Forwarding Armenian Statistics Through Twinning

AM09/ENP-PCA/TP/04

MISSION REPORT

on

EXHAUSTIVENESS OF GDP ESTIMATES

ACTIVITY C.6
REVIEW OF IMPLEMENTATION

Mission carried out by

Mr. Ole Berner, Statistics Denmark
Ms. Annette Thomsen, Statistics Denmark

Armenia, 11 – 14 December 2012

Final Version

National Statistical Service
Republic of Armenia

Statistics Denmark

Authors' names, addresses, e-mails

Ole Berner
Head of Division of National Accounts
Statistics Denmark
Sejrøgade 11
DK 2100 Copenhagen Ø
E-mail: obe@dst.dk

Annette Thomsen
Deputy Head of Government Finances
Statistics Denmark
Sejrøgade 11
DK 2100 Copenhagen Ø
E-mail: ath@dst.dk

Table of contents

List of Abbreviations

BR	Business Register
SD	Statistics Denmark
ESA	European System of Accounts
GDP	Gross Domestic Product
HBS	Household Budget Survey
NACE	Nomenclature generale des Activitiés économique dans les Communautes Eu-ropéennes (the industry classification of European Union)
NSSRA	National Statistical Service of Republic of Armenia
SNA93	System of National Accounts 1993 (United Nations)
SNA2010	System of National Accounts 2008 (United Nations)
TAE	Tabular Approach of Eurostat

1. General comments

The main purpose of the mission was to evaluate the processes, the activities and the results of the project. In addition, recommendations for further development of the Armenian national accounts were discussed. In particular, an implementation strategy for the developed improvements as part of a major revision (including implementation of 2008SNA) was discussed in detail.

During the mission there was also a seminar on "Revisions of the National Accounts" at which the MS experts presented general guidelines for revision policy and the BC experts presented the revision policy for the Armenian national accounts which has recently been formulated in a standardised framework. The BC experts also presented the achievements from the twinning project with a focus on the tabular approach. There was a good discussion of the Armenian revision policy in general and the timing and scope of major revisions in particular. At the seminar participants from the Central Bank, the Ministry of Finance, the Ministry of Economy and the Economic Research Institute were present.

The MS Experts would like to express their thanks to all officials and individuals met for the kind support and valuable information, which was received during the stay in Armenia, and which highly facilitated the 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.

2. Assessment and results

Based on information exchanged before the mission and also on discussions that took place at previous missions, final discussions on improved estimates for N2 illegal activity (production of and trade in narcotics) and for N6 Misreporting by producer (hidden activity in the observed economy) took place. Two other important issues related to the exhaustiveness of the national accounts were discussed, namely an implementation strategy for the improvements and the question of back data. Finally, the formulation of a revision policy for regular revisions was discussed and presented to users. The following assessments were made:

(1) Revision policy
The BC experts had developed their revision policy and a release calendar for 2013 in a framework inspired by the framework used by the German national accounts. It was discussed in detail with the MS experts and it was agreed that overall it gave a good overview and presented relevant information to users. Some minor consistency issues in the presentation of the policy were raised. The revision policy was presented at a seminar for users.

(2) N2 Illegal activity (narcotics)
At previous missions it has been agreed that adjustments for illegal activity, in particular for narcotics, should be made and initial discussions on methodology and data availability had already taken place. Before this mission, the BC experts had sent calculations to the MS experts, and based on a note prepared by the MS experts the results of the calculations were discussed and evaluated.

The calculations are based on a demand side approach, and they are made in a very transparent way. They use available and relevant information, and are made for the period 2000-2011. It is assumed that the supply of narcotics is mainly from domestic production. The methodology is sound and provides sensible results which can provide the basis for the implementation in the national accounts. It should be considered to investigate some minor details regarding input data for the calculations before the results are actually implemented.

(3) N6 Misreporting by producer (hidden activity in the observed economy)
Based on discussions at previous missions, it had been agreed to improve the adjustments for hidden activity in the observed economy by number of hours worked. The improvements should be made for

NACE A, B, C, D, E, F, H and O. Calculations sent by the BC experts to the MS experts before the mission were discussed.

The calculations are based on the methodology agreed at previous missions. The effects of adjusting by number of hours worked are largest in manufacturing (NACE D) and construction (NACE F) both in absolute and relative terms. The economics and the reality behind the new results were discussed as part of the evaluation, and it was concluded that the results reflect the economic reality and would improve the adjustments for N6.

(4) Implementation strategy and back data
An implementation plan for the improvements, and the timing with other large upcoming revisions, like the introduction of 2008SNA, NACE rev. 2 for years before 2010 was discussed. The BC experts explained that they expect to publish revised national accounts according to the 2008SNA at the beginning of 2015.

The MS experts underlined the importance of distinguishing between the implementation process and the publication of revised data. In addition it is important to implement the changes in steps and the MS experts proposed the following order:

Step 1: NACE rev. 2 for years before 2010
Step 2: Improvements related to exhaustiveness and other revisions of data
Step 3: Implementation of 2008SNA.

The question of back data was also discussed. The seminar with external users showed the need for long consistent time series from the point of view of users. However these needs should be balanced against the limited resources available. Preferably the revisions should be taken back to 2000 but if this is not possible, the year 2005 could be a compromise.

The methodology for the calculation of back data was also discussed. It was agreed that simple and robust methods should be used. For example transition keys based on 2010 could be used for the transformation to NACE rev. 2 for earlier years. For other revisions a coefficient method could be used.

The BC experts informed that they were planning to develop supply-use tables for the year 2011 in order to improve the quality and the exhaustiveness of the national accounts. The MS experts agreed that supply use tables indeed would improve the quality. However, it is important to keep in mind that it is also very resource demanding.

3. Conclusions and recommendations

3.1 Summary conclusions

Based on the above findings and assessments the following conclusions were reached:

(1) It was concluded that the proposed revision policy and attached release calendar was a reasonable compromise between user needs and the appearance of statistical information. Some presentational issues should be adjusted.

(2) The estimates of production of and trade in narcotics are sound and appropriate for implementation in the national accounts. Estimates of other illegal activities such as smuggling and prostitution should be developed.

(3) An adjustment of the method for the compilation of the hidden economy (N6) taking into account differences in average working hours was evaluated and it was agreed to introduce the adjusted method.

(4) It was concluded, that the revisions of the National Accounts due to the transition to NACE rev.2, the revision of data and methods, and 2008SNA (including back data) should be published at the same time, planned to take place at the beginning of 2015.

(5) The revised back data should preferable go back to 2000. In case of scarce resources it might be considered only to go back to 2005.

(6) It was concluded that the back data on NACE rev.2 for the years before 2010 could be based on transition keys for the year 2010 showing how each of the 17 NACE rev.1 industries is allocated to the 21 NACE rev.2 industries in 2010. Different transition keys should be established for output, intermediate consumption and employment.

(7) Concerning revisions due to revisions of data or due to the transition to 2008SNA it was acknowledged that direct compilation of back data for all the years was not needed. Instead the coefficient method could be used to estimate backward revisions.

(8) The work towards the release in the beginning of 2015 should be conducted in the following order:

Step 1: Data before 2010 should be transformed to NACE rev.2.
Step 2: Revisions due to the revisions of data and methods should be incorporated
Step 3: Revisions due to the transition to 2008SNA should be introduced.

3.2 Recommendations

(1) The MS experts supported the proposed revision policy and the plans to publish a release calendar in early 2013.

(2) The estimates of use of narcotics are sound, and it is recommended that they are implemented in the revised national accounts that are to be published in 2015. It is further recommended that estimates of other illegal activities such as smuggling and prostitution are developed for that same revision.

(3) It is recommended to adjust the method for the compilation of the hidden economy (N6) taking into account differences in average working hours.

(4) It is recommended, that the revisions of the National Accounts due to the transition to NACE rev.2, the revision of data and methods, and the implementation of 2008SNA (including back data) should be published at the same time, planned to the beginning of 2015.

(5) It is recommended that the revised back data should go back to 2000. In case of scarce resources it might be considered only to go back to 2005.

(6) It is recommended that the back data on NACE rev.2 for the years before 2010 could be based on transition keys for the year 2010 showing how each of the 17 NACE rev.1 industries is allocated to the 21 NACE rev.2 industries in 2010. Different transition keys should be established for output, intermediate consumption and employment.

(7) Concerning revisions due to revisions of data and methods or due to the transition to 2008SNA it was acknowledged that direct compilation of back data for all the years was not needed. For the remaining years it is recommended to use the coefficient method.

(8) It is recommended that the work towards the release in the beginning of 2015 is conducted in the following order:

Step 1: Data before 2010 should be transformed to NACE rev.2.
Step 2: Revisions due to the revisions of data and methods should be incorporated
Step 3: Revisions due to the transition to 2008SNA should be introduced.

Other recommendations

The informal sector survey is an important source for adjustments. It could be considered to repeat the survey at certain intervals. Other one-off surveys that are used as benchmarks could also be considered repeated in order to achieve updated benchmarks.

The business register includes corporations and some unincorporated enterprises that are registered. A better coverage of unincorporated enterprises in the business register will allow for these enterprises to be included in the business statistics survey.

When compiling GDP from the output side, the compilation of gross value added accounts for by far the largest part of GDP. Using one source for output and another source for intermediate consumption can however create consistency problems. It should be considered to include relevant information on intermediate consumption in the business statistics survey in order to get this information from the same source.

Due to the growing importance of NPISH in Armenia, amongst others because of an increasing engagement of non government organisations it is recommended to repeat the survey on NPISH (last survey from 2001) as soon as possible. N4 exhaustiveness additions in the TAE could be lowered, if survey information for the positions that sum up to the costs of these NPISH were available.

4. Achieved results in component C, Exhaustiveness of GDP estimates

The overall results of the work on component C can be summarised as follows:

1. Documentation of the non-exhaustiveness adjustments currently made in the Armenian National Accounts through a **full exercise of the tabular approach** (EU standard) for the year 2009, where the non-exhaustiveness adjustments are broken down by type of non-exhaustiveness adjustment, institutional sector and industry. Due to the character of the information used to estimate the adjustments it has not been possible to distinguish between N1 and N3, which has all been classified as N3, and between N4 and N5, which has all been classified as N4.

2. **Achieved improvements of the non-exhaustiveness estimates**: Established estimates for tips in hotels and restaurants (N7), for the use of narcotics (N2), and an adjusted compilation method for the hidden economy in several industries (N6 in several industries).

3. Identified a number of **future actions in order to improve the non-exhaustiveness estimates**:
   - Consider the need for estimates for tips in other industries than hotels and restaurants e.g. taxi drivers, hairdressers etc. (improvement of N7 estimates).
   - Establish estimates for illegal activities other than use of drugs, in particular smuggling and prostitution (improvement of N2 estimates).
   - Repetition of the "Informal Sector Survey" which is an important source for a considerable part of the non-exhaustiveness estimates (improvement of N1/N3 and N6 estimates).

4. Identified some **future actions in order to improve the direct statistical coverage and thereby reducing the need for the non-exhaustiveness estimates**:
   - Better coverage of unincorporated enterprises in the business register and inclusion of these enterprises in the business statistics survey (reduces the value of N1/N3 estimates).
   - Repetition of the survey on NPISH (last survey from 2001) as soon as possible (reduces the value of N4/N5 estimates).

Those two actions together would reduce the value of the non-exhaustiveness estimates by 50 percent.

5. Identified an action in order to **improve the quality of the Armenian National Accounts** in general:
   - When compiling GDP from the output side, the compilation of gross value added accounts for by far the largest part of GDP. Using one source for output (Business statistics) and another source for intermediate consumption (Special survey from small sample), can however create consistency problems. It should be considered **to collect relevant information on intermediate consumption in the business statistics survey** in order to get the information on output and intermediate consumption from the same source.

6. Formulated a **revision policy and a release calendar** in accordance with the European standards for regular revisions. For major revisions, a **draft plan for the transition to NACE rev.2, the implementation of revisions of data and methods and the implementation of 2008SNA** was agreed. The plan aims at a release in early 2015 of the revised National Accounts data based on NACE rev.2 and 2008SNA.

7. Other issues which have been considered in the component:
   - Analyses of the new "Social Package" and recommendation on how to record it in the National Accounts,
   - Instructions on how to use the seasonal adjustment software,
   - Discussions on "goods sent abroad for processing",
   - Discussions on the recording of insurance,
   - Discussions on the use of the COFOG classification.
   - Discussions of the draft questionnaire for the Agricultural Census.

Annex 1. Terms of Reference

Activity C.6   *Review of the implementation*

Component mandatory result (cf. contract): *Full tabular exercise completed; better estimates achieved for at least half of the tables; specific improvement plans for the remainder formulated.*

1. Purpose of activity
The purpose of the activity is to evaluate the processes, the activities, and the results of the project. Furthermore, recommendations for further development of the Armenian national accounts of are to be provided.

2. Expected output of the activity
The expected output of the activity is:
o   Conclusions on the work with the tabular approach methodology:
   o   Finalization of the work with the adjustment types N1-N7
   o   Documentation of the work;
o   A plan for the introduction of the revisions derived from the Twinning project:
   o   The need for consistent time series
   o   Co-ordination with other revisions (SNA2008, NACE rev. 2, Agr. Census)
o   Participation in a meeting with stakeholders for a discussion of revision principles:
   o   Ordinary revisions (versions)
   o   Major revisions (data revisions, methodological revisions)
o   Next steps for NSSRA: Recommendations.

3. Project Participants
Ms Lilit Petrosyan, Member of State Council on Statistics *(BC Component Leader)*
Ms Lusya Khachatryan, Head of National Accounts and Macroeconomic Indicators Division;
Ms Nadezda Astvatsaturova, Main Specialist of National Accounts and Macroeconomic Indicators;
Ms Susanna Khachatryan, Main Specialist of National Accounts and Macroeconomic Indicators;

Mr Ole Berner, Head of National Accounts Division, Statistics Denmark *(MS Component Leader*;
Ms Annette Thomsen, Deputy Head of Government Finances Division, Statistics Denmark.

Annex 2. Programme for the mission 11-14 December 2012

Time	Place	Event	Purpose / detail
Tuesday, 11 Dec. Morning	Congress Hotel	Meeting with RTA	To discuss the programme of the week
Afternoon	NSSRA	Meeting with BC Experts	Current status. Developments since last activity (C.4). Plans for the week.
	NSSRA	Meeting with BC Experts	Preparations for Wednesday seminar. Fine-tuning of presentations.
Wednesday, 12 Dec. Morning	NSSRA	Meeting with BC Experts	Discussion of the N1-N7 adjustments: • the applied methodologies • the size of the revisions • back data options
Afternoon	NSSRA	Seminar for external stakeholders	Joint agenda with the Quality Management component: • Revisions of the national accounts – principles and practical implementation • Co-ordination with revisions of primary statistics • EU's "Code of Practice": the release calendar of the national statistical agency
Thursday, 13 Dec. Morning	NSSRA	Meeting with BC Experts	Continuation of Wednesday morning programme
Afternoon	NSSRA	Meeting with BC Experts and RTA	Documentation of the work during the Twinning project
Friday, 14 Dec. Morning	NSSRA	Meeting with BC Experts	Discussion of preliminary report and agreement on conclusions.
Afternoon	NSSRA	Debriefing with BC Project Leader	Conclusions and recommendations.

Annex 3. Persons met

Stepan Mnatsakanyan, President of NSSRA (BC Project Leader)
Lilit Petrosyan, Member of State Council on Statistics
Anahit Safyan, Head of International Statistical Cooperation Division,
Lusya Khachatryan, Head of Macroeconomic indicators and National accounts statistics division
Susanna Khachatryan, Main specialist of Macroeconomic indicators and National Accounts Statistics division
Nadezhda Astvatsaturova, Main specialist of Macroeconomic indicators and National Accounts Statistics division

To be completed by RTA Assistant

External stakeholders
Ministry of Finance of RA
Ministry of Economy of RA
Central Bank of RA
Economic Research Institute

Annex 4. Armenian National Accounts Revision Policy and Time Table

This document is prepared mainly to improve the information level of statistical data users, as well as to make statistical output of Armenian National Accounts more available. Meanwhile, it aims at coordinating the Armenian National Accounts with international standards as well as harmonize with other statistical systems. The current time table was prepared in the framework of Component C, Exhaustiveness of GDP Estimates, of the EU project, Forwarding Armenian Statistics Through Twinning, and is based on the EU Code of Practice.

The Armenian National Accounts are, as is international practice, being regularly revised. This process involves regular/current revisions and major revisions.

Regular or current revisions
Regular or current revisions are made on annual or quarterly basis. Those revisions are made via adjustments of data for each quarter. Generally, quarterly data for the current year may be reviewed during the next quarter, while all quarters of annual data are also subject to revision.

The structure of Regular or Current Revisions

Name of the published indicator	Publication date	Publication of new data		Data Revision	Name of Publication
		Quarterly	Annual		
GDP by activity type	60th day of the current (t) year	Q4 (t-1)	t-1	1. All quarters of year (t-1) 2. All quarters of year (t-2)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	90th day of year (t)	Q4 (t-1)	t-1	1. All quarters of year (t-1) 2. All quarters of year (t-2)	«Data bases» of NSS RA web site «Socio- economic Situation of RA» monthly report
GDP by activity types, income and expenditure components (calculated by 3 methods) based on the reporting data of the year (t-2)	End of April of year (t)	-	t-2	From Q1 (t-2) to Q4 (t-1) based on reporting data of year (t-2)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by activity type	End of May of year (t)	Q1 (t)	-	All quarters of year (t-1)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	End of June of year (t)	Q1 (t)	-	All quarters of year (t-1)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
		-	-	Year (t-1) and all quarters of (t-1) based on final data of balance of payments	

GDP by activity types	End of August of year (t)	Q2 (t)	-	1. Previous quarter Q1 (t) 2. All quarters of year (t-1)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	End of September of year (t)	Q2 (t)	-	1. Previous quarter Q1 (t) 2.All quarters of year (t-1)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by activity type	End of November of year (t)	Q3 (t)	-	1. Previous quarters Q1 (t) and Q2 (t) 2. All quarters of year (t-1)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	End of December of year (t)	Q3 (t)	-	1. Previous quarters Q1 (t) and Q2 (t) 2. All quarters of year (t-1)	«Data bases» of NSS RA web site «Socio-economic situation of RA» monthly report

Major Revisions

Major revisions include the whole National Accounts statistical system for longer time series. Major revisions are made with the coordination (according to parallel agreements) of the National Accounts Statistics (NAS), and main revisions of other macro statistics (MS), i.e. balance of payment, external debt, international investment position, government finance statistics).

For implementation of these revisions it is required to closely coordinate the work between the person responsible for compilation the National Accounts and Macro statistics.
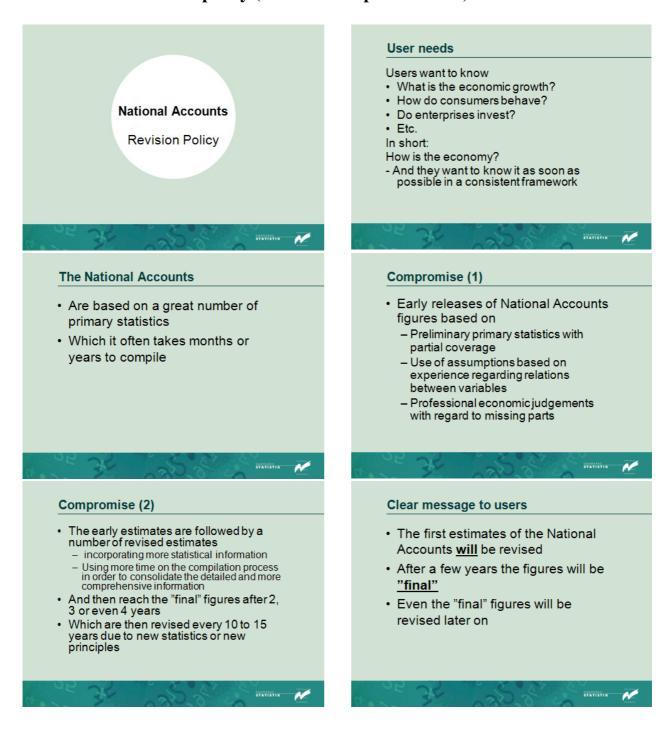
The structure of Major Revisions

	Major Revisions	
	Special revisions	**Regulated (planned) revisions**
Description	Due to methodological changes (for example, implementation of new NACE, SNA 2008, ESA 2010, BPM6, etc.)	As a result of change or update of data sources (once every 5-10 years). (as a result of surveys, censuses, or using other estimation methods).
Management	The process should be regulated by working group with participants from NSS RA and responsible persons for administrative statistics based on the relevant time table.	The process should be regulated by a working group with participants from NSS RA and responsible persons for administrative statistics based on a concrete time table.
Depth	**Possible recalculation of the time series**	
Timing	Agreed time table applicable for all statistical systems.	Agreed time table applicable for all statistical systems. Revision years should end with 0 or 5. Implementation years should end with 4 or 9.
Scope	Annual and quarterly national accounts, annual and quarterly BoP, MFS, IIP, ED, GFS, etc.	

National Accounts Time table for 2013

This time table is prepared mainly to enhance the information level of statistical data users, as well as to make statistical output of the Armenian National Accounts more available. Meanwhile, the time table aims at integrating the Armenian National Accounts with international standards, as well as to harmonize it with other statistical systems. The current timetable was prepared in the framework of Component C "Exhaustiveness of GDP" of the EU project, "Forwarding Armenian Statistics through Twinning", and is based on the EU Code of Practice.
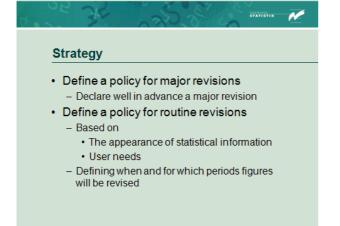
Name of the published indicator	Publication date	Publication of new data		Reviewed data	Name of publication
		Quarterly	Annual		
GDP by activity types	28 February, 2013	IV quarter of 2012	2012	1 All previous quarters of 2012 2. All quarters of 2011	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	29 March 2013	IV quarter of 2012	2012	1 All previous quarters of 2012 2. All quarters of 2011	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by activity types, income and expenditure components (calculated by 3 methods) based on the reporting data of 2011	30 April 2013	-	2011	From I quarter of 2011 to IV quarter of 2012 based on reporting data for 2011	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by activity types	31 May 2013	I quarter of 2013	-	All quarters of 2012	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	28 June 2013	I quarter of 2013	-	All quarters of 2012 based on final data of balance of payments 2012	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by activity types	30August of 2013	II quarter of 2013	-	1.I quarter of 2013 2.All quarters of 2012	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	30 September of 2013	II quarter of 2013	-	1.I quarter of 2013 2.All quarters of 2012	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by activity types	29 November of 2013	III quarter of 2013	-	1. I and II quarters of 2013 2. All quarters of 2012	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report
GDP by expenditure components	30 December 2013	III quarter of 2013	-	1. I and II quarters of 2013 2. All quarters of 2012	«Data Base» of NSS RA web site «Socio-economic situation of RA» monthly report

Annex 5. Revision policy (Power Point presentation)

National Accounts

Revision Policy

User needs

Users want to know
- What is the economic growth?
- How do consumers behave?
- Do enterprises invest?
- Etc.

In short:

How is the economy?

- And they want to know it as soon as possible in a consistent framework

---

The National Accounts

- Are based on a great number of primary statistics
- Which it often takes months or years to compile

Compromise (1)

- Early releases of National Accounts figures based on
  - Preliminary primary statistics with partial coverage
  - Use of assumptions based on experience regarding relations between variables
  - Professional economic judgements with regard to missing parts

---

Compromise (2)

- The early estimates are followed by a number of revised estimates
  - incorporating more statistical information
  - Using more time on the compilation process in order to consolidate the detailed and more comprehensive information
- And then reach the "final" figures after 2, 3 or even 4 years
- Which are then revised every 10 to 15 years due to new statistics or new principles

---

Clear message to users

- The first estimates of the National Accounts **will** be revised
- After a few years the figures will be **"final"**
- Even the "final" figures will be revised later on

Two types of revisions (1)

- Major revisions
  - Takes place with long intervals, typically 10 to 15 years
  - Can be caused by
    - New statistical information
    - New principles
    - New classifications
  - Usually concerns levels and only to a lesser extent growth rates

Two types of revisions (2)

- Routine revisions
  - The revisions that takes place between the first release of annual/quarterly figures to the "final figures
  - Usually concerns growth rates and to a lesser extent levels

Strategy

- Define a policy for major revisions
  - Declare well in advance a major revision
- Define a policy for routine revisions
  - Based on
    - The appearance of statistical information
    - User needs
  - Defining when and for which periods figures will be revised

EU proposal for common revision policy

- Possibility for major revisions every 5 year (years ending at 0 and 5)
- Routine revisions for the last four years with revision "windows" in the 1'st and 3'rd quarter covering all the for years (and the quarterly figures for these years)
- The revision policy covering both the National Accounts and the Balance of Payments