

**National Institute of Statistics, Romania**

**Direction of National Accounts and Macroeconomic Synthesis**

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## **Quarterly National Accounts Inventory - Romania -**

This document is produced in the framework of the Grant Agreement Number 41100.2005.006-2007.258, Project “Quarterly National Accounts Inventory”. The main aim of the work-project was to produce a comprehensive description of the sources and methods used for the compilation of Quarterly National Accounts in the Romanian statistics, according to the European System of Accounts version 1995 (ESA95).

The present document does not include numerical illustration because the Romanian national accounts series are currently under a major process of revision according to ESA95. This will conduct to changes in quarterly accounts figures. An updated version of Quarterly National Accounts Inventory will be made available in order to cover the revised data series together with eventual improvements, when they are officially published.

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## 1. Overview of the system of quarterly accounts

### 1.1. Organisation and institutional arrangements

In Romania, Quarterly Gross Domestic Product is regularly compiled from year 1992 and it has been published since 1997. Quarterly national accounts are estimated based on Council Regulation No. 2223/96 of 25 June 1996 on the European System of National and Regional Accounts (ESA95) starting year 1998. ESA79 was applied in Romanian national accounts starting year 1990 until year 1997.

In Romania National Institute of Statistics, the **organisation of activity** of national accounts in general and of QNA compilation in special, is performed within General Direction of National Accounts and Macroeconomic Synthesis, which is made of two units: Direction of Price Statistics and Direction of National Accounts and Macroeconomic Synthesis. The Direction of National Accounts and Macroeconomic Synthesis is made of following departments:

- Input-output Table Department;
- Institutional Sector Accounts Department;
- Government Finance Statistics Department;
- *Analyses and Macroeconomic Synthesis Department (with no responsibility in compiling national accounts, but only to issue certain monthly and yearly important publications).*

Total staff, together with heads, currently working for national accounts compilation with the Direction of National Accounts and Macroeconomic Synthesis is **21 persons**, of which 2 persons are intensively involved into compilation of QNA, besides other 4 involved into collecting and preparing the set of indices and other indicators used in compiling QNA. Also, these persons must develop different improvement projects in the field, as PHARE ones.

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### **1.2. Publication timetable, revision policy and dissemination of QNA**

In Romania, the quarterly compilations are subordinated to the aim that the results on QGDP should be operatively provided (in maximum two months after the reference period), and should confer accuracy in presenting the reality of national economy.

In 1997, NIS of Romania has started to publish estimates of quarterly GDP, in current and constant prices (prices of the corresponding quarter of the previous year). In general, the quarterly estimates were ready for publish at T+75 days. Currently, the releases of the Romanian quarterly estimates follow the established **Eurostat timetable** (70 days, or less, after the reference quarter). Data are disseminated in a Press Conference which is also posted on the NIS web-site.

Regular revisions of QNA take place when new publication of annual national occurs. In Romanian national accounts, ESA95 was implemented starting year 1998, while data backwards to 1989 are available based on ESA79. In this sense, in order to fulfil the Transmission Program Regulation, Romania must transmit quarterly back-data based on ESA95 starting year 1995. At this moment, a major revision of the Romanian national accounts takes place, with two main objectives:

- to revise data series starting year 1998 based on ESA95 by enhancing the latest improvements in the Romanian NA;
- to revise national accounts data compiled based on ESA79 by applying ESA95. The first step is the revision of series 1995-1997.

### **1.3. QNA compilation approach**

ESA95 states that the compilation of QNA is part of the general framework of the system of national accounts. QNA represents a coherent set of transactions and accounts from the non-financial and financial field, with a quarterly periodicity. In general, and for Romania in special, the development of QNA estimation was imposed by various causes:

- QNA offer a view on the national economy evolution within a smaller periodicity than the year, in an operative way for the political decision-makers;
- QNA could detect the phases of the economic cycle;
- QNA represents a system of consistent and coherent economic information;
- QNA can be used for annual semi-final estimations of national accounts.

The methods used are “direct procedures” based on the available data sources, in special statistical and administrative ones. Thus, these sources enable the **compilation of QNA by production and expenditure approaches**, offering the possibility to check the consistency, the level and the volume of the QGDP.

The income approach was not yet addressed until year 2008, because of poor infra-annual data sources on the specific components. Even the problem of data sources availability cannot be changed on short term, efforts are made in order to obtain the sequence of accounts by institutional sectors at quarterly level, this covering also the income approach of QGDP.

The quarterly national accounts are consistent with annual accounts.

Starting with 2008, the quarterly accounts are compiled and send according to ESA95 Transmission Programme using the **required breakdown (A6) based on NACE Rev.1.1**. The back-series were revised and sent accordingly.

#### **1.4. *Balancing, benchmarking and other reconciliation procedures***

Due to the fact that QGDP is compiled based on production and expenditure approaches, the balancing between the resources and uses sides is possible. The production approach is more sound method than the expenditure one, due to the use of more reliable data sources.

In 1994, it was set up a correspondence between the industrial classification used for the quarterly accounts and the one used for the annual Resources-Uses tables allowing the aggregation of the 105 industries of the annual nomenclature into 14 industries of quarterly Input-Output framework nomenclature. **Quarterly Resources-Uses tables** have been elaborated for 1994-1996, but this work was abandoned caused by, mostly, the lack of human resources.

Simplified quarterly resources-uses tables were issued for years 2003 and 2004, by 10 homogenous branches in correspondence with the 105 industries (homogenous branches) used in annual SUTs and NACE Rev.1.1. The valuation was made in current prices and average prices of the previous year, due to applied benchmarking with the final version of the annual supply-uses tables for years 2003, 2004 in current prices and year 2004 in prices of year 2003 (constant prices). This work is intended to continue for the final version of quarterly accounts whenever the annual SUTs are available.

### **1.5. Volume estimates**

The Romanian QNAs in **constant prices** are compiled, traditionally, based on the corresponding quarter of the previous year, due to the available data sources (Paasche price indices and Laspeyres volume indices). Also, the quarterly constant price estimations are compiled based on year 2000 (in average prices of year 2000), by compiling specific chain-linked indices. Data are not seasonally adjusted.

QGDG in constant prices is compiled based on production approach and expenditure approach. Different series of indices are applied for each industry. In general, double deflation is used for deriving Gross value added at constant prices.

### **1.6. Seasonal adjustment and working day correction**

At present, no seasonally adjusted quarterly national accounts data are published. Efforts are made in order to make available these series during year 2009, depending also on the finalisation of the major revision process in Romanian national accounts.

**Flash estimates** issue was also addressed in the framework of improvement of QNA, being linked to the seasonal adjustment process. Experimental figures were obtained, but more tests will be performed until starting the dissemination.

### **1.7. Additional information**

The timetable of the publications (including the QNA from Monthly Statistical Bulletin) can be found at the following address:

[http://www.insse.ro/cms/files/catalog/catalog\\_2009.pdf](http://www.insse.ro/cms/files/catalog/catalog_2009.pdf)

QGDG releases for Romania announced in the related Press Conference can be found at the following address:

<http://www.insse.ro/cms/rw/pages/comunicate/pib.ro.do;jsessionid=0a02458c30d5a2b8e165ce05416392e7d7d3029cb76b.e38QbxoSahyTbi0QbNf0>

The calendar of the Press Conferences for year 2009, for example, is available under:

<http://www.insse.ro/cms/rw/pages/press2009.en.do>

A summary methodology in Romanian language regarding the estimation of Romanian QNA is posted under:

[http://www.insse.ro/cms/files/aplicatie/Metodologii%20CAM/Conturi/Metodologie\\_conturi\\_trimestriale.pdf](http://www.insse.ro/cms/files/aplicatie/Metodologii%20CAM/Conturi/Metodologie_conturi_trimestriale.pdf)

## 2. Publication timetable, revisions policy and dissemination of QNA

### 2.1. Release policy

In general, the annual national accounts data are not based on the quarterly national accounts estimations. The quarterly national accounts are revised after the estimates of annual national accounts are issued, in order to respect the equality between annual figures and the sums of the four quarters (in current and constant prices). Thus, the annual estimates are mostly independent (except for provisional annual estimates) from the quarterly estimates of national accounts, the reconciliation representing the end of the compilation process.

Table 2.1: Releases of annual estimates

TIMELINESS	VERSION	AVAILABLE INDICATORS
N+3 months (March)	Provisional	The production account by 14 branches and total GDP, at current and constant prices (previous year prices). GDP by main expenditure aggregates.
N+10 months (October)	Semi-final version	The production account by 14 branches and total GDP at current and constant prices (previous year prices). GDP by main expenditure aggregates (more data sources are used for these estimates). The production account and the generation of income account for the institutional sectors (not published). Balance resources-uses.
N+21 months (September)	Final version	The supply-use tables at current and constant prices. The sequence of institutional sector accounts (Integrated Economic Accounts Table)
N+26 months (February)	National Accounts Publication with the final version of year N accounts (in Romanian and English)	The synthesis tables (sector accounts and SUTs). Series of national accounts data. Analysis on the basis of national accounts data.

*Table 2.2: Releases of quarterly estimates (the QNA revisions follow annual revisions)*

<b>Release of the quarterly estimates</b>	<b>Version</b>
T+70 days (March)	Provisional
T+15 months (March)	Semi-final version
T+27 months (March)	Final version

Quarterly data in current and constant prices (by production and expenditure approach) is first released after 70 days by the end of the reference quarter (as required by Transmission Programme), when are disseminated in a Press Conference which is also posted on the NIS web-site.

In Romanian national accounts, ESA95 was implemented starting year 1998, while data backwards to 1989 are available based on ESA79. In this sense, in order to fulfil the Transmission Program Regulation, Romania must transmit quarterly back-data based on ESA95 starting year 1995. At this moment, a major revision of the Romanian national accounts takes place, with two main objectives:

- to revise data series starting year 1998 based on ESA95 by enhancing the latest improvements in the Romanian NA;
- to revise national accounts data compiled based on ESA79 by applying ESA95. The first step is the revision of series 1995-1997.

In this respect, all series of quarterly national accounts will be revised and will be sent to Eurostat. A special publication is envisaged to be issued in 2009 in order to inform the public about changes into the series and to present the revised data series, both annual and quarterly.

## **2.2. Contents published**

QNA are regularly published within Monthly Statistical Bulletins issued by National Institute of Statistics of Romania. Also, the half-year and 9 months data are published together with the corresponding quarter (the second and the third). The values of constant prices quarterly accounts are not published in bulletins, but only the real



growths. When the publication is issued, it is freely available on the web-site of NIS, [www.insse.ro](http://www.insse.ro) until next statistical monthly bulletin is available. The bulletin in paper form is available for purchase from the NIS library (located at the main entrance of the institute), and also for public consultation at the NIS library.

Until year 2007, only four industries were used to publish QNA data:

- Agriculture;
- Industry;
- Construction;
- Other services.

In year 2008, the A6 classification according to NACE Rev.1.1 was implemented for QNA data (production approach of GDP), while the back-series were revised, sent to Eurostat and published using also A6 classification. The base year 2000 (average prices of year 2000) was used to compile constant prices estimates for these series. Besides meeting the Eurostat requirements, the undertaken actions were imperative for developing seasonal adjustment of QNA and flash estimates.

*Table 2.3: Industry breakdown for QNA publication purposes*

<b>Code</b>	<b>Description</b>	<b>NACE Rev.1</b>
1	Agriculture, hunting, forestry and fishing	A+B
2	Industry, including energy	C+D+E
3	Construction	F
4	Wholesale and retail trade; repair of motor vehicles and household goods; hotels and restaurants; transport and communications	G+H+I
5	Financial intermediation; real estate, renting and business activities	J+K
6	Other services	L to P

The QNA raw data releases, at T+70 days are sent to Eurostat, according to Press Conference calendar of Eurostat, via standards tables from ESA95 Transmission Programme: ESAP2\_0101\_Q\_Quest, ESAP2\_0102\_Q\_Quest. The tables correspond to output approach and expenditure approach (in current prices, in prices of the same quarter of the previous year and in prices of 2000). Data are not seasonally adjusted. The used breakdown is A6 for output approach.

### **2.3. Special transmission**

In accordance with the national Strategy for Development of Statistics Romania subscribed to the **Special Data Dissemination Standard (SDDS)** in May 2005. SDDS is established by the International Monetary Fund to guide Member States that have, or might seek to have access to the international capital markets in the dissemination of economic and financial data. This fact implies the transmission of the quarterly national accounts data in current and constant prices, by production and expenditure components of GDP and of metadata. Initially, the transmitted quarterly data in constant prices were based on the 2003 prices (2003 = 100). Then, the base year 2000 was applied starting 2008.

The web-address for SDDS regarding Romania QNA is the following:

<http://dsbb.imf.org/Applications/web/sddsctycatbaselist/?strcode=ROM&strcat=NAG00>

The compiled tables of the ESA95 transmission program are sent via GESMES to Eurostat. The results are not transmitted to any institution, either domestic or international, before the official release.

### **2.4. Policy of metadata**

Regarding the **dissemination of metadata**, several actions are taken in the sense of informing users on the compilation method of Romanian quarterly national accounts. In the Monthly Statistical Bulletin, the QNA series are published when releases are available; in the same time specific methodological notes are included, which describe, in brief, the main compilation method (mainly about production and expenditure approaches of QGDP).

On the National Institute of Statistics of Romania web-site, a methodological document on QNA in Romanian language is posted for interested users. This document is more elaborated than the methodological notes from Statistical Bulletin, this showing the methods of compilation, evaluation of main aggregates, and also the data sources used. In order to comply with the standard requirements for a QNA Inventory, this Methodology will be updated with more information. There will be added information on seasonal adjustment methods and flash estimates, at the moment they will be officially published in Romania.

### 3. Overall QNA compilation approach

#### 3.1. *Compilation approach*

The QNA methodology follows the **ESA95**. The Romanian QNA compilation covers the estimations of **QGDP based on the output and expenditure approaches**. No seasonally adjusted series are published yet, but only raw data.

An important reason to apply at least the production and expenditure approaches is that they provide different breakdowns of GDP. To the extent that demand is driving short-term changes in the economy, the expenditure split provides particularly useful data for business cycle and macroeconomic policy analysis and for forecasting. The industry composition of growth provides a useful but less important supplementary perspective.

The compilations for quarterly national accounts are mainly performed according to the **direct procedures**. The short-term surveys/statistics are available, in special price and volume indices. There are not used mathematical or statistical techniques but only in isolated cases. Microsoft Excel is used in order to process all data.

The integration is achieved at the macro level.

The main **process stages** applied in order to obtain the releases of QNA at T+70 days are as following:

- I. Collecting information: from statistical and administrative infra-annual publications, direct from special directions of NIS (e.g. agriculture, construction, etc.);
- II. Processing data sources, price and volume indices in order to obtain data basis used for QNA;
- III. Compiling QGDP aggregates series for output and expenditure approaches in prices of the same quarters of the previous year and in current prices; conceptual, exhaustivity adjustments are applied;
- IV. Balancing the QGDP for output and expenditure approaches in the same time in current and constant prices (of the same quarter of previous year);
- V. Applying chain-linking procedure with the base year 2000 (obtaining the estimates in average prices of the year 2000);

VI. Balancing the QGDP for output and expenditure approaches in average prices of the base year 2000.

Whenever the annual national accounts estimates are available, the **revision of QNA** is applied, as following:

- a) Benchmarking of the aggregates of the four quarters to the reference year releases in current and constant prices (prices of the same quarter of the previous year);
- b) Balancing by each quarter and with year the revised aggregates of QGDP compiled in production and expenditure approaches using more des-aggregated level;
- c) Benchmarking of the QGDP aggregates of the four quarters aggregates valued in average prices of the year 2000 to the reference year aggregates valued in constant prices of year 2000;
- d) Balancing the revised QGDP in average prices of the year 2000 with the benchmark year.

The current and constant prices estimations of the two methods of QGDP are performed in the same time, keeping the balance between the resources and uses side of the GDP. So, no discrepancies arise during the compilation process. The only registered discrepancies that exist are shown in the expenditure side of the QGDP, for series valued in prices of year 2000. This situation is due to the fact that QNA for Romania in constant prices are, traditionally, firstly compiled in the prices of the same quarter of previous year, starting from production side (the most reliable method); than, applying the chain-linking technique with base year 2000, starting with the production approach, the discrepancies arise in the expenditure side.

In order to establish the number of data revisions from quarterly accounts and their term appointment, some aspects were taken into consideration:

- the reconciliation between quarterly and annual data;
- the possibility of using some information from data sources as complete as possible.

The starting point of the Romanian QNA compilation is to **gather as many data** sources as possible, for the T+70 days compilation. Normally, the price and volume

indices used are already available within monthly statistical publications. Other data sources are:

- execution of general government budgets (from Ministry of Finances);
- production account for agriculture industry (compiled based on Agriculture Economic Accounts, obtained from Special direction of NIS);
- Infra-annual statistics from construction, transport, trade, other services, etc., obtained from special direction of NIS;
- Balance of payments from National Bank of Romania, etc.

The information from data sources should be treated according to the national accounts requirements for compilation. So, special intermediate tables are compiled. Also, certain **adjustments** are necessary, in order to obtain the estimates by “homogenous branches” used by Romanian system of national accounts and also to improve the exhaustiveness of QNA.

Monthly indices (consumer price indices, industrial production price indices, industrial production indices, turnover volume indices) are transformed, by national accountants, into quarterly Paasche indices (for price indices) and Laspeyres indices (for volume indices).

The quarterly national accounts are not compiled based on the annual data, but annual and quarterly data are reconciled during the revision process, the availability of the versions of the annual accounts and of the new data sources. During this process, the consistency of price indices corresponding to different categories of supply and demand is being analyzed, but also the volume indices projections.

During this revision process, it is preserved the equality between the amounts of the four quarters with the annual data, for each year, by each category of aggregate. In the meantime, new data sources are made available, so the envisaged improvement is achieved.

The classification used in order to process the information for QNA estimates is the Classification of Activities from National Economy Rev.1., perfect compatible with NACE Rev.1.1.

### 3.2. *Balancing procedures*

Improving quarterly national accounts is represented by the compilation for Romania of the reduced quarterly supply and uses tables. This leads to an **improved compilation of quarterly figures in a balancing framework**.

Romania has gained already an important experience in balancing procedures for the annual national accounts. The same principles are applied also to quarterly level. Following a **project-work**, the compilation of reduced QSUT (based on production and expenditure approaches of QGDP) was an opportunity to move forward in the development of the system of Romanian national accounts as a whole and to verify the used assumptions.

There are stated the main two roles of the balancing within the Eurostat Handbook on QNA, which Romanian national accountants addressed to:

- **The first role** relates to balancing data for the current or latest quarter. Moreover, the simultaneous balancing of the supply and uses tables in current and constant prices is considered;
- **The second role** involves starting with established sets of balanced data for the four quarters of the year, and then making the quarterly figures consistent with firmer annual figures which become available. The balancing procedures are based on quarterly and annual national accounts figures, so there is no need for a re-balancing of the quarterly accounts.

#### 3.2.1. *Quarterly GDP balancing procedure*

The main principles fulfilled by Romanian QNA are as following:

- First, the **GDP is estimated independently** from production and expenditure sources, as available, and is obtained a single, definitive measure of economic activity.
- Secondly, once such an estimate has been established, **the component information is adjusted** so that each of the separate production and expenditure measures is consistent with the overall GDP estimate. The accounts are fully balanced, with no statistical discrepancies or residual errors.
- The third principle is that, in order to achieve balance, **all component series, and not just selected variables, are subject to possible adjustment**. During the

balancing of the Romanian quarterly resources-uses tables, the adjustments of the components must be performed, as shown under heading 3.1.

The *Romania seasonally adjusted quarterly accounts are not yet disseminated*, so the balancing process is performed only **on the basic data**, this representing a positive aspect. But, from the compilation point of view, this raises a number of practical difficulties. The non-seasonally adjusted quarterly figures are usually somewhat more variable than their seasonally adjusted counterparts. A further potential problem relates to the way in which information about the structure of economic activity of the previous year is used as a basis for making estimates for the current quarter.

The exercise of compiling Romanian reduced quarterly supply-use tables for 2004 quarters in current and in average prices of year 2003 under a project-work was very useful to consider the described issues.

Given the situation it was considered that the **manual approach for balancing** is the most feasible method to be applied, because in this way the control on figures could be maintained. The manual approach relies, essentially, on the implicit judgement of the compiler to assess which particular series might be adjusted and by how much. The appropriateness of the information included in the balancing process which based on the previous year's framework needs to be carefully assessed, particularly for the non-seasonally adjusted data.

Full balancing the non-seasonal adjusted data implies the four main data sets:

- a) Balance in current prices;
- b) Balance in constant prices;
- c) Tables of volume indices;
- d) Tables of price indices.

So, the first problem faced by the Romanian national accountants in developing the reduced QSUT was **to set the homogenous groups of industries/products** used to breakdown the quarterly supply and uses tables. The basis for this was the classification by 105 homogenous industries/products used in compiling annual Supply-Use Tables in Romania, breakdown which is based on the NACE Rev.1.1 classification. Synthesising, there are several issues taken into considerations:

- the degree of detail used in the previous compilations of quarterly Gross Value Added in the production approach;
- available data sources in order to split the uses/expenditure approach GDP components by homogenous groups of products for each quarter;
- the structure and breakdown of annual supply-uses tables;
- the importance of the main groups of industries/products within the Romanian economy.

The chosen balancing detail was:

*Table 3.1: QSUT industry breakdown*

<b>Nr. crt.</b>	<b>Industries used in QSUT</b>	<b>Reference NACE Rev.1.1</b>
1.	Agriculture, hunting, forestry and fishing	A+B
2.	Industry, including energy	C+D+E
3.	Construction	F
4.	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants	G+H
5.	Transport and communication	I
6.	Financial intermediation, real estate, renting and business activities	J+K
7.	Public administration and defence, compulsory social security	L
8.	Education	M
9.	Health and social services	N
10.	Other services	O+P+Q

One can mention the fact that, for certain aggregated group of industries, more detailed analysis and balancing procedures occur, in order to keep the consistency.

The main **accounting identity** used in order to balance the quarterly figures is based on the double-entry approach of national accounts:

*Resources = Uses,*

for the following two institutional sectors accounts:

- Goods and services account, and
- Production account

these implying the accounting relation:

*Imports of goods and services + Output + Taxes on products – Subsidies on products + Trade and transport margins = Intermediate consumption + Final consumption + Gross fixed capital formation + Changes in stocks + Exports of goods and services.*



This relations stays at the basis of the two approaches used to compile quarterly GDP (QGDP) in Romania:

a) Production approach:

$$GDP \text{ (market prices)} = \sum GVA + \text{Taxes on products} - \text{Subsidies on products}$$

In which: GVA -Gross value added, at basic prices

$$GVA = \text{Output} - \text{Intermediate consumption}$$

b) Expenditure approach

$$GDP = \text{Final consumption expenditure (households, NPISHs)} + \text{Final consumption expenditure (government)} + \text{Gross fixed capital formation} + \text{Changes in inventories} + \text{Exports of goods and services} - \text{Imports of goods and services}$$

One should mention again that, at present, the **compiled QGDP by the two approaches is a unique figure**, obtained by independent measures, based on data from government and non-government sources.

On the basis of this framework and approach to data estimation, the first steps in the balancing process are **the comparison** of:

- the estimates of supply and use for each product;
- the outputs and inputs of each industry;

A further set of relevant “**structural**” information is provided by making estimates of the components of use for each product. This is done by breaking down the total use according to the pattern of demand shown by the supply/use framework, for both the latest year and also the same quarter of a year earlier, among the information provided by data sources. The use of other information from this latter source, for example, ratios of output to value added and of taxes and margins to supply, is also an important part of the whole process.

### 3.2.2. Benchmarking of QNA and ANA

In Romania, the reconciliation procedures between QNA and Annual NA are based on **aligning quarterly estimates to firmer annual data**. The main principle is based

on the fact that, when annual data become available, the quarterly data are adjusted so as to retain the original quarterly path as far as possible. The process of ensuring time consistency should be applied across all national accounts data, and should ensure that the constraints of account balancing are respected.

In fact, the main challenge is **to improve the quality of the quarterly data**. This is done when using the benchmarked annual data of the resources and uses tables and the quarterly data in order to make them consistent. The alignment process needs to ensure that, not only are the quarterly figures made consistent with the annual figures, but also that the various quarterly data sets at current and constant prices, and for non-seasonally **still balance**. The balancing of the quarterly data has the additional constraint that the **quarterly estimates sum to known annual figures**. The achievement of consistent annual and quarterly data is considered as part of the balancing process, which is carried out retrospectively on an already balanced set of data, but with additional constraint of respecting the annual totals.

### **3.3. Volume estimates**

The QGDP is compiled in constant prices in Romania by the two approaches: production approach and expenditure approach. This is a good base for balancing the resources and uses sides.

In order to compile constant prices estimates, chain-linking techniques are applied. This fact offers certain advantages that must be taken into consideration:

- growth rates are calculated with the most up-to-date weights. They are economically significant even far away from the reference year;
- the choice of index formula (for the link) becomes less important (substitution bias);
- regular rebasing is not longer necessary. Re-referencing will not change growth rates (no re-writing of economic history).

Also, there are several inconveniences:

- loss of additivity of volumes (aggregation levels, regions, time) in all years except the reference year and the year following the reference year;
- no chain-linking for variables with potentially changing sign;
- computational complexity;
- more difficult interpretation, in particular of volume levels;
- drift tendency with price/quantity movements.

In Romanian QNA, the used volume indices are of the Laspeyres type ones, and the price indices are of the Paasche type. Indices necessary for the constant prices estimation purposes are processed within the National Accounts Division based on the indices received from the special divisions of NIS. The main indices used for constant price estimation of national accounts are:

- Consumer price indices;
- Industrial producer price indices;
- Turnover indices;
- Turnover volume indices;
- Price index of agricultural production, calculated by products;
- Volume index of industrial production;
- Cost index of construction;
- Unit value indices for imports and exports of goods;
- Volume index of investments, etc.

Quarterly chain-linking with annual re-weighting can be done according to different linking techniques. These relate to which period is chosen as a reference for the single link in the chain, while **in Romanian QNA practice** there are found two cases:

- **the annual overlap technique** (reference is the base year), developed since recently in Romania;
- **the over-the-year technique** (reference is the same quarter of the previous year) – the traditional method for Romanian quarterly estimates.

Traditionally, Romania has published QNA at current prices, and growth rates of the reference quarter comparing to the same quarter of the previous year, obtained on the basis of QNA estimates in prices of the same quarter of the previous year.

QNA series for a reference quarter of each aggregate used to **compile estimates in prices of the same quarter of the previous year** covers:

- the series in current prices related to the same quarter from the previous year;
- the series of Laspeyres volume indices (the volume component of the reference quarter comparing to the volume component of the same quarter from previous year)
- the series of estimates in prices of the same quarter of the previous year;

- the series of Paasche price indices (price component of the reference quarter comparing to the price component of the same quarter from previous year).

For each aggregates, simultaneous estimation is performed in current and constant prices, using the available price and volume indices, as described above. In the first instance, constant price estimates of reference quarter (in prices of the same quarter of previous year) is obtained by multiplying the volume index with the existing current values of the corresponding quarter from previous year, then the price index is applied in order to obtain the estimates in current prices.

The synthetic volume index and price index of QGDP are resulting from the aggregation of the GDP component items.

In order to obtain the **growth rates comparing to the previous quarter**, the valuation is made in prices of the base year 2000 in Romanian QNA. This was very useful in the context of Transmission Programme and SDDS reporting and also for the exercise of applying seasonally adjustment in QNA.

QNA for Romania in constant prices are, traditionally, firstly compiled in the prices of the same quarter of previous year, from production and expenditure sides. The estimated GDP is reconciled. The chain-linking technique with base year 2000 is then applied and certain discrepancies arise. The discrepancies appear between the sum of the chain-linked component aggregates and chain-linked GDP, by production approach and expenditure approaches. After that, there are no discrepancies between the GDP compiled by the two approaches.

In order to apply the chain-linking technique, for each aggregate, estimates of each quarter of 2000 in the average prices of 2000 have been compiled. Then, taking into example year 2001, for each aggregate, the quarterly estimates of 2001 in the prices of 2000 are calculated by chain-linking the volume index of the similar quarter of 2000 in average prices of 2000 with the volume index of 2001 in the prices of the same quarter of 2000 (previous year). Thus, each quarter of 2001 is estimated in the average prices of 2000. The same procedure is applied for the following years.

Consistent deflation for different parts of the accounts, and deflation for various components is achieved.

Output approach of QGDP in constant prices

For constant prices valuation of output approach of QGDP, the prices of the corresponding quarters of the previous year are used. Double deflation is mostly applied, and the rules for annual estimations in constant prices are followed for quarterly compilations.

For the constant price estimation of **production** by industries several series of deflating price indices are being used: producer price indices, consumer price indices, price indices on the peasant market, price indices for agricultural production. In certain cases, when no price indices are available, the constant price valuation consists of a projection in volume of the current price values of the base quarter, as for certain services (domestic trade, transport).

A distinction should be made for some particular industries, as financial-banking services and general government.

So, the output of financial-banking services in constant prices is estimated by using:

- the index of the average interest rate for the imputed banking services;
- the consumer price index for the other financial services.

The constant price valuation of government production in the quarterly accounts follows the same methodology as for the annual accounts which, basically, consist of:

- a constant price valuation of the intermediate consumption;
- a constant price valuation of the gross value added using for deflation the index of the net average wage of the personnel employed in this sector;
- the calculation of the output in constant prices by adding the intermediate consumption and the gross value added in constant prices.

The method used to estimate the **intermediate consumption** in current prices comprises, as a first step, the valuation in the prices of the corresponding quarter of the previous year. The estimation of the intermediate consumption in the prices of the previous quarter is calculated by deflating the current price values by the price indices of resources and consumer price indices.

The **gross value added** in constant prices is calculated by double deflation for most of the industries, with the exception of government services. In this case the index of the net average wage is being used as deflator.

For the constant prices valuation of the **net taxes on products**, deflating price indices, calculated by multiplying the price index of the tax/subsidy base by an indicator reflecting the evolution of the implicit rate of tax/subsidy, are being computed. The constant price estimations of these elements are made distinctly by each type of tax/subsidy.

#### *Expenditure approach of QGDP in constant prices*

The expenditure split is, in some ways, the most practical to measure in constant price or volume terms. By contrast, the price and volume dimensions of value added are more complex because value added cannot be directly observed. For constant prices valuation, the prices of the corresponding quarter of the previous year are used.

In order to estimate the **households actual individual final consumption** in constant prices, each component is being deflated by using different series of price indices: consumer price indices by products, price indices on the peasant market, price indices for agricultural production, etc.

For valuating the **government actual collective final consumption** in constant prices, the following steps are taken:

- the constant price estimation of the output;
- the constant price estimation of the market output of the non-market producers by deflating the current price values by producer price indices;
- the calculation of the final consumption as a difference between production and market output in constant prices.

For estimating the **gross fixed capital formation** in constant prices deflating indices are calculated. These are average price indices of resources used for investments: production, imports, custom duties, taxes on products (VAT not included).

The constant price estimates of **exports and imports** of goods are compiled based on the Unit Value Indices from the monthly statistical reports. The constant price estimates for imports and exports of services are calculated deflating the current values by the exchange rate indices. These indices are calculated separately for imports of goods/services and exports of goods/services. The quarterly average exchange rates are estimated by the National Bank of Romania.

### **3.4. Seasonally adjustment**

The Regulation (EC) No 1392/2007 amending Council Regulation No 2223/96 with respect to the transmission of national accounts data stipulates that “Quarterly data are to be provided in non-adjusted, as well as seasonally and working-day adjusted format. Gross domestic product (B.1\*g) and total gross value added (B.1g) must also be provided in working-day adjusted format. The provision of other aggregates in working day adjusted format is voluntary”.

Seasonally adjusted quarterly accounts must be compiled by Romania to be included into ESA 95 Transmission Program. In this sense, the framework of a project-work has covered the issue of seasonal adjustment, on exercise basis. The series together with methodological notes will be made available after their official publication which is envisaged for year 2009, and will be included into Romanian Statistical Bulletin.

## **4. GDP components: the production approach**

The production approach is the most widely used in the QNA for measuring GDP, because of a traditional focus in many countries on short-term statistics on manufacturing industries as major indicators.

In Romania, QGDP compilation from production approach is the most important method. The production approach involves calculating output, intermediate consumption, and value added at current prices as well as in volume terms by industry.

The compilation way of QGDP by production approach is the same as for annual GDP, meaning:

*QGDP at market prices = GVA at basic prices + Net taxes on product, where:*

*GVA at basic prices = Output (at basic prices) – IC at market prices*

Separate estimates are made for output and intermediate consumption, gross value added being obtained as balancing items.

The indicators obtained from production approach are the subject of balancing with expenditure approach of GDP, this allowing establishing certain relations in branches, which are updated when the annual estimates are available (provisional semi-final and final versions).

In the following, one will describe to the compilation methods of aggregates for the first release (at T+70 days).

#### **4.1. Gross value added**

In general, Gross value added is obtained by subtracting intermediate consumption at purchasing prices from output at base prices.

##### *4.1.1. Output*

The output of goods and market services by industries, according to the classification used for quarterly accounts, has the same coverage area as in the case of annual accounts. In order to estimate the output by industries, the following data sources are used:

- monthly and quarterly statistical reports for the production of agriculture, industry, construction, trade, transport, communication, other services;
- administrative sources.

Besides the information directly provided by the above mentioned data sources, estimates for trade margins, underground economy, imputed rent and households' domestic production are being calculated and added.

The production of goods and services in the quarterly accounts, as well as in the annual ones, is valued at basic prices.

Output is compiled within the production account framework. Thus, output and intermediate consumption are separately valued, in order to obtain Gross Value Added. For services from public administration sector, the GVA is directly obtained by summing costs, while for the rest of industries a direct estimation of Output value is performed.

The breakdown used for the final figures is the A6 classification, while more detailed information is processed at the level of each industry, as for Transport and communication, Public administration sector, Other services.



The production account for **agricultural activities** is compiled by the Special Division from NIS. This Division collects quantitative and value information from statistical data sources (monthly statistical reports), as well as some information from Ministry of Agriculture. This Division estimates this account in current prices and in constant prices, according to the Economic Accounts from Agriculture methodology. Data are directly taken into compilation of the national accounts, without any adjustments.

The value of **industrial output, including energy** is estimated in current and constant prices by extrapolating values from the same quarter of the previous year with related volume and price indices, using industrial production indices, industrial production price indices, turnover indices and other information from Monthly statistical bulletin and other short term statistical reports. Price indices are transformed from Laspeyres type indices into Paasche type indices, as used in national accounts. Manufacturing and energy are well covered by the indices supplied in the statistical data sources.

A special division from NIS estimates the value of **construction** output in current prices based on information from short-term statistical reports. In estimating construction works, the following structure elements are used:

- new construction works;
- capital repair works;
- maintenance and current repair works.

The construction types are the following:

- buildings (residential buildings, non-residential buildings),
- civil engineering.

For constant prices estimates, there are used construction cost index, volume index of construction by structure elements.

**Services** consists of activity of trade, transports, post and telecommunications, tourism, hotels and restaurants, general government and defence, education, health and social assistance and other services for economic units and for population. Separate estimations are performed for each of these items.

In order to estimate **trade output**, separate estimates are made by wholesale trade, retail trade and trade with motor vehicles and motorcycles (including their maintenance and repair), motor vehicles fuel. There are available, for each separate type of trade,

turnover volume indices. Also, combined with consumer price indices, other activity indicators, proper estimates are obtained.

For hotel and restaurants output estimation, turnover volume indices, consumer price indices and industrial production price indices are used.

In order to comply with ESA95 requirements, the production of imputed rent is compiled. While for annual estimates a detailed stratification method is applied, for quarterly estimates, more reduced information is available. For imputed rent at quarterly level, estimation is made, based on consumer price indices (rents), volume indices and average exchange rate.

**Transport** services (goods, passengers) output is estimated in current and constant prices based on the value projection from the corresponding quarter of the previous year, using volume indices obtained on the basis of kilometres-commodities and kilometres-passengers by quarters, by type of transport, consumer price indices, and turnover by transport NACE classes. The turnover for services of transport, post, and telecommunication is also used.

**Financial intermediation** output, intermediate consumption and gross value added are estimated based on accounting statements (profit and loss account), which are quarterly submitted by these institutions.

Also, the turnover for services of real estate transactions and services mainly rendered to enterprises is available, by NACE classes. The final consumption expenditure of households on dwelling rent is used for renting activity.

The output value of market services rendered to population is estimated in current and constant prices by extrapolating its value from the corresponding quarter of the previous year using turnover volume indices, consumer price indices and industrial production price indices.

The output of services from **general government** sector, included into **Other services**, in current prices is compiled by summing the component items (intermediate consumption and GVA components – of which wages and salaries is very important) and in constant prices is obtained by summing up the components in constant prices. Quarterly general government sector accounts are also available. The used data sources are: the execution of the state budget, the execution of the local budget and the execution of the state social security budget.

In order to obtain the **most exhaustive coverage for QNA**, certain adjustments are applied to the aggregates, resulting QGDP adjusted for non-observed economy.

There is used a roof, simplified method, in line with more elaborated method applied for annual estimates, based on **labour force estimates**.

The main approach is linked on the assumption that in the Romanian economy exist people working without a formal contract, so call “black labour”. They can be depicted by comparing the employment declared by enterprises (as they have formally registered) and the employment declared by persons offering their labour force.

While comparing the two data sources, one obtain a difference, in favour of persons declaring they were employed in a paid work, meaning the so-call black labour, which is not recognized in the formal reporting of enterprises. These differences are obtained by main industries groups, and knowing the average salary from each industry, one can obtain the amount of remuneration corresponding to the non-observed economy. This is included into Gross Value Added compilation, because the industry-specific structural coefficients are applied. In order to balance resources with uses sides, the main uses components are impacted with these amounts.

Due to the fact that limited information is available at quarterly level, there is not possible to follow in wide extend the procedure to enhance exhaustiveness from annual level.

In order to obtain the exhaustivity adjustments, certain data sources are used. For employment declared be enterprises, data are obtained from Monthly Statistical Bulletin, chapter Social indicators, “Number of employees in the economy”. For employment declared by labour force, data are taken from quarterly Labour Force Survey. The “Average gross earnings” is obtained also from Monthly Statistical Bulletin, from the chapter Social indicators.

#### *4.1.2. Intermediate consumption*

The intermediate consumption is valued at purchasing prices, deductible VAT not included. The current price valuation of the intermediate consumption of industry, construction, trade and market services rendered to population, transport and communication services is done by projecting in volume and price of the similar consumption items from the corresponding quarter of the previous year. It is used a detailed breakdown by main industries of intermediate consumption. This is projected

by the main of specific price and volume indices for these branches with the aim of estimating the values in current and constant prices as close as possible to reality.

For agriculture, financial services and general government industries, the data sources (the same used for estimating the output) allow direct estimation of their intermediate consumption, using the information from special division of NIS for agriculture, accounting statements of financial corporations and execution of the budgets for public administration.

#### *4.1.3. Gross Value Added*

Gross Value Added (GVA) is obtained, in general, as the balancing item of the production account. This means that GVA results as difference between production and intermediate consumption. Thus, the valuation is made at base prices.

There are also industries for which the GVA is directly compiled. For financial-banking services, the GVA is obtained by summing up the components of primary inputs, of which the compensation of employees is the most important one. The information is taken from the accounting statements provided by National Bank of Romania and Ministry of Finances and other infra-annual surveys.

For general government sector (public administration, education, health and social work), the GVA is obtained also by summing up the components of primary inputs, taken from the execution of the state budget, of the local budgets and of the state social security budget.

#### **4.2. Financial intermediation services indirectly measured (FISIM)**

Financial intermediation services indirectly measured is estimated by the difference between interest receivable and payable by credit institutions resulting from financial intermediation activity. Output of **Financial intermediation services indirectly measured**, obtained from the financial intermediation services, was re-allocated starting with 2003.

Allocation is based on the output for each industry (Method B from Commission Regulation 1889/2002).

The used data sources for quarterly estimations are: statistical, administrative and other data sources. They are mostly short term data sources (infra-annual).

#### **4.3. Taxes and subsidies on products**

Net taxes on products consist of value added taxes (VAT), excise duties, other taxes on products, less subsidies on products. These are compiled on the basis of information from Ministry of Finances regarding the execution of state and local budgets, and social security funds, that are monthly provided on the cumulative basis. Thus, it is performed a direct estimation of net taxes on products.

They are estimated in accrual basis, using the “time adjusted cash registration” method, with one-month time adjustment.

### **5. GDP components: the expenditure approach**

In Romania, the QGDP at market prices by expenditure approach is compiled using the following compilation formula, each component aggregates referring to the quarterly period:

$$\begin{aligned} \text{QGDP} = & \text{Actual final consumption (Households actual individual final consumption +} \\ & \text{Actual collective final consumption of general government)} \\ & + \text{Gross capital formation (Gross Fixed Capital Formation + Changes in} \\ & \text{inventories)} \\ & + \text{Net exports of goods and services (Export of goods and services – Imports} \\ & \text{of goods and services)} \end{aligned}$$

The expenditure split provides particularly useful data for business cycle and macroeconomic policy analysis and for forecasting. Also, this split is most useful for policy reasons because, over the short-term, demand can be more easily influenced than supply.

The expenditure approach for measuring GDP is less sound than the production approach among QNA-compiling countries. This is because of problems in availability, timing, valuation, and coverage in expenditure source data. Even the existing inconveniences, Romania has performed estimations by expenditure approach together with the production approach.

The categories of uses of QGDP compiled within the Romanian national accounts are the following: Actual final consumption made of Households actual individual final consumption and Government actual collective final consumption; Gross capital formation, made of Gross fixed capital formation and Changes in inventories; Net exports of goods and services, made of Exports of goods and services less Imports of goods and services.

Regarding **data sources**, the expenditure side usually has two strong pillars of quarterly data, namely, foreign trade and government consumption; the other categories are often less well covered. The major components of external transactions are usually available from the balance of payments and through merchandise trade statistics that often have a strong basis in comprehensive data collection for customs purposes. Data on government consumption derive from government administrative data. Other expenditure components (namely, household final consumption, parts of fixed capital formation, and changes in inventories) are usually covered less well.

In the following, one will describe to the compilation methods of aggregates for the first release (at T+70 days).

### **5.1. *Final consumption expenditure of households***

**Households (individual) final consumption** expenditure consists of:

- population households expenditure for purchasing goods and services to satisfy their members needs;
- expenditure for individual consumption made by general government (education, health, social security and social actions, culture, sport, recreation activities, housing wastes collection);
- expenditures for individual consumption of non-profit institutions in the service of the households (religious organisations, trade unions, political parties, unions, foundations, cultural and sportive associations).

In the value of this type of consumption, the following items are included:

- the purchases of new goods from retail trade;
- population expenditure on market services;
- the households self-consumption of agricultural products;

- the purchases of food products on the peasant market;
- the industrial goods produced by the households by processing their own agricultural raw material (households' domestic production);
- estimates of non-observed economy;
- imputed rent for own-occupied dwellings;
- sales of the non-market services production of government and NPISH;
- transfers in kind made by the economic agents to their employees;
- the transfers of the government production to cover the differences in the price of certain commodities sold at a lower price to some particular categories of population;
- territorial correction.

The households consumption is valued at purchaser prices, for the goods and services purchased, and at producer prices for those self-consumed.

The evaluation of the households consumption is partly based on direct information provided by statistical reports (expenditure on goods and services), for retail trade and for services rendered to population and administrative sources (market production of general government), as well as on indirect estimation of some components of this important aggregate (self-consumption, households domestic production, non-observed economy, imputed rent, etc.). The territorial correction is also compiled, as a balancing item between expenditures made by residents outside country and by foreigners expenditures inside Romania.

The estimations are based on the consumer price indices, industrial production price indices, industrial production indices, price indices on the peasant market, turnover indices, indicators of the trade services, average market rent, other.

## **5.2. Final consumption expenditure of general government**

Government actual collective consumption comprises expenditure for collective consumption of general government (general public services, national defence and territorial security, maintenance of public order and security: legal and regulation, research and development activities, etc.). The final consumption of government is calculated using the information processed from administrative data sources, meaning the execution of the budgets.

Final consumption expenditure of general government consists primarily of the value of non-market goods and services produced by government itself. These are obtained, by convention, as the sum of intermediate consumption, compensation of employees, consumption of fixed capital and other taxes on production, less subsidies on production.

The methodology used to estimate the final consumption of government is similar to the one applied for the annual accounts, the data sources offering the possibility to separate the market and non-market output from the sector as well as an estimation of collective and individual consumption.

### ***5.3. Final consumption expenditure of non-profit institutions serving households***

Final consumption expenditure of non-profit institutions serving households (NPISHs) is equal to the value of goods and services produced by NPISHs and provided to households free of charge (P.132 – free of charge other non-market output).

Data sources for the provisional release of quarterly estimates are rather poor, thus a combination of synthetic price indices, volume indices is used. The accounting statements of all these units are available at annual level.

### ***5.4. Gross capital formation***

**Gross capital formation** is made of the **Gross fixed capital formation** and **Changes in inventories**. These two components are separately compiled.

The **gross fixed capital formation (GFCF)** in the quarterly accounts, as well as in the annual ones, covers:

- the investments (new) of the reference period;
- the major renovations or extensions;
- the estimates for underground economy.

In order to obtain a good estimation of the gross fixed capital formation, two important data sources are being used:

- the quarterly survey of investments;
- the Execution of the public budgets.



The investments are estimated as total by the NIS special division based on information from infra-annual surveys. This division provides the values of investments, directly in current prices and volume indices.

The current price valuation is made at purchaser prices for the purchased investment goods and services and at producer prices for the investment goods and services produced by own-account.

### **5.5. Changes in inventories**

**Changes in inventories** are compiled as a balancing item between output and expenditure approach. The inventories valuation and their changes represent difficult problems for the Romanian national accounts, in general. This situation occurs because the lack of complete and detailed data sources. At present, for quarterly estimations, there are available only certain information regarding producers stocks from monthly statistical reports for industrial activities and some information regarding stocks from agriculture.

In order to improve the estimation of change in inventories, a Pilot-survey was carried out during year 2008. The intention is to add this pilot-survey to a regular quarterly survey, in order to obtain an unitary view of the change in inventories, due to the fact that the pilot-survey has referred to only two quarters, which is not comparable with the annual survey (Structural Business Survey).

Four types of stocks are considered for the survey (based on the classification already used in Annual Structural Business Survey):

- Stock of raw materials, consumables, inventory objects and hutments;
- Stock of finished products;
- Stock of goods;
- Stock of un-finished goods, semi-final goods.

The focus of the sample is on manufacturing enterprises, less on other services activities. The information on the values of stock of goods (to be sold) should be provided by the units carrying out trading activities.

The amounts at the **beginning** and at **the end of the quarters**, by the four types of stocks, are required. In this respect, the accounting change in inventory could be compiled, and, by applying the price indices, the economic change in inventory can be obtained.

## **5.6. Net exports of goods and services**

**Net exports of goods and services** are compiled as difference between Exports of goods and services and Imports of goods and services.

The data on imports and exports of goods and services are obtained from monthly statistical reports which contain information collected by the main of INTRASTAT and EXTRASTAT and from Balance of payments received from National Bank of Romania. The exports of goods in FOB valuation, by types of products, are estimated on the basis of monthly statistical reports. Imports of goods are obtained, by types of products, at CIF prices. Then, the evaluation of the imports in FOB prices took place, based on the conversion coefficient CIF/FOB established by a survey made on the principal trade enterprises that develop activities on the field of external trade. Also, the Unit Value Indices are used.

The exports and imports of services are estimated based on the Balance of payments.

## **6. GDP components: the income approach**

The income approach of QGDP was not yet addressed in Romania national accounts, caused by poor data sources for the GVA components.

Anyway, based on a project-work, the quarterly sequence of accounts of institutional sectors is under estimation. In this respect, the generation of income account, which is the base for obtaining the income approach of GDP, will be also produced.

Anyway, no independent method can be applied in the near future for income approach.

## **7. Population and employment**

### **7.1. Population**

Total population is defined for national accounts according to the concept of residence. On a given date, the total population of a country consists of all persons,

national or foreign, who are permanently settled in the economic territory of a country, even if they are temporarily absent from it.

In the ESA95 Transmission Programme, data on population should be reported within Table 0110.

In Romania national accounts, no quarterly estimates are published for population, but only yearly (Table 0110\_A).

## **7.2. Employment**

A first attempt for estimating quarterly employment based on national accounts rules was applied for quarterly series 2002-2005, which were published into Monthly Statistical Bulletin. Quarterly data were correlated with the annual data. Because of the fact that no QNA series on remuneration of employees are available, no comparisons and plausibility checks could be performed. Also the information for applying domestic concept adjustments is not available at quarterly level, so the link with annual estimates is needed.

At this moment, the tables transmitted to Eurostat – Table 0110 (Population and employment) and Table 0111 (Employment by industry) – cover the quarterly series 2002-2006 on employment (corresponding to definitive estimates of national accounts) valued in thousands persons and thousands hours-worked.

At the basis of quarterly estimates on employment stays the methodology for annual estimates on employment.

In Romania national accounts, data regarding the employment are compiled into:

- number of persons;
- number of actual working hours;
- number of jobs.

One will following describe the methodology on employment compilation (mostly on annual level, but also with remarks on quarterly estimates).

### *7.2.1. Domestic concept versus national concept*

There are differences between these two perspectives, obtaining the two concepts which stay at the basis of compilations:

- national concept;

- domestic concept.

When referring to **national concept**, the estimations for employment involve resident employees and self-employed persons employed by resident and non-resident producer units. Such kind of estimates is almost the same as the data provided by the Labour Force Survey (AMIGO), which is based on the national concept for employment perspective.

When referring to **domestic concept**, the estimations for employment involve resident and non-resident employees and self-employed persons employed by the resident producer units. In this sense, the data from Labour Force Survey are adjusted and completed by other information, in order to bring the estimations in line with domestic concept (obtaining estimates based on national accounts concepts).

The adjustments are linked to:

- the persons in employment (non-resident employment should be added);
- the producer units (which should be only the resident ones).

#### *7.2.2. Step-by step procedure for employment estimation in Romanian national accounts*

Specific for Romanian NA is the compilation by **homogenous branches** for GDP. The majority of data sources offer information by principal activity. Adjustments are performed in order to obtain data on employment by both principal and secondary activities (using jobs).

Another type of adjustment is applied in order to address the **actual** working time, according to ESA requirements.

According to Eurostat Results of the **Questionnaire on employment sources and methods (2006)**, country practices to estimate persons can be broadly grouped into **four main groups**, so **no homogenous methodology** is found for the European countries for employment estimates. Romania is included into the group of the Countries using mainly LFS (at annual and quarterly level), but replacing it in a few industries (or labour status) on a case-by case basis (other countries in this group: Bulgaria, Greece, Latvia and Portugal).

The modalities to combine data sources using essentially LFS are explained, for Romania, within the table 7.1.

Table 7.1: Main data sources in Romanian employment estimates

<b>Name of survey/ register</b>	<b>Usage</b>	<b>Type</b>	<b>Periodicity and availability</b>	<b>Coverage</b>	<b>Sampling method</b>
Labour Force Survey in Households (LFS)	Primary source for all activities (section level)	Household survey SU <sup>1)</sup> : dwelling OU <sup>2)</sup> : person aged 15 years and above	1994, 1995 – yearly since 1996 - quarterly	Resident population of 15 years and over	Multi-stage sampling plan
Structural Business Survey (SBS)	For sections C (mining) and D (manufacturing), as auxiliary information for breakdowns at 2 digits level	Enterprise survey SU: enterprise OU: local unit	Since 1994, yearly	Activities A-I and K	Stratified simple random sampling
Labour Cost Survey (LCS/S3)	Adjustment for working abroad	Enterprise survey SU: enterprise OU: local unit	Since 1993, yearly	All activities	Stratified simple random sampling
Accounting statements of financial, banking and insurance institutions	Section J (financial services)	Administrative source SU: enterprise	Yearly, long time series	Financial sector	Exhaustive
Government budget data (GB)	Sections K, L, M, N, O (general government)	Administrative source SU: local unit	Yearly, long time series	Governmental institutions	Exhaustive
Declarations on global income of individual producers and handicrafts (DI)	All activities	Administrative source SU: individuals	Yearly, since 1992	Self-employed people	Exhaustive
Ministry of Foreign Affairs (MFA)	Section L Adjustment for (non-) residents (diplomatic service etc.)	Administrative source: individuals	Yearly, since 1995	Residents working in Romanian embassies abroad and non-residents working in embassies in Romania	Exhaustive
Ministry of Labour, Family and Social Security (MLSSF)	All activities, adjustment for (non-) residents	Administrative source: individuals	Yearly, since 1993	Residents working abroad; non-residents working in Romania	Exhaustive
Ministry of Internal Affairs (MIA)	All activities, adjustment for non-resident people	Administrative source: individuals	Yearly, since 1995	Non-residents working in Romania	Exhaustive

<sup>1)</sup>SU: selection unit; <sup>2)</sup>OU: observation unit

The algorithm applied for annual data is described below. Adjustments are separately applied on employees and self-employed.

- Computing LFS data on employment aged 15 years and over by required variable, LFS data already includes the conscripts

A) Adjustment due to **reconciliation** with other data source

(i) for employees

- Using the more reliable distribution at 2 digit level of the number of employees from SBS for sections C and D (NACE Rev.1.1), the proportions of each division in total of section were compiled.
- The proportions obtained were applied to the number of employees from AMIGO data for C and D sections; the distribution of the number of employees from AMIGO data according to the breakdowns from SBS were obtained for sections C and D at 2 digits level.
- For number of employees from section J, data from accounting statements of financial, banking and insurance institutions were used to correct the LFS data; the administrative source was preferred because it provides exhaustive data.
- For number of employees from sections K, L, O, LFS data were replaced by those corresponding to the GB (government budget data), because these data are more complete and reliable;

(ii) for self-employed

LFS data from activities: D (several), F, H, I, J, K and M, were corrected according to data from declarations on global income for self-employed.

B) Adjustment to **domestic concept – only annual**

- Based on data provided by MFA, MLSSF and MI, the data obtained after performing steps (i) and (ii), were adjusted to the domestic concept:
  - Using data from MFA, by adding to the employees number (after reconciliation with other data sources) the (non-) residents working in Romanian embassies abroad and subtracting the ones working in foreign embassies in Romania;
  - Using the data from MLSSF and MI, by adding to the obtained figure of employees the non-resident workers and subtracting the residents working abroad;
  - Using the data from MLSSF, by adding to the data on self-employed after reconciliation with other data sources, the non-resident workers;
  - Total employment according to the domestic concept is made up from obtained number of employees and self-employed persons.

**C) Adjustment for *actual working time (jobs)***

In order to count both principal and secondary activities, to be comparable with the RNA data, the number of persons obtained is considered number of primary jobs.

There are added the **secondary jobs to the primary jobs**, obtaining the total number of jobs.

In order to follow the ESA requirements, there are excluded the persons which are recorded in employment, but actually do not perform work. In this situation there are **women in maternity leave**.

**D) Estimation of *actual hours worked***

The total hours worked, with breakdown by social variables (gender, groups of age) was obtained by multiplying the respective (already broken down by social variables) final **number of jobs** from each cell with the corresponding **average number of hours worked per week** (from LFS, for each item) and **number of working weeks** (yearly and quarterly).

Table 7.2: Sources used to obtain data on hours-worked

<b>Name of survey/register</b>	<b>Usage</b>	<b>Type</b>	<b>Periodicity and availability</b>	<b>Coverage</b>	<b>Sampling method</b>
Labour Force Survey in Households (LFS)	Primary source for all activities (section level)	Household survey SU <sup>1)</sup> : dwelling OU <sup>2)</sup> : person aged 15 years and above	1994, 1995 – yearly since 1996 - quarterly	Resident population of 15 years and over	Multi-stage sampling plan
Labour Cost Survey (LCS/ S3)	Consistency checks: all activities	Enterprise survey SU: enterprise OU: local unit	1993, yearly data on hours worked only since 2000	All activities	Stratified simple random sampling
Monthly Survey on Wages (SW)	Consistency checks: all activities	Enterprise survey SU: enterprise OU: enterprise (till 2000), local unit (starting from 2001)	1990, monthly data on hours worked only since 2000	All activities	Stratified simple random sampling

<sup>1)</sup> SU: selection unit

<sup>2)</sup> OU: observation unit

In order to obtain an accurate estimation of the number of working weeks (annual and quarterly), were taken into account:

- the distribution of the public national holidays (their number during the year);

- the distribution of the holiday leaves given by tourism statistics.

In Romanian NA, data on Compensation of employees covers all the remunerations related to total employment (thus, including self-employed and, also, non-observed economy). Compensation of employees was not compiled at quarterly level, based on independent data sources (even it was obtained as a product of balancing institutional sectors accounts).

Regarding quarterly data series, the data on employment are published by 6 main industries (A6), the ones also required by Eurostat to breakdown the GVA for quarterly GDP. So, the quarterly estimates for employment are obtained after obtaining the annual figures (final version of ANA accounts). The split among quarters depends on the number of working weeks and days within each quarter. The seasonality of activities within each quarter can be observed.

## **8. From GDP to net lending/net borrowing**

In order to make the transition from GDP to net lending/borrowing, the quarterly sequence of accounts of institutional sectors should be in place.

For Romania, no QSA is compiled since now; following a project-work, it is envisaged to issue these estimates during year 2009.

## **9. Flash estimates**

The flash estimates for Romanian QGDP were not yet published.

In the context of a project-work, efforts were made in order to obtain results to be published, in line with Eurostat requirements.

## **10. Main data sources**

The various data sources used within the compilation of Romanian QNA, for the first releases at T+70 days are the following: statistical, administrative and other.



In order to maintain consistency with the reference year the present Inventory refers to, the described data sources correspond to year 2007. More data sources are available for the final version of QNA.

One should mention the fact that the **Statistical Register of Economic Units (REGIS)** is used as a common sample frame for all enterprise surveys and is essential in estimating GDP using the production approach. It is maintained on an ongoing basis by a special division of NIS Romania, being correlated to the Fiscal Register and Trade Register and it is updated based on the accounting statements collected by the Ministry of Public Finances.

**Monthly Statistical Bulletin** is monthly available, at T+40 days after the end of the reference month, containing conjectural main indicators on industry, investments, construction, agriculture, internal trade, foreign trade, services, social indicators, economy and finances.

Data presented in the Monthly Statistical Bulletin, concerning the main economic and social indicators, are provisional and can be further rectified. They are usually obtained by statistical sampling survey and measure the short-term economic and social evolution. Data are yearly finalised based on the business structural survey as well as on some yearly surveys specific to social and economic indicators.

The sampling base, which ensures the information necessary to build and yearly review the enterprise sample is represented by the REGIS.

At the presentation of data it is used The Classification of Activities in the National Economy CANE Rev.1, fully compatible with NACE Rev.1.1 and international Statistics (CITI Rev.3.1). CANE Rev.1 is used at national level, beginning with 1.01.2003 based on the Order of NIS President no.601/2002, issued in accordance with the stipulations of the Government Decision no. 656/1997, on approving the Classification of the Activities in the National Economy – CANE.

The indicators are calculated according to the principle of homogeneity/ prelevance, by section, broad industry group, division, group and class according to CANE Rev.1 structure. The continuity of data series has been ensured.

The value data are expressed in current prices of each period. The volume indices are determined under comparable methodological conditions and in constant prices. For the foreign trade activity, the value indices are calculated based on the data expressed on Euro.

The Monthly Statistical Bulletin also presents several indicators coming from administrative sources, specified within the publication. The provider of data and information institutions are directly responsible for their content and quality:

- Ministry of Agriculture, Forests and Rural Development (situation of agricultural works);
- General Administration of Customs (foreign trade data);
- National Agency for Employment (number of registered unemployed persons and unemployment rate);
- Ministry of Public Finances (Execution of State budget, local budgets and state social security budget);
- National Bank of Romania (Monetary situation and exchange rate);
- National Office of Trade Register (registrations of commercial companies with foreign participation in subscribed social capital);
- Stock Exchange Bucharest (main indicators of capital market);
- Ministry of Administration and Interior, General Direction of the Person Informational Evidence (new registrations of road vehicles).

The calculation methodologies for the statistical indicators are subject to a continuous process of revision and improvement, in order to accurately reflect the changes taking place in the economy, to adapt them to the new informational requirements and to align them to the statistical system of the European Union. Consequently, in order to assure the comparability, for several indicators, there have been updated: the coverage, the surveying samples and the aggregates weights, the methods of recalculation of the previously issued data etc.

**Prices Statistical Bulletin** is also monthly available at T+40 days, containing data series of Consumer price indices, Prices and price indices of the main agricultural products, Industrial production price indices, Constructions cost index. Some of these series are also contained by the Monthly statistical bulletin.

The national accounts aggregates from the agricultural activities are compiled within the system of **Economic Accounts for Agriculture (EAA)**, undertaken by the special division in NIS. This represents a system of interconnected accounts that should give a systematic, comparable, and as complete as possible view on agriculture field of activities with the aim of analyzing the production process and the primary income generated within the frame of "Agriculture" activity. The EAA in

Romania are compiled since 1998 in current prices and are based on the EUROSTAT Handbook on EAA, and also enhances the further requirements and improvements. The EAA follows the EC Regulation No. 138/ 2004.

EAA consists of two main types of accounts:

1. Current transactions accounts, containing production accounts, generation of income account, enterprise income account (distribution, redistribution and use of income as final consumption);
2. Accumulation account; capital account.

**Households Budget Survey** is quarterly running. The main aim of this survey is to identify the existing disparities among various social categories, by residence area, by their incomes, expenditures, alimentary consumption, housing conditions and owning of durable goods. The sample of the survey is made by households from urban and rural areas, random selected from all Romania counties and Bucharest Municipality. The sample of a quarter is normally organised as a continue survey during three consecutive months (from the quarter), by a random sample of more than 9000 permanent dwellings. The sampling plan was based on the construction, **at a first level**, of the Multifunctional Sample of Territorial Areas (the master sample EMZOT), starting from the results of Population and Housing Census carried out on 2002, built on 780 surveyed centres from all counties and Bucharest. EMZOT is based on Census on Population and Dwellings from 2002, periodically updated.

**Households labour force survey (AMIGO)** is a modern procedure for the statistical inquiry of labour market, having as main objective the measurement of active population – employment and unemployment – and of inactive population. Since 1996, households labour force survey is quarterly carried out as a continuous survey, thus allowing the achievement of conjectural data on the size and on the structure of labour force supply, pointing out the seasonal phenomena manifested on labour market.

**Balance of payments** is the main data source for estimation of the Rest of the world accounts and also for import and export of services. The responsible institution for the elaboration of Balance of payments and of the statistics of investments position of Romania is the National Bank of Romania (NBR), by its Division of Statistics. The elaboration methodology of Balance of payments is based on the recommendations

of the 5<sup>th</sup> edition of the Handbook on balance of payments of International Monetary Fund (BPM5), 1993. Data from balance of payments are elaborated and issued monthly, quarterly and annual.

Starting 2005, the **financial statements of non-financial enterprises** in Romania were brought in line with the accounting European Directives, while in 2006 has entered into force the Order of Ministry of Public Finance no. 1752/2005 for approving the accounting regulations according to the 4<sup>th</sup> and the 7<sup>th</sup> European Directives. In this sense, the nationally normalized format of accounting statements covers the accounting indicators required at European level.

The accounting statements, in pre-defined template, must be submitted to Ministry of Finances yearly and also half-yearly. The information from semester statements is not of a good quality.

The **accounting statements of financial enterprises** are regulated by National Bank of Romania and related Supervision authorities. They are submitted annual and half-yearly. Moreover, the profit and loss accounts for banks and credit cooperatives are quarterly available. One should underline the fact that, for most of the accounting statements format and accounting rules, the European Accounting Directives requirements are applied.

Each month, in the Monthly Statistical Bulletin there is published: **Execution of the state budget, Execution of the local budgets, Execution of the state social security budget**. These data are transmitted by the Ministry of Finances, and they are available in more detailed format for the national accounts purposes. The data are in cumulative basis, cash basis, referring to the government revenues and expenses. The public accounting and statistics stay at the basis of the published amounts.

Table 10.1 synthesises the main data sources used within the compilation of QGDP in Romania enumerated during the description of the methods.

*Table 10.1: Data sources and indicators used for the compilation of QGDP*

<b>No crt.</b>	<b>Main source/ indicator</b>	<b>Periodicity, availability</b>	<b>QGDP methods</b>	
			<b>Output approach</b>	<b>Expenditure approach</b>
1.	The industrial production index	Monthly, T+40 days	X	
2.	Turnover volume index for production delivered	Monthly, T+40 days	X	
3.	Turnover volume indices of wholesale and retail trade, maintenance and repair of motor vehicles	Monthly, T+40 days	X	X
4.	Industrial production price index (domestic and non-domestic market)	Monthly, T+40 days	X	
5.	Volume indices of investments	Quarterly T+50 days		X
6.	Construction cost index	Quarterly T+50 days		X
7.	Consumer price index	Monthly, T+40 days	X	X
8.	Prices and price indices of the main agricultural products	Monthly, T+40 days	X	
9.	Price indices of the main goods currently consumed in agriculture	Monthly, T+40 days		X
10.	Value of delivered/exported and entered/imported goods, based on INTRASTAT and EXTRASTAT	Monthly, T+40 days		X
11.	Unit value indices	Quarterly T+90 days		X
12.	Turnover volume indices for market services rendered to population	Monthly, T+40 days	X	
13.	Turnover volume indices for services of transport, post, telecommunications, real estate transactions and services mainly rendered to the enterprises	Monthly, T+40 days	X	
14.	Transport of passengers and goods	Monthly, T+50 days	X	X
15.	The number of employees	Monthly, T+40 days	X	
16.	The gross nominal earnings	Monthly, T+40 days	X	
17.	The net nominal earnings	Monthly, T+40 days	X	
18.	The monthly average earnings	Monthly, T+40 days	X	
19.	Households Budget Survey	Quarterly, T+120 days		X
20.	Labour Force Survey	Quarterly, T+120 days		X
21.	Economic Accounts in Agriculture	Quarterly, T+50	X	X
22.	Balance of payments	Quarterly, T+45		X
23.	Accounting statements of non-financial enterprises	Half-yearly	X	X
24.	Execution of the state budget	Monthly, T+40 days	X	X
25.	Execution of the local budgets	Monthly, T+40 days	X	X
26.	Execution of the state social security budget	Monthly, T+40 days	X	X

ABBREVIATIONS

AMIGO/LFS	Labour Force Survey (Romanian acronym AMIGO)
ANA	Annual national accounts
CIF/FOB	Cost, insurance, freight/ Free on board
EAA	Economic Accounts for Agriculture
ESA 95	European System of National and Regional Accounts (ESA95), version 1995
GVA	Gross value added
HBS	Households budget survey
NA	National accounts
NACE Rev.1.1	Classification of Economic Activities in the European Community, Rev.1.1
NBR	National Bank of Romania
NIS	National Institute of Statistics of Romania
NPISH	Non-profit institutions serving households
QGDP	Quarterly gross domestic product
QNA	Quarterly national accounts
QSUT	Quarterly supply-use tables
REGIS	Statistical Register of Economic Units
SBS	Structural business survey
SDDS	Special Data Dissemination Standard