



Forwarding Armenian Statistics Through Twinning

AM09/ENP-PCA/TP/04

MISSION REPORT

on

HCPI

ACTIVITY E.3

DEVELOPMENT OF TECHNICAL METHODOLOGIES

Mission carried out by

Mr. Oskars Alksnis, Head of Section

Mr. Paul Lubson, Head of Section

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National Statistical Service Republic of Armenia	Central Statistical Bureau of Latvia	STATISTICS DENMARK Statistics Denmark

Authors' names, addresses, e-mails

Mr. Oskars Alksnis, Head of CPI Section, Price Statistics Department
Central Statistical Bureau of Latvia
Lacplesa Street 1
LV-1301 Riga
Oskars.Alksnis@csb.gov.lv

Mr. Paul Lubson, Head of Section, Prices and Consumption Division
Statistics Denmark
Sejrøgade 11
DK-2100 København Ø
pal@dst.dk

List of Abbreviations

HICP	Harmonized Consumer Price Index
CPI	Consumer Price Index
HBS	Household Budget Survey
BC	Beneficiary Country
MS	Member State
COICOP/ HICP	Classification of Individual Consumption According to Purpose dedicated to HICP through HICP regulation no. 1749/1999
ToR	Terms of Reference
NSSRA	National Statistical Services of the Republic of Armenia
IMF	International Monetary Fund

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Annex E3.6 Presentation on quality adjustments

Annex E3.7 Presentation on production systems – data validation and checking

0. Executive summary

An analysis of reducing the sample size from 3 to 2 monthly price collections was examined and it was concluded that this reduction should be implemented for all products with the possible exceptions of fresh vegetables and fruit. It was agreed that the analysis will continue until it spans a whole year.

The Household Budget Division of NSSRA has agreed to implement the COICOP classification as part of the ILCS in their work starting 2012, which in turn facilitates the process towards annual updating of CPI weights and compiling according to HICP requirements.

A workshop was held on quality adjustment procedures for selected product groups, and another workshop session was devoted to discussion of IT solutions (production system).

According to the discussions, the road map developed during the E.1/E.2 mission was updated.

1. General comments

This mission report was prepared within the framework of the EU Twinning project implemented by National Statistical Service of the Republic of Armenia and its' EU partners. It was the second mission and third activity within Component E, Harmonized Consumer Price Index, activity E.3, Development of Technical Methodologies.

The objectives of the mission were, cf. annex 1:

- To assist in drawing conclusions following the analysis on reducing the sample size;
- To follow up on the organisational consequences in the regional statistical offices of possible changes in the timing and extent of the collection of prices;
- To give advice on yearly updating of the sample;
- To assist in determining the areas of consumption where the method of quality adjustment should be changed;
- To share knowledge and experience on methods for quality adjustments, particularly for technological products;
- To assist in ensuring sufficient number of items and elementary aggregates to represent the diversity of consumer market within each category of the COICOP.

The MS Experts would like to express their heartfelt thanks to all officials and individuals met in the NSSRA for the kind support and valuable information which they received during their stay in Yerevan, and which facilitated their work.

The views and observations stated in this report are those of the MS Experts and do not necessarily correspond to the views of Statistics Denmark or Central Statistical Bureau of Latvia.

2. Assessment and results

Reducing sample size

The Price Division of NSSRA provided in advance the MS Experts with an analysis of reducing the sample size by moving from 3 to 2 price collections per month. This analysis is reproduced in annex 4. The analysis contains two parts. Firstly, it analyses the impact on the index if prices for all products are only collected twice a month. Secondly, it analyses keeping a third price collection per month for fresh vegetables and fruits, while reducing the number of price collections to 2 per month for all other products. The analysis covers a span of eight months, January-August 2011.

The first part of the analysis shows a difference comparing the overall CPIs for the two methods of price collection of 0.7 percentage points for the monthly rate of change in January, but then stays within +/- 0.4 percentage points.

The second part of the analysis shows a difference comparing the overall CPIs for the two methods of price collection, which does not exceed +/- 0.2 percentage points for the monthly rate of change.

There was agreement between the MS Experts that implementing the second solution, which involves 2 monthly price collections except for fresh vegetables and fruits for which 3 price collections per month is maintained, would not reduce the quality of the CPI. The MS Experts recommend that reduction of the frequency from 3 to 2 price collections per month for all product groups except fresh vegetables and fruits should be implemented.

Agreement whether the number of monthly price collections of fresh fruit and vegetables can be reduced from 3 to 2 was not reached as more detailed analysis would be necessary. Accordingly, it was agreed to extend the analysis from spanning a period of eight months to cover an entire year.

It was also agreed to do a more detailed analysis of the fresh vegetables and fruit basket in order to see which products are causing the major volatility, and which do not. Such further analyses will show the part of the fresh vegetables for which a reduction from 3 to 2 monthly price collections is not realistic.

The analysis of reducing the price collection from 3 to 2 monthly collections is not final and will continue to be carried out. The MS Experts and the Price Division of NSSRA decided to postpone the discussion of the organisational consequences in the regional statistical offices to the next mission. The road map for the component that was produced during activities E.1 and E.2 has been updated to reflect this (annex 5).

Annual updating of the CPI sample

The topic of sample update falls into two parts that are interlinked. Choosing products to be included in the sample and updating of the weights.

As regards updating of the sample, common practices of choosing and introducing newly significant goods and services in the CPI/HICP sample were discussed. Experiences and common practices of CSB of Latvia and Statistics Denmark were discussed. Also a rather technical discussion of the practical implementation took place. The Price Division of NSSRA has, following the recommendations from activities E.1 and E.2, adopted the COICOP/HICP, although there are still minor issues with regrouping a few final items to be solved.

A brief discussion took place on the optimisation of the number of collected prices within the sample. As a methodology of how such an analysis could be carried out, a paper produced by Statistics Austria¹ was proposed by the MS Experts.

Concerning the weights, the main issue is the different classifications used in the Price Division and the Household Budget Survey Division. Since the activities E.1 and E.2 a very big and detailed work has been carried out by NSSRA, and a complete key between the two classifications has been established. This key was made by the joint co-operation of the Price Division, the Household Budget Survey Division and the Methodology Division. An agreement has been made with the Household Budget Survey Division that they will switch their classification to the COICOP starting from January 2012, and send out their questionnaires based on the COICOP nomenclature of 2012. This will greatly help the process of changing CPI weights annually and thus be in line with the HICP regulation.

NSSRA has successfully solved the problem with weights for insurance, since agreement was reached with the Central Bank of Armenia on the provision of the appropriate information. The data would allow estimating the weights as premiums net of claims and that is in line with the HICP requirements.

Quality adjustment

A workshop on Quality adjustment by the MS Experts was conducted during the mission. The presentation from this workshop is included in annex E3.6. Topics covered in the presentation were the EU regulation and general recommendations for specific product groups and specific Latvian experiences in this field. Technical discussions took place on the following product groups: new cars, used cars, technological products, and the different methods that apply to each product group. The Price Division of NSSRA had in advance provided the MS Experts with methods of quality adjustment that are in use in the Armenian CPI, which highly contributed in making the discussion fruitful.

IT-system

The MS Experts examined the CPI production system of NSSRA, which is a modified version of the IMF Excel based system. Given the constraint that only Excel can be used there is practically no space for further improvements of the production system. If the system is to be improved with the aim of decreasing the human resources needed to run the production system, a change to another platform than Excel can be considered. This platform could be MS Access, which is also part of the Office Package.

The Latvian experience shows that it may take approximately 1 man year to develop a CPI/HICP production system, utilizing only internally programmer resources. This production system allows for checking and validation of primary data, aggregation, imputation for missing prices (including out-of-season imputations), index calculation and report production as well as information exchange with price collectors.

In connection to this discussion a presentation on data validation and checking was provided by the MS Experts, cf. annex E.3.7.

¹ Paper presented at the Joint UNECE/ILO Meeting on Consumer Price Indices 8-9 May 2008 Geneva
<http://live.unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.22/2008/mtg1/zip.4.e.pdf>

3. Conclusions and recommendations

The analysis on reducing the number of price collections is to be continued, but for all product groups except fresh vegetables and fruits, it has already been concluded that the number of monthly price collections should be changed from 3 to 2.

A separate road map for the implementation of this decision and its' organisational consequences will be a topic for the next activity, E.4.

The Household Budget Survey Division has chosen to implement the COICOP classification starting 2012, thus facilitating the possibility of yearly weight updates, which is an important step in fulfilling the HICP regulations.

A workshop was held on quality adjustments and there was agreement that the Price Division would review their practices of quality adjustments for the items discussed, in particular technological products and cars

4. Actions before next activity (E.4)

The next mission within component E is at the time of writing the present report scheduled to take place in March 2012.

It was agreed between the BC and MS Experts that the following work and actions should be undertaken before E.4:

- Continue the analysis concerning the effect of not conducting complete price collections on the 1st of every month. Prepare a presentation of the results for discussion.
If written material; have it translated into English before E.4.
- Consider and describe the organizational changes that will have to be made, if timing and methodology of the price collection is changed.
If written material; have it translated into English before E.4.
- Continue the process of managing yearly updating of the sample, including the use of price collectors in assessing the representative products.
If written material; have it translated into English before E.4.
- Investigate what product groups methods of quality adjustment can be applied/changed compared to existing practice.
If written material; have it translated into English before E.4.
- Status on the transfer from COICOP to COICOP/HICP (grouping issues)
- Arrange workshop with regional offices.
- Arrange meeting with BC policy experts.

Annex 1. Terms of Reference

Activity E.3 Development of technical methodologies

1. Purpose of activity

The purpose of the activity is to follow up on activities E.1 + E.2, including optimizing the sampling and improving the quality adjustments of the price indices:

- To assist in drawing conclusions following the analysis on reducing the sample size;
- To follow up on the organisational consequences in the regional statistical offices of possible changes in the timing and extent of the collection of prices;
- To give advice on yearly updating of the sample;
- To assist in determining the areas of consumption where the method of quality adjustment should be changed;
- To share knowledge and experience on methods for quality adjustments, particularly for technological products;
- To assist in ensuring sufficient number of items and elementary aggregates to represent the diversity of consumer market within each category of the COICOP.

2. Expected output of the activity

The expected outputs of the activity are:

- Conclusions on how to alter the timing and organization of price collection;
- A workshop on quality adjustment of specific categories of the COICOP;
- A road map on how to implement yearly updating of the sample;
- A possible updating (revision) of the road map produced during E.1 + E.2;
- An outline of the Terms of Reference for the next activity, E.4.

3. Project Participants

Mr. Gagik Gevorgyan, Member of State Council on Statistics (BC Component Leader)

Mr. Gurgen Martirosyan, Head of Prices Statistics and International Comparisons Division

Ms. Mariam Yeritsyan, Main Specialist, Prices Statistics and International Comparisons Division

Mr. Oskars Alksnis, Head of CPI Section, Price Statistics Department, Central Bureau of Statistics, Latvia;

Mr. Paul Lubson, Head of Section, Prices and Consumption Division, Statistics Denmark.

Annex 2. Programme for the mission 5–9 September 2011

Time	Place	Event	Purpose / detail
Monday, 5 Sept. Morning	Congress Hotel	Meeting with RTA	To discuss the programme of the week
Afternoon	NSSRA	Meeting with BC Component Leader and Ex-perts	Current status. BC Component Leader on developments since E.1 + E.2, and internal follow-up on the report from E.1 + E.2.
	NSSRA	Meeting with BC Experts	Introduction to and demonstration of the present IT system
Tuesday, 6 Sept. Morning	NSSRA	Workshop	Presentation by MS Experts – quality adjustments with focus on technology (computers, mobiles) and used cars. Discussion - for which consumptions areas should the methods of quality adjustments be improved?
Afternoon	NSSRA	Meeting with BC Experts (hands-on)	The CPI/H CPI production system. Possible improvements of the current IT-system.
Wednesday, 7 Sept.	NSSRA	Meetings with BC Experts	The future sample and weights: 1. From 3 to 2 monthly price collections? 2. Optimizing the size of the sample 3. Necessary items and elementary aggregates for each COICOP category to be represented adequately
Thursday, 8 Sept. Morning	NSSRA	Meeting with BC Experts	Discussion of a time plan (road map) with respect to introducing new sample and weight system
Afternoon	NSSRA	Ad-hoc meetings with BC Experts	Drafting of report and possible follow-up activities in relation sample and weights issues as well as work on the IT solution
Friday, 9 Sept. Morning	NSSRA	Meeting with BC Component Leader	Discussion of preliminary conclusions and possible updates of the road map.
Afternoon	NSSRA	Debriefing with BC Project Leader	Conclusions and recommendations. Consequences of decisions for the next mission and implied work programme for BC Experts

Annex 3. Persons met

Mr. Stepan Mnatsakanyan, President of NSSRA, BC Project Leader

Ms. Anahit Safyan, Head of International Statistics Cooperation Division

Mr. Gurgen Martirosyan, Head of Prices Statistics and International Comparisons Division

Ms. Mariam Yeritsyan, Main Specialist, Prices Statistics and International Comparisons Division

Mr. Sargsyan Ishkhan, Head of Regional Statistical Agency, Armavir Marz

Mr. Nikoghosyan, Main Specialist, Etchmiadzin Territorial Agency

Ms. Diana Martirosova, Head of Household Budget Survey Division

Ms. Gayane Sargsyan, Main Specialist, Statistical Work Methodology and Classification Division

Annex 4. Analysis of reducing number of price collections

Note produced by the Prices Division before E.3 as follow up to the E.1/E.2 report, section 3.2.

Various calculations and analysis has been carried out. Based on the example of Yerevan, for the months of January-July 2011 Consumer Price Index has been calculated:

- Instead of 3 times collection of prices and tariffs for each month, taking average price calculations of 470 name of commodities-services available in CPI (901 individual items of commodities and services, representative) at the beginning of each month as of 1st day of each month's observed price information, keeping only the observed price information as of 10th and 20th dates. The summarized indicators are shown in the table 1.

Table 1

	2010	2011						
		I	II	III	IV	V	VI	VII
Main CPI	100.0	107.9	108.6	109.1	108.8	108.7	107.4	104.2
		3.5	0.6	0.5	-0.3	-0.1	-1.2	-3.0 ^{*)}
CPI	100.0	107.2	108.1	108.5	108.4	108.1	106.3	103.6
Calculated by 2 observation		2.8	0.9	0.4	-0.2	-0.3	-1.6	-2.6 ^{*)}
Difference in %	100.0	0.8	0.4	0.6	0.4	0.7	1.1	0.6
		0.7	-0.3	0.1	-0.1	0.2	0.4	-0.4 ^{*)}

**) price increase compared to previous month*

- Instead of 3 times collection of prices and tariffs for each month, taking from the average price calculations 470 categories of commodities –services available in CPI (901 individual items of commodities and services, representative) at the beginning of each month as of 1st day of month observed price information, keeping only the observed price information as of 10 and 20 dates, by keeping only the 3 times observations of 44 agricultural products under the product group named fruit, vegetables and potatoes. Summarized indicators are shown in the Table 2.

Table 2

	2010	2011						
		I	II	III	IV	V	VI	VII
Main CPI	100.0	107.9	108.6	109.1	108.8	108.7	107.4	104.2
		3.5	0.6	0.5	-0.3	-0.1	-1.2	-3.0 ^{*)}
CPI calculated by	100.0	107.7	108.5	109.1	108.7	108.6	107.4	104.1
2 observation (fruit, vegetables		3.3	0.8	0.5	-0.3	-0.1	-1.1	-3.1 ^{*)}
by 3 observation)								
Difference in	100.0	0.2	0.0	0.0	0.1	0.1	0.0	0.2
%		0.2	-0.2	0.0	0.1	0.0	-0.1	0.1 ^{*)}

**) price increase compared to previous month*

The calculations of CPI combined in 10 and 65 item categories by the mentioned two methods are shown in the attached tables.

The purpose of the calculations was to determine the following:

- What will be the impact of reducing the price collection number in Armenia on CPI (instead of collecting it 3 times in a month, if it will be collected 2 times in a month),
- As a result of reducing the frequency of price collections to reduce and alleviate the burden of price collectors,
- To give the possibility to price collectors and involve them in the following additional activities:
 - the sampling of commodities-services of the observed trade and services outlets,
 - regular adjustments of technical characteristics of commodities-services,
 - in case of commodity-services that are going out of the market to replace them with new product,
 - to observe the prices of newly appeared products or services in the market and calculation of average prices.
 - in case of necessity the inclusion of new commodities and services into the CPI calculations (to enlarge the list of the observed commodities -service). For example, insurance services, housing services, long term used commodities, etc.The mentioned activities will be continued throughout the whole year.

Conclusion:

1. Taking into consideration the highly seasonal nature of products included in the product category of fruit, vegetables and potato, as a result of which the prices of those products have drastic fluctuations during different periods in a year and even during the month and also taking into account their relatively high density (thus having bigger impact on the whole CPI), to keep the current routine and conduct the price observations three times in a month (on the 1st, 10th and 20th days and the nearest to these dates).
2. Taking into consideration that in the CPI calculations the price and tariff changes of other commodities and services are not significant in a month and their impact on CPI is not big enough, to reduce the number of price observations of those commodities-services and instead of having 3 price collections in a month to make it 2, on the 10th and 20th days and the dates nearest to these days of each month.
3. To involve price collector statisticians more into the activities related to assessment of representative products-services and in the annual revision and updating process.
4. Make appropriate methodological and programmatic technological changes in Armenia for calculation of CPI and HICP, in future by keeping only the HICP.
5. To carry out the revision of weights, structure of commodities-services for calculation of CPI more often (possibly once a year), by replacing them with new representative products and service types.
6. To give instructions and conduct relevant training seminars for price observers.
7. To organize joint discussions with EU experts and consumers, by explaining the purpose of the mentioned organizational and methodological changes and their impact on the further development of price statistics.

The mentioned activities will be carried out during 2011-2012 within the frame of Twinning Project.

Annex 5. Road map for the component (updated)

EU Twinning Project Forwarding Armenian Statistics Through Twinning AM09/ENP-PCA/TP/04																									
Roadmap for an HICP for Armenia																									
Task / Time	2011												2012												2013
	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January			
<u>Sampling and Quality Adjustments</u>																									
- Analyses of the effect of not collecting prices on the 1st every month																									
- Organizational consequences of changing the price collection																									
- Yearly updating of sample / using price collectors in assessing the representative products																									
- Determine for which areas of consumption to change the method for quality adjustment.																									
- Quality Adjustments for technological products																									
- Reduce the sample: Fewer sampling days in the month																									
- Ensure sufficient elementary aggregates to represent the diversity of items within each category of COICOP																									
<u>Weighting</u>																									
- Determine whether it is possible for the HBS to apply the COICOP/HICP in the terms of this project.																									
- Based on the Armenian experience and knowledge, make preparations for a new production system for weights.																									
- Producing an EXCEL-system to make the changing of weights less time consuming																									
- Inclusion of car insurances in HBS																									
- Calculate weights for car insurance																									
<u>Price concept</u>																									
- Find a less time consuming way to handle the check for missing prices / matching prices. An EXCEL solution.																									
- Include services into the index in the month they are consumed																									
<u>Classification of Consumption</u>																									
- Prepare for the COICOP/HICP in weights and allocation of prices																									

Annex 5, cont.

EU Twinning Project Forwarding Armenian Statistics Through Twinning AM09/ENP-PCA/TP/04																									
Roadmap for an HICP for Armenia																									
Task / Time	2011												2012												2013
	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January			
Coverage																									
- Include car insurances in the sample																									
- Analysis of whether more areas of consumption should be included in the index; Depending of their weight: Used cars, kindergardens in group 12.4, internet shops																									
Special areas of consumption																									
- Seasonal products. Analysis conducted and decision made																									
Other topics																									
- Give recommendations on whether to produce both CPI and HICP or only the HICP in the future, on the basis of results from trial HICP calculations.																									
- Implement changed work processes in the statistical regional offices																									
- Communication																									
Missions																									
Activity E.1+2.: Identification of issues / Determination of alternatives: Mr. Martin Larsen and Ms. Kirsten Balling	4-14 / 4																								
Activity E.3.: Assistance mission in Armenia: Mr. Paul Lubson and Mr. Oskars Alksnis					5-9 / 9																				
Activity E.4.: Workshop with MS and BC policy experts. Participation from the regional offices. Ms. Nadezda Aleveja and Mr. Oskars Alksnis												12-16 / 3													
Activity E.5.:Study visit to Statistics Denmark: 3 BC experts															4-8 / 6										
Activity E.6.:Workshop by MS policy experts to Armenia: Ms. Kirsten Balling and Ms. Nadezda Aleveja																					3-7 / 12				