*Weighting base period and frequency of rebasing*

19. During previous missions, a range of time series of annual import patterns was analyzed. On balance, it was agreed that the 3-year average for 2011 to 2013 was the most credible distribution and judged that it was likely to be broadly representative of import trading patterns over the next few years. Accordingly, 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*

20. The methodology for the derivation of the MPI structure, composition and weights is provided in detail in a previous mission report. 151 8-digit HS commodities were selected as the index basket.

21. This process is to be repeated by UBOS for the XPI.

22. During the current mission, the MPI structure and weighting pattern were reviewed and assessed as being representative of current trading patterns (see para. 46 below).

## **B. Source Data**

*Price indicators*

23. Price indicators need to be obtained for each of the selected 8-digit import commodities. Customs unit values will be used 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.

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

25. Analysis showed that the quality of unit value data as indicators of pure price change is often 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.

26. The quarterly unit values for each of the 151 selected HS commodities 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.

27. 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 as suitable, and thus reducing the dependence on price survey data.

28. As a result of this analysis, it was concluded that 45 of the 151 8-digit HS commodities selected for inclusion in the MPI had credible Customs-based price indicators and 106 required survey-based price indicators.

29. 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 September quarter 2009, and further smoothing of volatile series, or removal of particular country data, was undertaken. Further analysis was undertaken during the current mission; this work needs to be reviewed and finalized.

30. An initial MPI should be compiled retrospectively to September quarter 2009 based solely on adjusted Customs unit value data. When the survey data for the 106 commodities becomes available, the index should be recompiled incorporating the survey data from March quarter 2015. Pre-testing revealed that it is generally not feasible to obtain retrospective prices for more than about three or four quarters.

31. The *main* HS Chapters, their weights to All Groups and the primary data source for the price indicators are shown below:

<b>Chapter</b>	<b>Weight</b>	<b>Main data source for prices</b>
Petroleum products	28%	Customs
Machinery, computers, etc.	11%	Survey
Vehicles	11%	Survey
Electrical machinery	10%	Survey
Iron and steel	5%	Customs and Survey
Animal fats and oils	5%	Customs
Cereals	5%	Customs
Plastics	5%	Customs and Survey
Sugar	3%	Customs
Cement and lime	3%	Customs

32. While 106 of the 151 HS 8-digit commodities (over 70 percent) will have prices based on Survey data, it can be seen above that only about 40 (percent) of the *value* of the Chapters will be based on Survey data.

33. Also, for back prices prior to March quarter 2015, it is not feasible to rely only on Customs data for the Chapters whose primary data source for the future will be Customs data because they are not representative of the total pattern of exports. That is, the back prices need to be based on Customs unit values for *all* the selected Chapters and commodities.

34. Alternative methods of imputing missing observations (either survey prices or Customs unit values) were discussed during the mission, e.g., carry-forward, using movements in the prices of other related products from the same, or other, importers, or projecting the recent trend.

35. During the previous mission, an initial selection of a sample of importers for each of the 106 HS commodities in the MPS was undertaken. The methodology employed is described in that mission's report.

36. The initial result was the selection of about 500 importers which was excessive, and the sample needed to be rigorously reviewed and cut back by at least 50 percent.

37. UBOS reviewed the initial sample selection by removing importers where there is a large number for a HS commodity and reducing the coverage of the medium and small HS commodities. As a result, 342 importers remained. While this number is still too high, it was decided to over-sample and have substitutes available because of the expected high number of refusals (10 of the 40 importers refused to respond during the pre-test).

38. 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*

39. 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 outlined in paras. 51–53 and Appendices II, III, IV and V of the previous mission report.

40. UBOS conducted a pre-test of the initialization interview program. A quarterly collection form was designed based on the Tanzanian model. Of the sample of 40 importers, 10 refused to co-operate. Product specifications were selected and back prices obtained for three quarters. These were loaded onto the spreadsheet compilation system.

41. Means of improving response rates and achieving business co-operation were discussed. In the case of PPI-M, UBOS plans to approach the Ugandan Manufacturers' Association with a view to seeking their support, and that of their members, for the PPI-M collection.

42. During the mission, the product specifications and prices were analyzed. It was concluded that:

- (i) the majority of the product descriptions were adequate to provide indicators of pure price change. The product descriptions were generally comprehensive, the unit of quantity specified and the country of origin included. The small number of products with descriptions that were considered to be inadequate were identified for investigation;
- (ii) most of the reported prices were credible indicators of price change. A small number were volatile and appeared to require smoothing or querying and imputation of a small number of missing prices was required;
- (iii) a few importers had very lumpy import patterns consideration should be given to replacing them.

43. Refresher training of the field interviewing staff will be undertaken prior to the commencement of the program of initialization interviews planned to be conducted over the period 15 March to 15 May 2016.

### **III. SERVICEABILITY**

#### **A. Periodicity and Timeliness**

##### *Periodicity and span of the indices*

44. It is planned that the 2009/10 based XMPI be compiled quarterly from September 2009, and annually from 2009/10.

##### *Publication goals and dissemination policy*

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

46. Annual and quarterly indices down to the 8-digit HS commodity level should be provided to National Accounts on an as-needs basis, with any necessary additional comments about the data.

##### *Five-yearly index rebases*

47. 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*

48. Training on price index concepts and methodology and price collection initialization and compilation was provided to staff during the previous missions. 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*

49. A work program for the development of the indices is provided in Appendix I.

## **PRODUCER PRICE INDEX MANUFACTURING (PPI-M)**

### **I. STATISTICS PREREQUISITES**

50. During a PPI mission in June–July 2014, a sample of 173 manufacturing establishments was selected for PPI-M using cut-off sampling techniques. UBOS Statistical Assistant field staff have been conducting initialization interviews with the establishments and ongoing monthly price collections have been commenced for 81 of those establishments, as far as possible commencing with prices back to September quarter 2013, the time reference period for the new index.

51. UBOS has experienced major problems in obtaining cooperation from many of the manufacturers, especially small and medium sized establishments.

52. To progress the development of the index, a concerted effort will need to be undertaken to increase the sample size (see paras. 86–92 below).

### **II. ACCURACY AND RELIABILITY**

#### **A. Statistical Techniques**

#### *Conceptual basis*

53. 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*.

54. 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 manufacturing and utility (i.e., electricity and water) industries. In the medium term, it is planned to further extend the scope to cover the output of the mining and quarrying sector.

(ii) the pricing point is ex-factory etc., with a valuation basis of basic prices, exclusive of trade and transport margins and 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 local sales and exports as well as total output (see paragraph 78–85 below).

#### *Reference base period*

55. The time reference period for the new index will be September quarter 2013 and the new PPS is commencing with prices for the month of July 2013.

#### *Aggregation formula and compilation methodology*

56. As discussed in the 2014 mission report, 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.

57. The current PPI processing system was used as the foundation for building a processing system for the compilation of the rebased PPI using the Jevons aggregation formula. It will be necessary to transfer the processing of the rebased PPI from Excel to the “Access” system (which manages the data capture and product and establishment samples).

#### *Weighting base period and frequency of rebasing*

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

59. It is proposed that the index be fully rebased on a 5-yearly basis, using the latest finalized SUT. The East Africa Community (EAC) has recommended that member countries move towards a common base period of 2015.

60. The opportunity was taken to discuss the frequency of rebasing the index baskets, and index revisions, with CPI and PPI managers.

61. The current month's CPI is released on the last working day of that month. Revisions may occur to indices for the *previous* month (only) due to the late receipt of some prices.

62. The periodic rebase of the CPI is moving to a 3-yearly cycle, coinciding with the conduct of the Household Expenditure Survey. The rebased index is linked to the previous index and the rebase does not result in any revisions to previous index numbers. PPI-M has commenced being rebased on a 5-yearly cycle using the results of the 5-yearly SUT and the UBI.

*Determination of the index structure, composition and weighting pattern*

63. During the previous mission, final 2009/10 index weights were calculated for total domestic supply (i.e., gross output) based on the final 2009/10 SUT. Twenty eight 4-digit ISIC class industries were 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).

64. Broad credibility checks were 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) will need to be justified prior to publication of the rebased PPI-M.

65. 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.

66. 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.

67. The Bank of Uganda (BOU) requires the three separate tables on an ongoing basis for economic analysis. Therefore, separate structures and weighting patterns will need to be developed for exports and domestic usage.

68. Detailed discussions during the mission considered alternative approaches to the calculation of the separate exports, and domestic sales, structures and weighting patterns.

69. The first approach considered was to draw 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.

70. Following discussions with Trade staff, it was decided to use a macro approach and link the HS export commodity codes (HSCC) to the SUT 4-digit ISIC industry classes and match the relevant 2009/10 data. As a general rule, local sales were derived as industry output minus exports. However, adjustments will need to be made to remove double counting of manufacturing output that is sold locally, say to wholesalers, and then exported; such local sales need to be eliminated from the exports data by reference to trade data on exports by individual establishments. In addition, there is a need to clean the data. The calculation of the three separate weighting patterns is an important task in the Project Tasks and Timetable in Appendix II.

## **B. Source Data**

### *Price indicators*

71. The current PPS has been greatly simplified following recommendations of an earlier mission. Previously it was highly complex and covered not only mid-month product prices, but also monthly production from establishment sales. Also, it related 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.

72. A new PPS is now operating with a separate collection form relating solely to PPI mid-month product prices, which is much more user-friendly and timely. Also, mid-month prices are now collected on a monthly rather than a quarterly basis. That is, both the periodicity, and the frequency, of the PPS are now monthly.

73. The previous mission reviewed the sampling criteria, and worked with the PPI team to re-select the sample for the rebased index using a combination of cut-off and random sampling techniques.

74. The technique employed was to firstly categorize the regimen of 28 classes into 6 large classes (5 percent or more of the total weight), 16 medium classes (between 1 and 5 percent) and 6 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 the medium industries supplemented by a selection of smaller establishments using a skip interval approach as necessary, and a straight 70 percent applied to the small industries. A significantly smaller sample of 173 manufacturing establishments resulted (which included supplementation by reference to the URA “largest taxpayers” and local knowledge).

75. To date, staff have been successful in establishing ongoing monthly price collections with 81 of these establishments (mainly large establishments, who are more cooperative). Note that the 81 establishments provide coverage of some 70 percent of manufacturing gross output, though it is biased towards large establishments.



76. In 2013, the Ugandan Auditor General conducted an audit of the statistical methodology used by UBOS in compiling the current PPI. A recommendation was that scientific sampling should be used for the selection of the establishments so that sampling errors could be measured. The mission is confident of the representativeness of the cut-off and random based sample, which has been used in other East African countries, and unless UBOS has given a commitment that it will move to adopt scientific sampling techniques for the rebased PPI, then work should proceed on conducting initialization interviews with the remaining 92 establishments in the original sample (i.e., 173–81).

77. The current mission reviewed the situation. The compilation of the rebased PPI-M should proceed as soon as possible using the price data from the new sample of 81 establishments. It should be progressively updated and revised with the incorporation of prices from additional establishments as the initialization program proceeds.

78. Note that even if an establishment only provides retrospective prices for part of the period back to July 2013, it is possible to incorporate the earlier prices by using splicing techniques and revising the indices.

79. To support this major initialization exercise, UBOS will contact the Ugandan Manufacturers' Association (UMA) to enlist their support and, ideally, contact their members and encourage them to cooperate in the PPI survey. In addition, UBOS will provide as much support to the interviewing team as possible and optimize the resources allocated.

80. It is critical that the rebased PPI-M is published within a reasonable time frame. Regrettably, its implementation has extended over a long period with delays due to resource cuts, etc. A target date of 30 June 2016 has now been set for the release of the rebased index, initially incorporating price data from as many as possible of the additional 92 establishments as possible. After initial publication, work should continue to enroll additional establishments, including substitutes if necessary, and progressively revise the indices as a result of the improved sample size.

81. 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.

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

83. In addition, the credibility of the time series of prices was analyzed. The analysis resulted in many queries the main issues relating to:

- (i) the incorporation of V.A.T. when the pricing basis is basic prices;

- (ii) the need to impute missing prices;
- (iii) the designation of the market (i.e., exports and local sales) is sometimes missing;
- (iv) monthly prices are sometimes constant for two or three years;
- (v) very large price rises and falls (in excess of 100 percent);
- (vi) highly volatile price series;
- (vii) apparent data entry errors; and
- (viii) an excessive number of product specifications for some establishments (e.g., over 20).

84. These queries have been highlighted on the spreadsheet and require resolution.

### **III. SERVICEABILITY**

#### **A. Periodicity and Timeliness**

##### *Periodicity and span of the indices*

85. The PPS is being conducted with a periodicity, and frequency, of monthly which will 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.

86. During the initialization interviews, retrospective monthly prices are being collected from July 2013, or as far back as practical.

##### *Publication goals and dissemination policy*

87. Separate indices will be published on an ongoing basis for total gross output, domestic sales, and exports, broken down to the 2-digit Division level of ISIC, and higher levels of aggregation.

88. If the samples are sufficient for the earlier period, these monthly data should be published back to July 2013. If the samples are not sufficient for the earlier months then less detail should be released.

89. The rebased indices should be 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.

90. 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.

## **HOTELS AND RESTAURANTS PRODUCER PRICE INDEX**

### **I. STATISTICS PREREQUISITES**

91. Due to shifting priorities and staff changes, limited progress has been made on this project. However, the Business and Industry Directorate is now in a position to move the project forward during 2016. A work plan now needs to be prepared.

92. Staff and financial resources need to be allocated to complete the development of the rebased 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 new price survey through a program of initialization interviews and conduct the ongoing price collection and index compilation.

### **II. ACCURACY AND RELIABILITY**

#### **A. Statistical Techniques**

##### *Conceptual basis*

93. The conceptual basis of the rebased index was ratified. It will continue to relate to actual transaction prices for sales of Accommodation and Food and Beverage Service Activities. The pricing point will be ex hotel/restaurant and the pricing basis will be basic prices exclusive of value added tax (VAT) and after any discounts, and include any subsidies.

##### *Reference base period*

94. 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 12 month average of the prices. That is, the reference base period will relate to a full year, not a single quarter or month.

95. As is anticipated that the 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, 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. Therefore, it is proposed that retrospective monthly prices back to January 2015 be obtained during the initialization interviews and that the reference period of the index be 2015.

##### *Aggregation formula and compilation methodology*

96. The processing system for the H&R-PPI will be based on the system of spreadsheets developed for the compilation of the rebased PPI-M.

97. The first level of aggregation will be to combine the individual product prices collected in the H&R PPS to the 4-digit ISIC class 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. Note that this approach differs from that employed for the current index in which indices are first aggregated to a commodity level before weights are applied. The new approach is consistent with that used for PPI-M and industry weights are readily available.

*Weighting base period and frequency of rebasing*

99. The index weights will be based on 2009/10 SUT table data for “Accommodation” (ISIC Division 55) and “Food and Beverage Service Activities” (ISIC Division 56). 4-digit ISIC class weights will be derived using UBI gross output data.

100. The index should be rebased 5-yearly.

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

101. The new index structure and weighting pattern derived as above are as follows:

**Hotels and Restaurants PPI**

Accommodation (Div. 55)	29.3%
Short-term Accommodation Activities (Class 5510)	29.3%
Food and Beverage Service Activities	70.7%
Restaurants etc. (Class 5610)	41.1%
Event Catering (Class 5621)	11.0%
Beverage Service Activities (Class 5630)	18.6%

102. These calculations should be verified.

**B. Source data**

*Price indicators*

103. The current H&R-PPS seeks mid-month price data for specific, representative products for a range of commodities.

104. The collection is conducted quarterly and, as well as seeking mid-month price data, it also asks for sales and other data.

105. It is proposed that the PPS form be reviewed, redesigned and simplified. Consideration should be given to collecting only price data to streamline the collection and processing.
106. 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 scientific sampling procedures (as for PPI-M). Work was initiated on this activity during the current mission.
107. A program of initialization interviews needs to be conducted with the establishments that are new to the collection in order to commence the monthly collection of price data.
108. To support this initialization exercise, UBOS will meet with the Ugandan Hotel Owners Association (UHOA) with a view to obtaining their support, and that of their members, and determining their data requirements.
109. An annual review of the sample of establishments 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*

110. 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.
111. 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
  - (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 product, unit of quantity, etc. are required.

### **III. SERVICEABILITY**

#### **A. Periodicity and Timeliness**

##### *Periodicity and span of the indices*

112. It is proposed that the rebased H&R-PPI have a reference base of 2015 and be compiled monthly from January 2015.

##### *Publication goals and dissemination policy*

113. It is planned to publish monthly indices at the 4-digit ISIC class level in the index structure (see paras. 114–116 below).

114. It should be linked to the old indices at the ISIC Division and Total level of aggregation to provide long term series.

##### *Five yearly rebases*

115. The indices should be fully rebased each five years.

##### *Training*

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

##### *Work program*

117. A broad work program is provided in Appendix III.

**APPENDIX I: XMPI PROJECT TASKS AND TIMETABLE**

<b>Target date: 2016</b>		
1.	Train field staff (refresher)	Feb.15
2.	Finalize development of linked spreadsheet processing system for: 2.1 Calculation of EA indices based on the Jevons formula 2.2 Aggregation to higher levels using Laspeyres formula	Mar. 31
3.	Load all weights onto the system	Mar. 31
4.	Complete analysis/adjustment of U.V. series for all index commodities back to Sept. 2009	Mar. 31
5.	Compile, and analyze, unit value-based MPI to March 2015	Apr. 15
6.	Undertake intensive program of field interviews (Mar.15–May 15)	May 15
7.	Replace unit values from March 2015 with survey prices for 106 commodities: 7.1 Convert to UGS 7.2 Link survey prices to unit value series for EAs at Mar. 2015	May 30
8.	Recompile and publish MPI	Jun. 30
9.	Ongoing quarterly compilation	Ongoing
10.	Commence progressively repeating above for XPI	Jun. 30

## APPENDIX II: PPI-M PROJECT TASKS AND TIMETABLE

<b>Target date: 2016</b>		
1.	Finalize management decision on sampling methodology	Jan. 31
2.	Conduct interview program with 92 additional manufacturers: 1.1 Obtain UMA support 1.2 Allocate very high priority 1.3 Maximize staff resources (incl. re-retraining) and management support 1.4 Select substitute establishments as necessary 1.5 Aim for back prices to July 2013 or as far as possible	Mar. 31
3.	Split 2009/10 SUT ISIC class output between Local Sales and Exports	Feb. 15
4.	Compile separate Local sales, Exports and Total weighting patterns	Feb. 15
5.	Incorporate Utilities in (i) the index structure and (ii) the index compilation	Feb. 15 Mar. 31
6.	Rationalize major shifts between the old and new weighting structures	Feb. 15
7.	Resolve the queries raised in relation to the time series of product prices	Feb. 15
8.	Ongoing monthly compilation of rebased index and progressive introduction of new establishment data and revisions as necessary	Ongoing
9.	Prepare dissemination strategy and publication manuscript	May 15
10.	Move processing from Excel to Access system	May 31
11.	Link old/new indices	May 31
12.	Share draft indices internally for quality assurance	May 31
13.	Publish rebased PPI-M	Jun. 30
14.	Undertake 2015 PPI-M rebase (EAU)	
15.	Incorporate Mining and Quarrying industries	



**APPENDIX III: H&R-PPI PROJECT TASKS AND TIMETABLE**

<b>Target Date: 2016</b>		
1.	Finalize development of index structure and weights	Feb. 5
2.	Select samples of establishments for each ISIC class	Feb. 5
3.	Design H&R-PPS, incl. price collection form	Feb. 26
4.	Obtain UHOA support	Apr. 8
5.	Conduct refresher training for field staff	Apr. 8
6.	Conduct initialization interviews	May 15
7.	Load all descriptors and weights onto spreadsheet system	May 30
8.	Ongoing price collection and index compilation from January 2015	Ongoing
9.	Ongoing analysis of index	Ongoing
10.	Link old and new series and publish new linked indices	Oct. 7
11.	Ongoing price collection, index compilation and publication	Ongoing