Hungarian Central Statistical Office

Economic governance and Economic and social performance / National Accounts and Balance of Payments

Project 4. On-going activities for improving data production

Activity 7: Documenting sources and methods used for the compilation of QNA Inventory for Hungary based on ESA 2010

Grant agreement number: 831409 — 2018/HU/NA-BOP

FINAL REPORT

V1.2

December, 2019

1. Introduction

Quarterly national accounts (QNA) data are transmitted by the Hungarian Central Statistical Office (HCSO) in the Table 1 of ESA 2010 Transmission programme. In accordance with the Article 4 of the Regulation (EU) No 549/2013 the Commission (Eurostat) makes the detailed metadata available on sources and methods applied to compile QNA. Availability of detailed inventory of sources and methods will also comply with the Principle 15 "Accessibility and clarity" of the European Statistics Code of Practice requiring access to metadata for data users.

Standardised inventories have been established as useful tools to provide information on the compilation of national accounts in different domains. The quarterly national accounts (QNA) inventory is considered to be a useful source of information for assessing data quality and can be used as input for both metadata and quality reports.

2. Objectives of the project

The aim of this project was to compile a complete QNA Inventory based on ESA 2010 according to the standard structure provided by EUROSTAT. The aim of the project was achieved, the QNA Inventory was written and successfully finalized.

3. Project management

The project was launched on 13 June 2018.

A dedicated team was set up from the experts of National Accounts Department (NAD) of the HCSO. This team was responsible for the planning, the detailed scheduling and elaborating of the planned activities, compiling the reports and documentations. Team members were chosen based on their professional background and experience. The NAD did not contract external experts or involve subcontractors during this project.

The project team was responsible for the creation of the QNA Inventory based on the standard structure provided by EUROSTAT. A framework was created in order to follow and monitor continuously the progress and project members' contributions. The project leader as editor was responsible for the compilation and standardisation of the chapters. Proofreading was implemented before finalizing the QNA Inventory. The Inventory was written in English.

4. Main activities

The project was launched in July 2018. During the first period of the project the general requirements of the standard EUROSTAT structure were analysed, a detailed action plan was created and the tasks were delegated among the team members. The 14 colleagues of the NAD who were part of the project team all had to write a section of the Inventory by 30th June 2019. The compilation of the first draft version was finished by 1st August 2019. The following step involved the review and editing of the chapters. Before finalizing and sending the QNA Inventory, there was time for proofreading and where it was appropriate corrections and changes were made. The aim of the project was achieved, the QNA Inventory was written and finalized.

The final report is submitted by the deadline, in December 2019.

5. Keep information up-to-date

All documentation – i.e. QNA Inventory – prepared during the project serve as a comprehensive description of the applied methodology for compiling quarterly national accounts.

In order to keep all information up-to-date and relevant the Inventory has to be reviewed and revised by the colleagues of the Quarterly and Sector Accounts Section after all major changes or every year.

Hungarian Central Statistical Office

QNA INVENTORY

of

HUNGARY

2019

Budapest, December 2019

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CHAPTER 1 OVERVIEW OF THE SYSTEM OF QUARTERLY ACCOUNTS

The Hungarian QNA Inventory is a summary of the compilation method of the quarterly GDP and employment estimation published t+2 months after the reference quarter. It also contains information on the estimation method of flash estimation on GDP (t+30 days and t+45 days) and employment (t+45 days) and information on QSA (t+90 days).

The compilation of the Hungarian QNA Inventory was supported and granted by the European Commission (Eurostat)[1].

The Inventory refers to 2017 Q4 as reference period. Since then changes in sources and methods used might occurred, these are indicated in text simultaneously.

1.1. Organisation and institutional arrangements

1. The National Accounts Department (NAD) of the Hungarian Central Statistical Office (HCSO) is responsible for the compilation of non-financial national and sector accounts (annual and quarterly) and related data sets in Hungary. Financial sector accounts are compiled by the National Bank of Hungary (MNB).

2. Act CLV. of 2016 on Official Statistics (15. December) and Government Decree 184/2017. (5. July), issued for the implementation of law, are in force in Hungary since 1 January 2017. They define the scope and the role of the different actors of the statistical system, as well as its general objectives. By the law HCSO is a professionally independent administrative institution of nation-wide authority, operating under the supervision of the Government.

3. Data collections of the HCSO are performed within the frame of the National Statistical Data Collection Programme (OSAP). OSAP is, after the referral of HCSO, regulated by governmental rules and all the members of the statistical service are entitled to pursue statistical activity by virtue of a basic law.

4. For decades the HCSO has intended to reduce the administrative burden for companies and the public as much as possible. Therefore HCSO uses existing administrative sources widely in the compilation process of national accounts. Business registers and registrations of both government and government-funded organizations are used. The information from tax office registers and tax databases are supplied to HCSO free of charge. Access to this information is guaranteed by the Statistical Law and by a special agreement for data exchange between HCSO and the National Tax and Customs Administration. Individual data on corporate taxes are available for the national accountants.

5. The NAD is responsible for producing QNA and QSA for Hungary. Quarterly financial accounts are compiled by the National Bank of Hungary (MNB). MNB is also responsible for the Balance of Payments and the Government debt statistics. The two institutions work in cooperation on issues under a formalized agreement.

[1] Grant agreement number: 831409 — 2018/HU/NA-BOP

6. The third main administrative data exchange partner is the Ministry of Finance, which is responsible for the general government budgetary information.

7. The NAD is part of the Statistics Directorate of HCSO[2] and it has approximately 50 employees currently. The structure of the department is as follows.

- Quarterly and Sector Accounts Section
- Annual Accounts Section
- Government and Non-profit Sectors Accounts Section
- Input-Output Table (IOT) Section
- Consumer Prices Section

8. Within the NAD the Quarterly and Sector Accounts Section is responsible for the compilation of quarterly national accounts (QNA) and quarterly sector accounts (QSA). However, colleagues working in other sections, such as the Annual Accounts, Government and Non-profit Accounts Sections, participate in the compilation process as well.

1.2. Publication timetable, revisions policy and dissemination of QNA

9. The HCSO has been publishing results of its quarterly GDP calculations since Q1 1996 as reference quarter, first for approximately 100 days after reference quarter. Recent QNA estimation for t+2 months refers to that calculation as a result of a continuing improvement work.

10. First flash GDP estimates were introduced in Q1 2006 as reference quarter in cooperation with NAD and ECOSTAT, a former economic researcher institute of HCSO. From Q1 2012 as reference quarter NAD produces flash estimates alone.

11. First flash estimation of quarterly GDP growth rate is sent only to Eurostat for calculation of EU aggregates at the end of the first month following the reference quarter (t+30 days). Second flash estimation of quarterly GDP growth rate is published in Hungary too at 45 days after the reference quarter. First preliminary data of QNA main aggregates are released at 2 months after the reference quarter. Finally, the first preliminary publication of QSA aggregates occur at 90 days following reference quarter.

12. According to the current revision policy QNA aggregates could be revised in quarters not covered by an annual estimation. After the first annual estimation is published – it is the sum of the latest four quarters – a quarter could be revised only in the end of September, simultaneously with the revision of annual estimation.

13. Hungary is a member state of the EU, but not the EMU, its GDP at current prices represents less than 1% of the corresponding EU total[3]. Therefore only QSA data of the general government sector (S.13), total economy (S.1) and rest of the world (S.2) are compiled by HCSO. But figures of the total economy are transmitted to Eurostat only.

14. Several information from data sources of the general government sector are available only after the QNA publication, such as information on local governments. Therefore these new information are incorporated into QSA only in the reference quarter and with a quarter time-lag into QNA.

[2] The organisational structure of HCSO is defined by the "Regulation No 49/2017 (of 30 November) of the Minister of Prime Minister Office on the „Organizational & Operational Rules of the Hungarian Central Statistical Office"

[3] The 1% threshold is calculated as a moving average based on the three latest available years.

15. Flash estimation of quarterly NA employment data is sent only to Eurostat for calculation of EU aggregates at 45 days following the reference quarter. First preliminary data of NA employment aggregates are released at 2 months after the reference quarter.

16. According to the current revision policy quarterly NA employment aggregates could be revised in quarters not covered by an annual estimation. After the first annual estimation is published a quarter could be revised only in the end of September, parallel with the revision of annual estimation.

1.3. QNA compilation approach

17. Quarterly GDP is compiled by production, expenditure and income approaches. The production and expenditure approaches of GDP are produced independently, then they are integrated and balanced. The production approach of GDP is calculated using the extrapolation method by STS production value indices. The previous price gross value added is calculated by the double deflating method. The expenditure approach of GDP is calculated by compilation of results of relevant surveys (e.g. HBS, Investment, external statistics). The income approach of GDP is not an independent estimation because the gross operating/mixed income is estimated as a residual item.

18. All approaches are compiled at current prices. The production and expenditure data are calculated at constant price by the annual overlap chain linked method.

1.4. Balancing, benchmarking and other reconciliation procedure

19. Hungarian national accounts are based on the annual SUT framework. The main balancing procedure is made within it. The three approaches for estimating GDP are combined in one system. In this system data are confronted and compared with each other on a detailed level in order to find possible causes of inconsistencies. The supply and use tables as an integral part of GDP balancing process started to be used since 2008 as a reference year. In the early and mid-1990s the results of the production approach were considered more reliable based on the analysis of reliability of data sources. However, since the integration of the SUT framework none of the three approaches has been given predominance during the SUT balancing process.

20. At first, GDP calculation from the two different sides gives different results. This contradiction poses as a real challenge in every quarter because early SUT balancing is not yet available at the time. There can be only one GDP figure by definition, which is why the production and expenditure approaches have to be integrated and balanced. The final SUT is compiled for t+33 months, therefore at an earlier date a way of macro balancing is applied to eliminate the differences between the results of different GDP compilation methods in the production side and expenditure side. The macro balance comes from the balancing process between the production and the expenditure sides.

21. The quarterly results of the production approach are usually given priority during balancing a quarter because they are considered to be more reliable based on the analysis of reliability of data sources in this stage of the GDP compilation process.

1.5. Volume estimates

22. In quarterly estimations the chain-linking method has been applied for constant price calculations conforming to the latest EUROSTAT regulations. Recently the year 2005 is used as a reference year for chain-linking.

23. Our calculations correspond to the EUROSTAT recommendations, the main steps are:

a) Annual weights should be used in chain-linking of quarterly national accounts.

b) Volume measures in quarterly national accounts should be derived by applying a Laspeyres formula.

c) The one-quarter overlap method (using the 4th quarter as the linking period) together with an appropriate benchmarking technique is considered best for linking annually chain-linked quarterly national accounts. The annual overlap method constitutes a valid alternative which is simpler to apply.

d) Seasonal adjustment should be carried out after chain-linking.

24. The HCSO decided to use the annual overlap method. On one hand, this technique automatically meets the time consistency criterion (i.e. additivity between quarterly and annual data). On the other hand, for applying the one-quarter overlap method the current price data of the given quarter should be recalculated on the average prices of the current year which is impossible in practice.

25. The annual overlap method uses the following calculation steps:

a) Step 1: constant price calculations for every quarter at the average prices of the previous year; annual data are equal to the sum of the data of four quarters;
b) Step 2: transformation of the constant price data into the average of the previous year = 100.0 volume indices;
c) Step 3: linking of the volume indices with the change of reference and basis years which is carried out with the help of the annual indices of the years as links. Firstly, the average of the previous year = 100.0 volume indices are linked into the reference year (in this case the average of 2005) = 100.0 volume indices. That is, the average of the previous year = 100 volume index for the given period is multiplied with the annual indices of the previous years (as links). Finally, the same period of the previous year = 100.0 volume indices can be calculated with help of these average of the 2005 = 100.0 volume indices.

1.6. Seasonal and calendar adjustment

26. The seasonal adjustment of quarterly NA data is made, in accordance with the principles uniformly applied in the HCSO, by the TRAMO-SEATS method with the help of JDemetra+ v.2.2.0 software.

27. The programme options are fixed annually (the applied ARIMA model, its parameters, the regression variables quantifying the effects of working days and holidays), which change only if it is justified by the revision of basic data, or if the character of time series behaviour is strongly modified. Resulting from the character of calculation, the seasonally adjusted data in all periods can be overwritten by the last run. In case of GDP total data series, seasonal adjustment is made for the data previously adjusted for calendar effects, in compliance with EUROSTAT recommendations.

28. During seasonal adjustment the following types of outliers are identified based on tests and relevant expert's information: additive outlier, temporary change and level shift.

Working day and leap year effects, such as moving holidays, are tested annually. Hungary specific calendar is used.

29. Direct approach is used for seasonally adjusted (and calendar adjusted, where relevant) chain-linked volumes.

1.7. Additional information

30. The HCSO publishes almost all data and information online only and it maintains an official, bilingual (Hungarian and English) webpage where data users can find all official releases and published data in one place. The address of the webpage is the following:

http://www.ksh.hu/?lang=en

31. Direct link to QNA press releases:

http://www.ksh.hu/gyorstajekoztatok/#/en/list/gde

32. Direct link to QNA published data:

http://www.ksh.hu/stadat_infra_3_1

33. Direct link to dissemination calendar of HCSO:

http://www.ksh.hu/dissemination_calendar_fr

34. The HCSO maintains one-channel customer services for supporting its data users and the public (http://www.ksh.hu/contactus). This central information service:

- provides information on all publicly available statistical data issued by HCSO either on the internet or in printed publications.
- meets the demands for not publicly available statistical data and individual analyses.
- provides help in finding other information (on data collections, methodological and technical issues)
- sells publications issued by the HCSO, in the office of the Information service or via internet.

CHAPTER 2. PUBLICATION TIMETABLE, REVISION POLICY AND DISSEMINATION OF QNA

2.1. Release policy

35. The following table shows the deadlines of GDP publications.

Table 1 The timeline of QNA publications

Subject	Deadline	Notes
Quarterly flash estimates (GDP volume index)	T+30 days	Not for publication
Quarterly and annual flash estimates (GDP volume index)	T+45 days	Release of Q4 estimation includes also preliminary annual GDP volume index.
Quarterly GDP main aggregates	T+2 months	Release of Q4 estimation includes also preliminary annual GDP data by breakdown
Quarterly sector accounts	T+90 days	Government sector and rest of the world are published only.
Annual national accounts	T+9 months	Benchmark of quarterly data to annual data
Annual national accounts, first final data	T+21 months	Benchmark of quarterly data to annual data
Optional revision of annual NA, second final data	T+33 months	Based on SUT, benchmark of quarterly data to annual data

36. The first flash estimation of quarterly GDP growth rate is sent only to Eurostat for calculation of EU aggregates at the end of the first month following the reference quarter (t+30 days). The second flash estimation of quarterly GDP growth rate is published also in Hungary at 45 days after reference quarter. First data of QNA main aggregates are released at 2 months after the reference quarter. Finally, the first preliminary publication of QSA aggregates occurs at 90 days following the reference quarter.

37. According to the current revision policy QNA aggregates could be revised in quarters not covered by an annual estimation. After the first annual estimation – the sum of the latest four quarters – is published, a quarter could be revised only in the end of September, parallel with the revision of annual estimation.

38. The following table shows the possible times for revision of the quarterly GDP main aggregates from reference quarter of 2017 Q4.

Table 2 The summary of GDP revisions by reference quarters

Date of publication		2017	2018				2019				2020	
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
2018	29th February											
	31th May											
	31th August											
	30th September											
	30th November											
2019	28th February											
	31th May											
	31th August											
	30th September											
	30th November											
2020	28th February											
	31th May											
	31th August											
	30th September											

new quarter
revision due to changes in quarterly basic data
unchanged
revision due to the preliminary annual data (t–1 year)
revision due to the final annual data (t–2 years)
revision due to SUT revision (t–3 years)

39. Hungary is a member state of the EU, but not the EMU, its GDP at current prices represents less than 1% of the corresponding EU total[4]. Therefore only QSA data of the general government sector (S.13), total economy (S.1) and rest of the world (S.2) are compiled by the HCSO. Figures of the total economy are transmitted to Eurostat only.

40. Several information from data sources of the general government sector are available only after the QNA publication, e.g. information on local governments. Therefore these new information are incorporated into QSA only in the reference quarter and with a quarter time-lag into QNA.

41. The following table shows the possible times for revision of the QSA aggregates from reference quarter of 2017 Q4.

[4] The 1% threshold is calculated as a moving average based on the three latest available years.

Table 3 The summary of revisions of main aggregates by reference quarters

Date of publication		2017	2018				2019				2020	
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
2018	29th March											
	28th June											
	30th September											
	29th December											
2019	29th March											
	28th June											
	30th September											
	29th December											
2020	29th March											
	28th June											
	30th September											

new quarter

revision due to changes in quarterly basic data

unchanged

revision due to the preliminary annual data (t–1 year)

revision due to the final annual data (t–2 years)

revision due to SUT revision (t–3 years)

42. Flash estimation of quarterly NA employment data is sent only to Eurostat for calculation of EU aggregates at 45 days following the reference quarter. First preliminary data of NA employment aggregates are released at 2 months after the reference quarter.

43. The following table shows the deadlines of NA employment publications.

Table 4 Publications of NA employment data

Subject	Deadline	Notes
Quarterly flash estimates (employment)	T+45 days	Release of Q4 estimation includes also preliminary annual data
Quarterly employment data by NACE	T+2 months	
Annual employment data	T+9 months	Benchmark of quarterly data to annual data

44. According to the current revision policy quarterly NA employment aggregates could be revised in quarters not covered by an annual estimation. After the first annual estimation is published a quarter could be revised only in the end of September, parallel with the revision of annual estimation.

45. The HCSO releases its dissemination calendar for the next year in the end of November on its official webpage. Link to dissemination calendar:

http://www.ksh.hu/dissemination_calendar_fr

46. In Hungary the National Bank of Hungary (MNB) is responsible for compiling Balance of Payments (BoP) statistics. Due to not harmonized dates of data transmissions determined by international organisations for BoP and for NA (rest of the world accounts), discrepancies are obtained in short term statistics.

2.2. Contents published

47. Hungarian QNA data are transmitted to Eurostat on the official release date, at t+2 months. The data transmission (DT) of NA data follows the European System of Accounts (ESA 2010) rules and is set up according to the transmission programme.

48. Completeness rate of Hungary in case of Table 1 in DT (T0101, T0102, T0103, T0110, T0111, T0117, T0120, T0121) is 100%. All compulsory information are transmitted to Eurostat via eDAMIS within the official deadline.

49. The domestic QNA publication of HCSO are released only in electronic format on the official website of the HCSO.

50. Unadjusted and adjusted QNA figures are published in million Hungarian forint (HUF), contribution to GDP growth data in percentage points and volume indices (q/q-4 or q/q-1) in percentage.

51. In case of flash estimates the growth rate of GDP are published. Four types of volume indices are released:

(I) Not adjusted, raw data (the corresponding period of previous year=100.0%)

(II) Adjusted for calendar effects (the corresponding period of previous year=100.0%)

(III) Seasonally and calendar effects adjusted and reconciled data (the corresponding period of previous year=100.0%)

(IV) Seasonally and calendar effects adjusted and reconciled data (previous quarter=100.0%

52. QNA employment data are not published yet, they are transmitted to Eurostat only. Annual NA employment data (in person and in hours worked) are available on the website.

53. In case of QNA estimates the following type of aggregates are published from production, expenditure of GDP estimation:

(1) Unadjusted data at current prices, in million HUF;

(2) Unadjusted data at average prices of previous year, in million HUF;

(3) Unadjusted data at average prices of 2005, in million HUF;

(4) Volume indices, the corresponding period of previous year = 100.0%;

(5) Contribution to GDP growth, calculated from indices compared to the corresponding period of previous year, in percentage points;

(6) Results of the seasonal adjustment programme running, at average prices of 2005, in million HUF;

(7) Seasonally and calendar effects adjusted and reconciled data, at average prices of 2005, in million HUF;

(8) Volume indices, seasonally and calendar effects adjusted data, previous quarter = 100.0%.

Table 5 Types of published NA aggregates by production approach

	NA aggregates from production side published on HCSO website	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gross value added	Agriculture, forestry and fishing	x	x	x	x	x	x	x	x
	Mining and quarrying; manufacturing; electricity	x	x	x	x	x	x	x	x
	Of which: manufacturing	x	x	x	x	x	x	x	x
	Construction	x	x	x	x	x	x	x	x
	Services, total	x	x	x	x	x	x	x	x
	Of which:								
	Wholesale and retail trade; repair of motor vehicles; accommodation and food service	x	x	x	x	x	x	x	x
	Transportation and storage	x	x	x	x	x	x	x	x
	Information and communication	x	x	x	x	x	x	x	x
	Financial and insurance activities	x	x	x	x	x	x	x	x
	Real estate activities	x	x	x	x	x	x	x	x
	Business services	x	x	x	x	x	x	x	x
	Public administration and defence; compulsory social security; education; human health and social work activities	x	x	x	x	x	x	x	x
	Arts, entertainment and recreation, repair of household goods and other services	x	x	x	x	x	x	x	x
	Taxes less subsidies on products	x	x	x	x	x	x	x	
	Gross domestic product, total (at purchaser's prices)	x	x	x	x	x	x	x	x

where (x) means published data;

Table 6 Types of published NA aggregates by expenditure approach

NA aggregates from expenditure side published on HCSO website	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household final consumption expenditure	x	x	x	x	x	x	x	x
Social transfers in kind from government	x	x	x	x	x	x	x	x
Social transfers in kind from NPISHs	x	x	x	x	x	x	x	x
Actual final consumption of households	x	x	x	x	x	x	x	x
Actual final consumption of government	x	x	x	x	x	x	x	x
Actual final consumption, total	x	x	x	x	x	x	x	x
Gross fixed capital formation	x	x	x	x	x	x	x	x
Changes in inventories	x	x			x			
Acquisitions less disposals of valuables	x	x			x			
Gross capital formation, total	x	x	x	x	x	x	x	x
Domestic use, total	x	x	x	x	x	x	x	x
Exports , total	x	x	x	x	x	x	x	x
goods	x	x	x	x	x	x	x	x
services	x	x	x	x	x	x	x	x
Imports, total	x	x	x	x	x	x	x	x
goods	x	x	x	x	x	x	x	x
services	x	x	x	x	x	x	x	x
External balance of goods and services	x	x			x			
goods	x	x			x			
services	x	x			x			
Gross domestic product, total	x	x	x	x	x	x	x	x
Household final consumption expenditure, (domestic concept), total	x	x		x				
Expenditure on durable goods	x	x		x				
Expenditure on semi-durable goods	x	x		x				
Expenditure on non-durable goods	x	x		x				
Expenditure on services	x	x		x				
Exports, to member states of EU	x	x		x				
Exports, to member states of euro area	x	x		x				
Exports, to non-EU countries	x	x		x				
Imports, from member states of EU	x	x		x				
Imports, from member states of euro area	x	x		x				
Imports, from non-EU countries	x	x		x				

where (x) means published data;

54. NA aggregates from income side are published only at current prices, and all aggregates are broken down by NACE categories. NACE categories are the same level as in the production approach.

Table 7 Types of published NA aggregates by income approach

NA aggregates from income side published on HCSO website by NACE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gross value added	x							
Compensation of employees	x							
Wages and salaries	x							
Employers' social contributions	x							
Other taxes on production	x							
Other subsidies on production	x							
Gross operating surplus, mixed income	x							

where (x) means published data;

55. As there is no legal obligation for compilation of quarterly sector accounts as it is written in Paragraph 39. In middle term compiling full sequence of quarterly national account for all institutional sectors is planned.

56. Concerning general government sector all in DT listed compulsory quarterly aggregates are released on the HCSO website. In case of rest of the world all balancing items (B.11, B.12, B.9) and product items are published and in addition the balance of D.2, D.3, D.4, D.5, D.6, D.7 and D.9 aggregates.

57. Currently it is not planned to compile and publish monthly National Accounts aggregates.

58. Link to press releases: http://www.ksh.hu/gyorstajekoztatok/#/en/list/gde

59. Link to published data: http://www.ksh.hu/stadat_infra_3_1

60. Link to dissemination calendar: http://www.ksh.hu/dissemination_calendar_fr

2.3. Special transmissions

61. Some institutions have access to the results of QNA one day before the official release. In case of regular release the complete dataset is sent to the Ministry of Finance and to the National Bank of Hungary.

62. The results of the flash estimates are sent to Eurostat one day before the official release.

63. Hungary sends data to the International Monetary Fund following SDDS standard. The data published in the homepage corresponds to the data described on the IMF's Dissemination Standards Bulletin Board (DSBB) to which Hungary has committed. Link to economic and financial data (SDDS): http://www.ksh.hu/docs/eng/imf/nsdp.html

2.4. Policy for metadata

64. According to the HCSO Strategy 2020 document the first strategic objective is to satisfy user needs at a high level and develop our services. 'Statistical activities aim at providing as many data and as much information of as good quality as possible to as many user as possible, through the channel and in the format which are the most suitable for them,

ensuring the confidentiality of individual data. Our objective is to contribute to fulfilling user needs and to improve statistical literacy through wide-spread use. '[5]

65. In accordance with our Dissemination policy published in 2014 HCSO aims to get to know the needs of its real and potential users, to measure the satisfaction with our data and services and to form our dissemination practice continuously in line with these. In the production process of statistics it is taken into account that users' interest is to have access to data of as good quality as possible, as soon as possible, with appropriate explanatory descriptions. HCSO aims to make data available in as short amount of time as possible following data collection, in a form that meets user needs.

66. In data publications HCSO cooperates with international organisations so that the published data should be available in international databases too, and the (accessible) data already sent to international organisations are published also by HCSO. In order to maintain data quality HCSO aims to keep the balance between the purposes of timeliness and accuracy, often contradicting each other. If possible, preliminary data are released – drawing attention to the preliminary character –, too, before final data are available. Statistics are produced and disseminated on an objective basis, determined by the principles of official statistics and professional aspects. All users can access statistical information simultaneously, pre-release access is exceptional, its rules are public and their violation – by any users outside of HCSO or HCSO staff members – has legal consequences.

67. Statistical data are released on dates published in advance in HCSO's dissemination calendar, incidental deviation from the calendar is announced with the reason of deviation as soon as possible and the new date of publication is disclosed. Data is aimed to be made suitable for comparisons over time. It is clearly indicated where comparability is restricted. Metadata, as well as conceptual and other explanations facilitating the interpretation of statistics are disclosed. A significant part of our product range is bilingual (Hungarian and English). The English-language content of HCSO's website covers the content of the Hungarian version to a large extent. In professional issues colleagues are at the disposal of users in English language, too.

68. Links to Strategy 2020 and other main policies:

http://www.ksh.hu/docs/bemutatkozas/eng/strategy2020.pdf

http://www.ksh.hu/guidelines_reports_policies_tart

69. HCSO uses the Hungarian version of Generic Statistical Business Process Model (GSBPM v.5.0) to make its work and its processes more transparent by describing, presenting and interpreting the HCSO data production processes in a harmonised way. Link to Hungarian Generic Statistical Process Model:

http://www.ksh.hu/docs/bemutatkozas/eng/estfm_eng.pdf

70. The NAD follows SIMS 2.0 for NAMAIN domain since 2019. The process to change the metadata structure to the NAMAIN domain was granted and supported by the European Commission (Eurostat)[6]. To keep the information up-to-date and relevant after all major changes or at least in each year the metadata information have to be checked and revised if necessary by the colleagues of the Quarterly and Sector Accounts Section.

[5] Hungarian Central Statistical Office Strategy 2020, page 10.
[6] Agreement number: 04121.2017.001-2017.260 Providing ESA 2010 metadata based on SIMS

71. Also SDDS is used in relation to IMF. (*see under chapter 2.3*)
72. Links to NA meta information:

http://www.ksh.hu/docs/eng/modszgyors/egdpmodsz15.html

http://www.ksh.hu/apps/meta.objektum?p_lang=EN&p_menu_id=110&p_ot_id=100&p_obj_id=BBAB&p_session_id=26559738

http://www.ksh.hu/apps/meta.objektum?p_lang=EN&p_menu_id=110&p_ot_id=100&p_obj_id=BBAE&p_session_id=26559738

http://www.ksh.hu/apps/meta.objektum?p_lang=EN&p_menu_id=110&p_ot_id=100&p_obj_id=BBAG&p_session_id=26559738

CHAPTER 3. OVERALL QNA COMPILATION APPROACH

73. This chapter provides a general description of the QNA compilation method applied in Hungarian QNA.

3.1. Overall compilation approach

3.1.1. General architecture of the QNA system

74. The QNA are compiled in strong analogy to the annual national accounts, although the information basis of the quarterly accounts is not as comprehensive as one of the annual national accounts.

75. Similar to the annual national accounts, QNA is estimated by production, expenditure and income approaches. The production and expenditure approaches of GDP are produced independently. The income approach of GDP is not an independent estimation because the gross operating/mixed income is estimated as a residual item.

76. Estimations from the production approach and from the expenditure approach are carried out from largely independent data sources, and in both cases the calculations use a bottom-up method.

77. Hungarian NA are based on SUT, thus QNA is also built on the results of the latest annual SUT frame (T-3 years).

3.1.1.1. Production approach

78. The current system of the QNA is connected to SUT in the way that production prices (CPA breakdown) are transformed to deflators by NACE breakdown using the ratio of the latest available supply and uses tables.

79. Extrapolation is the preferred calculation technique. Only in exceptional cases, absolute values from special statistics are taken over directly into the QNA (f.i.: in case of government statistics).

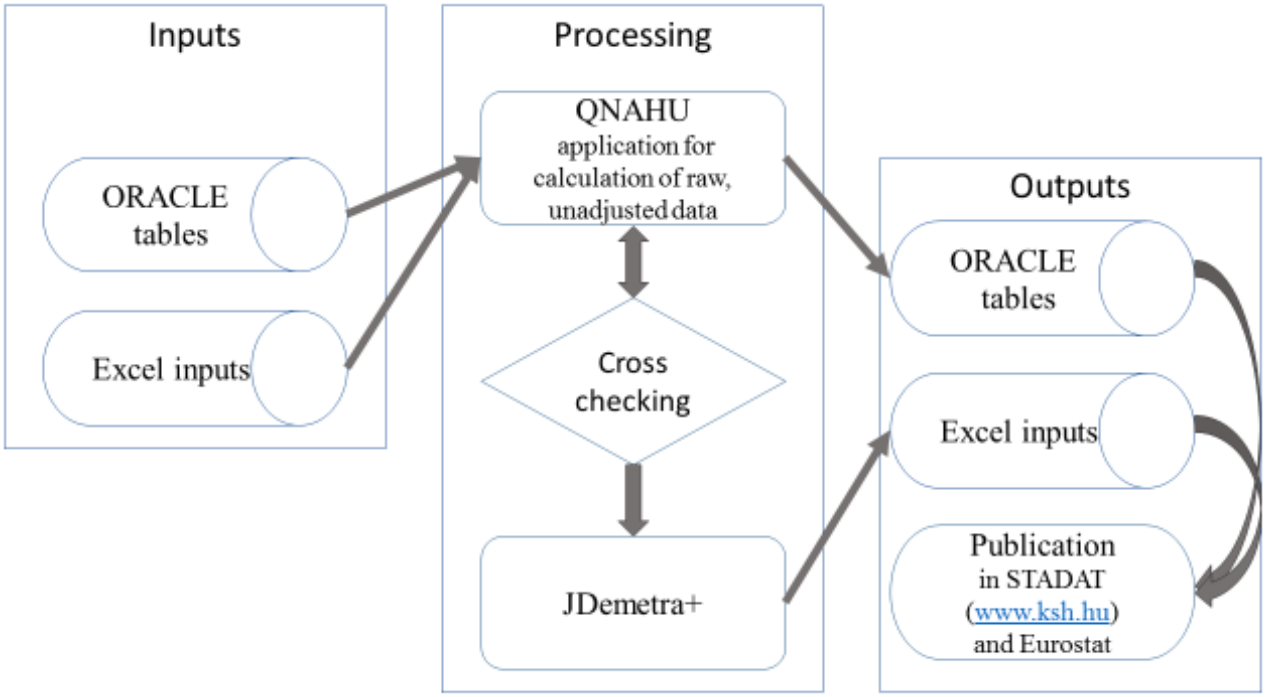
80. The current quarterly calculation is carried out by extrapolating the output of the previous year's quarter with the output value index from short-term business statistics.

$$Vq=Vq-4*(Iq/Iq-4)$$

where V is the value of the previous year's corresponding quarter, q is the actual quarter of the current year and I is the suitable indicator.

81. The current architecture of the calculation of the GDP for t+2 months after a current quarter can be illustrated by the following Figure 1.

Figure 1 The data preparation process



82. The indicators using the calculations (e.g. from short term statistics, CPI, industrial and service prices) are available in database. The ratios of supply and uses tables for calculation price indices are in database also. Each quarter of the calculation of GDP from production side means a new version and is stored in a new Oracle table. The NAD uses its own computer software, namely QNAHU which is able to manage the input data from different sources. Using this software, the gross value added of non-financial companies and households is calculated with extrapolation. The gross values added of other sectors (financial companies, government and non-profit institutions serving households) in separate calculations in Excel are loaded in Oracle tables also with the QNAHU software. Calculations of Output, IC, GVA and GDP in breakdown of 64 industries at current prices, at previous year's prices and at constant prices (as results of chain-linking) for the whole national economy are managed with this software QNAHU as well.

83. If the data of the new annual national accounts are available, the benchmarking and chain-linking is realized by the software. The new annual data are loaded in database and QNAHU is able to connect these tables. Taken into consideration the annual data and the previous quarterly data as indicators, the software makes the benchmarking using pro-rata method and chain-linking automatically and downloads the new time series in new Oracle tables.

3.1.1.2. Expenditure approach

84. In the expenditure approach information for the QNA compilation are partially available in databases. Currently the processes are not supported by QNAHU software, but SQL, Oracle databases and Microsoft applications are used parallel.

85. The calculation is based on SUT in different ways. HFCE is connected to SUT by extrapolation technic. The latest annual figures balanced in SUT (T-2 years) are extrapolated using annual and quarterly indicators. GFCF and P.53 calculation based on annual information (T-1 year) and extrapolated by quarterly indicators.

86. External trade statistics and changes in inventories based on mainly quarterly direct information, extrapolation has a smaller role. Experiences of latest SUT are incorporated in these statistics by routine revision.

87. Aggregates of general government are based on direct administrative information and special volume estimation. SUT has the smallest importance in compilation of GG aggregates.

88. If the data of the new annual national accounts are available, the benchmarking and chain-linking is realized by using pro-rate method by aggregates separately. Then at quarterly level QNA has to be balanced again.

3.2. Balancing, benchmarking and other reconciliation procedures

3.2.1. Quarterly GDP balancing procedure

89. The main balancing procedure is made within the annual SUT framework. The three approaches for estimating GDP are combined in one system. In this system data are confronted and compared with each other on a detailed level in order to find possible causes of inconsistencies. The supply and use tables as an integral part of the GDP balancing process started to be used since 2008 as a reference year. In the early and mid-1990s the results of the production approach were considered to be more reliable based on the analysis of the reliability of data sources but since the integration of SUT none of the three approaches has been given predominance during the SUT balancing process.

90. In quarterly level, due to lack of early SUT balancing yet, in all quarters it is a real challenge to calculate GDP because the production and expenditure approaches produce different results. However by definition there must be one unique GDP figure that is why calculations have to be integrated and balanced in any way.

91. Final SUT is compiled for t+33 months, therefore at an earlier date of QNA a way of macro balancing is applied to eliminate the differences between results of the GDP compilation from different approaches.

92. The macro balance comes from the balancing process between the production and the expenditure sides. The quarterly results of the production approach are usually given priority during balancing a quarter because it is considered to be more reliable based on the analysis of reliability of data sources in this stage of GDP compilation.

93. In the expenditure side macro balance is split among household final consumption expenditure, gross fixed capital formation and changes in inventories. The household final consumption expenditure and gross fixed capital formation get balanced according to results of a time series analysis and the remaining part goes to the changes in inventories. In cases when the amount of the balance is insignificant the whole amount is accounted as changes in inventories.

94. The size of the balancing adjustments is analysed continuously and information from SUT are incorporated into current calculations.

3.2.2. Benchmarking of QNA and ANA

95. First ANA estimate is the sum of the quarters and it is released together with the QNA data in 4th quarter as reference quarter. In that calendar year in the end of September quarterly time series are aligned to the new annual data by pro-rate method and by top-down processes.

96. The benchmarking of quarterly data is necessary after the publication of the preliminary annual and final annual data according to the revision policy. This ensures that the annual and quarterly accounts are consistent. However, there may be a case of methodological change in the annual accounts. In this case, quarterly accounts must also be adjusted retroactively until 1995.

97. The quarters are adjusted proportionally in a simplified way. This solution has the advantage that the volume indices of the original values in the year-on-year comparison are not distorted and also the volume indices compared to the previous quarter are not distorted (within a calendar year). However, there is the disadvantage that there may be a discrepancy (a step) between the first quarter of a year and the last quarter of the previous year. This problem is examined and it is planned to use another method for temporal disaggregation in the future.

3.2.2.1. Production approach

98. The sum of gross value added (difference of GDP and taxes less subsidies on products) of the national economy of the four quarters at the previous year's average price is adjusted to the annual amount by dividing the difference in proportion to the four quarters. This constitutes the vertical boundary for the benchmarking process.

99. The horizontal boundary (NACE breakdown, 64 industries) is derived from the annual numbers. The quarterly data are adjusted at the previous year's average price with a macro that attempts to minimize the squared difference between the new and old annual numbers while the total boundary conditions are met.

100. The benchmarked total value added of the national economy of a quarter is broken down by sector based on their annual proportion.

101. Sectoral value added data at the previous year's average price of a quarter are broken down by gross annual output and IC ratios. In this case, it is assumed that the ratio of IC and gross output within a year is constant. This assumption is used during the calculation also.

102. After the benchmarking of the quarterly data at the previous year's average price, the data at current price should be adjusted also. The gross output and IC at the previous year's average price in the sectors non-financial corporations and households are inflated to provide current price data. The current price data are adjusted to the annual figures by NACE A64 breakdown, dividing the difference between the total and the annual data by the four quarters.

103. For the general government, financial corporations and non-profit institutions serving households, preliminary quarterly data are benchmarked to annual data in the proportion of the four quarters' data.

3.2.2.2. Expenditure approach

104. All aggregates in the expenditure approach use pro-rate method for benchmarking quarterly figures to annual ones to ensure data consistency but in different manner.

105. In the less rate external trade statistics use pro-rate technic, because annual figures based on quarterly survey information. By routine revisions quarterly data are changed and that causes changes in annual figures.

106. By HCFE, GCF and government statistics the annual data sources used for ANA compilation are different from quarterly ones for QNA, thus in these aggregates are benchmarked by pro-rate technic. First the four quarter-totals are aligned then the sub-totals in deep of publication level.

107. By seasonal and calendar adjusted series results of running are adjusted to the annual figures both at current and chain-linked prices. The calendar adjusted annual series used for "benchmarking" of seasonally and calendar adjusted series by those aggregates where calendar effect detected and the original ones by all other aggregates.

3.2.3. Other reconciliation(s) of QNA different from balancing and benchmarking

108. D.1 Compensation of employee are reconciled to the NA employment data by NACE breakdown.

3.2.4. Amount of estimation in various releases

109. The QNA are compiled in strong analogy to the annual national accounts, although the information basis of the quarterly accounts is not as comprehensive as one of the annual national accounts. Due to information missing at the time, assumptions have to be made or any imputation technic has to be used to create quarterly indicators.

110. Flash estimation based on a combination of three different type of forecast (an expert, an econometric and a reconciled forecast). By flash estimation the rate of assumption used is the largest compared to the regular QNA estimation (t+2 months) and one for t+90 days.

3.3. Volume estimates

3.3.1. General volume policy

111. The annual overlap method used to derive quarterly volume data and linking data. Reference year is 2005. It is planned to change reference year used to 2015 in the next years or to other in align with Eurostat recommendation.

112. Our calculations correspond to the EUROSTAT recommendations, the main steps are:

a) Annual weights should be used in chain-linking of quarterly national accounts.

b) Volume measures in quarterly national accounts should be derived by applying a Laspeyres formula.

c) The one-quarter overlap method (using the 4th quarter as the linking period) together with an appropriate benchmarking technique is considered best for linking annually chain-linked quarterly national accounts. The annual overlap method constitutes a valid alternative which is simpler to apply.

d) Seasonal adjustment should be carried out after chain-linking.

113. HCSO decided to use the annual overlap method. On one hand, this technique automatically meets the time consistency criterion (i.e. additivity between quarterly and annual data). On the other hand, for applying one-quarter overlap method the current price data of the given quarter should be recalculated on the average prices of the current year which is impossible in practice.

114. Annual overlap method uses the following calculation steps:

d) Step 1: constant price calculations for every quarter at the average prices of the previous year; annual data are equal with the sum of the data of four quarters;
e) Step 2: transformation of the constant price data into the average of the previous year = 100.0 volume indices;
f) Step 3: linking of the volume indices with change of reference and basis years which is carried out with help of the annual indices of the years as links. Firstly, the average of the previous year = 100.0 volume indices are linked into the reference year (in this case the average of 2005) = 100.0 volume indices. That is, the average of the previous year = 100 volume index for the given period is multiplied with the annual indices of the previous years (as links). Finally, the same period of the previous year = 100.0 volume indices can be calculated with help of these average of the 2005 = 100.0 volume indices.

115. Contributions to growth show the factors behind the GDP changes in aggregates rather than just growth of series in their own right. So growth rate of the factors are weighted by using their shares from GDP total. Therefore, the data used for calculation of weights should be additive.

116. Due to the applied chain-linking method the additivity does not exist between the GDP total and its components at the reference year's prices. Therefore our calculations were based on the previous year's prices data, where the additivity still exists. From these data GDP components were calculated at actual year average prices (like 2017 Q4 at 2017 average prices). From this, contribution to growth can be easily obtained at 2017 Q4 as the difference between value of aggregates in 2017 Q4 at previous year prices and that of 2016 Q4 at 2016 average prices divided by GDP total in 2016 Q4 at 2016 average prices.

117. In the production approach the calculation of the contribution to growth has the following steps:

I. Calculate the average value added of the previous year for each national economy and GDP: $gva^{ap}_{q_i,t-1\,;j} = \frac{gva^{pyp}_{q_i,t-1\,;j}}{\sum_{i=1}^{4} gva^{pyp}_{q_i,t-1\,;j}} \sum_{i=1}^{4} gva^{cup}_{q_i,t-1\,;j}$

where gva: gross value added; ap: average price for a given year; q_i: given quarter;
t-1: the year preceding the reference period; pyp: average price for the previous year;
cup: current price; j: Balance of industry, balance of taxes and subsidies and GDP

II. The data at the average price for a given year are not additive in cross-sectional breakdown, but they have time additivity. In order for the contribution to growth to be additive, the sum of gross value added of the industries at the average price

of a given year must be equal to the value of the GDP calculated at the average price of a given year. For this reason, the average annual data for the given year needs to be adjusted to the vertical and horizontal boundaries.

III. During the alignment, the matrix calculated for the given year's average price is adjusted by an iteration procedure to the horizontal and vertical boundaries, minimizing the ratio of the square of the difference between the matrixes considered as the sample and the adjusted result to the sample:

$$\min\left(\frac{\left(gva^{ap}_{q_i,t-1\,;j}-gva^{ap\;adj}_{q_i,t-1\,;j}\right)^2}{abs(gva^{ap}_{q_i,t-1\,;j})}\right)$$

where $gva^{ap\;adj}_{q_i,t-1}$ represents the adjusted data, provided that the sum of the value added of the industries and the sum of taxes less subsidies on products and subsidies is equal to the value of GDP at the average price of a given year, and the sum of the values of the four quarters is equal to the annual value in every rows.

118. Finally, the contribution to growth is calculated for each industry:

$$contribution\ to\ growth\ rate_{q_i,t\,;j}=\frac{\left(gva^{pyp}_{q_i,t}-gva^{ap\;adj}_{q_i,t-1;j}\right)}{GDP^{ap}_{q_i,t-1;j}}$$

119. In expenditure approach calculation of contribution follows general technic, but there are two special aggregates, where the calculation technic different. Contribution rate of external balance of goods and services is calculated as a difference between exports' contribution and imports' contribution, while changes in inventories has a role as a residuum.

3.3.2. Chain-linking and benchmarking

120. In the Hungarian QNA, for benchmarking aggregates at previous year's prices the same methods are used as at current prices in both approach. These are pro-rate methods and top-down method. (cf. section 3.2.2).

121. Chain-linked volumes are calculated from benchmarked data. Annual overlap method used to derive quarterly volume data and linking data. The reference year is 2005. (cf. section 3.3.1).

3.3.3. Chain-linking and seasonal adjustment

122. According to current practice TRAMO/SEATS method and mainly manual modelling are applied. Direct approach used for seasonally adjusted (and calendar adjusted, where relevant) chain-linked volumes.3.4 Seasonal and calendar adjustment

123. Our practice is fully aligned with ESS guidelines on seasonal adjustment. There is no deviation from it. Seasonally and calendar adjusted data indicators are benchmarked to original or calendar adjusted annual data before publication, they are not directly used. But direct results of seasonally and calendar adjusted QNA variables are published too.

3.4. Seasonal and calendar adjustment

3.4.1. Policy for seasonal adjustment

124. The seasonal adjustment of quarterly NA data is made, in accordance with the principles uniformly applied in the HCSO, by the TRAMO-SEATS method with the help of JDemetra+ v.2.2.0 software. The programme options are fixed annually (the applied ARIMA model, its parameters, the regression variables quantifying the effects of working days and holidays), which change only if it is justified by the revision of basic data, or if the character of time series behaviour is strongly modified. Resulting from the character of calculation, the seasonally adjusted data in all periods can be overwritten by the last run. In case of GDP total data series, seasonal adjustment is made for the data previously adjusted for calendar effects, in compliance with EUROSTAT recommendations. During seasonal adjustment the following types of outliers are identified based on tests and relevant expert's information: additive outlier, temporary change and level shift. Working day and leap year effects are tested annually such as moving holidays too. Hungary specific calendar is used.

125. Direct approach used for seasonally adjusted (and calendar adjusted, where relevant) chain-linked volumes.

126. Seasonal adjustment is made on the production and expenditure side for data at current prices and data chain-linked back to the average prices of 2005 at the level of publications, and indices are calculated from seasonally adjusted data.

127. Our procedure does not imply the production of seasonally adjusted values at previous year's prices.

3.4.2. Policy for calendar adjustment

128. As seasonal effects occur within the year, they cannot affect the values performed during annual calculations. Although the calendar effect may differ from one year to the other due to the different number of the working days. Before seasonal adjustment working day and leap year effects, such as moving holidays, are tested annually. Hungary specific calendar is used.

129. For the consistency between the seasonally adjusted quarterly data and the annual data, the output of JDemetra+ is reconciled. The difference between the annual sum of seasonally adjusted quarterly data and calendar adjusted annual data - applying the principle of pro-rating - is allocated for sub-aggregates according to the share of each quarter. In case of the series where no calendar effect can be detected, the calendar adjusted series corresponds to the unadjusted series.

3.4.3. Revision policy for seasonally adjusted data

130. Resulting from the character of calculation, the seasonally adjusted data in all periods can be overwritten by the last run.

http://www.ksh.hu/apps/shop.kiadvany?p_kiadvany_id=12691&p_lang=EN

CHAPTER 4. GDP AND COMPONENTS: THE PRODUCTION APPROACH

131. The quarterly gross value added is calculated from the output of the economic units by deducting intermediate consumption. The calculations of gross value added (GVA) are carried out separately for sectors (non-financial corporations (S.11), financial corporations (S.12), general government (S.13), households (S.14) and non-profit institutions serving households (S.15)).

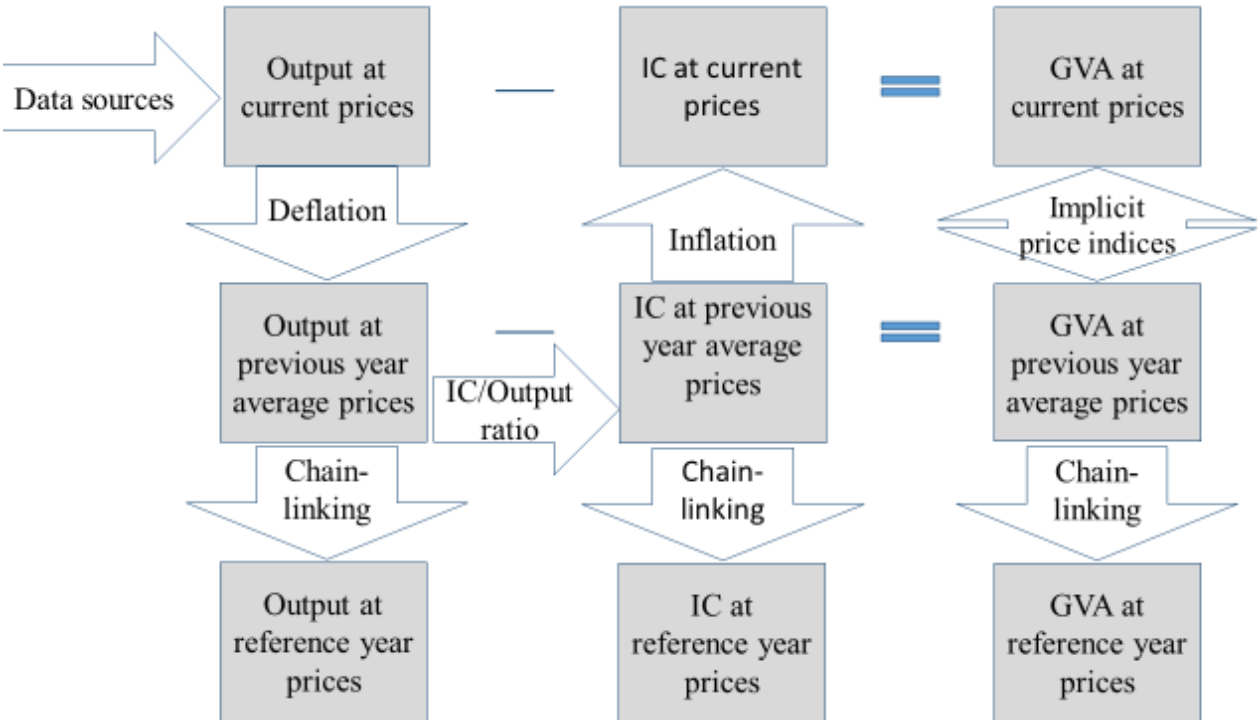
Gross value added of non-financial corporations

132. The activities of the units in the sector non-financial corporations are broken down into A64 by NACE. The quarterly gross value added is calculated for all industries separately using bottom-up approach. The used method is described by the Figure 2.

133. For the actual quarter the gross output (GO) time series is extrapolated by using value indices based on the total gross output value of all industries from short-term business statistics. The relevant data sources are DS_01 and DS_02. Therefore quarterly gross output was provided at current prices for most of the branches. For other branches like agriculture, other alternative estimation was developed.

134. The output at previous year's average prices is derived by deflating output at current prices by the corresponding output price indices (previous year's average quarter=100). The prices indices are calculated based on the data sources: DS_09-DS_11, DS_16-DS_18, DS_28, DS_36. Due to the lack of short term information for intermediate consumption (IC), the annual ratio of intermediate consumption and output of the last year is applied to reach intermediate consumption at previous year's average prices. This is based on the principal that in the short term the technological coefficient can be considered stable in constant prices.

Figure 2 The gross value added calculation in S11 and S14



135. Then the intermediate consumption at current prices is derived by inflating IC at previous year's average prices using the relevant IC price indices. Both nominal and price-adjusted gross value added are obtained than as difference between output and intermediate consumption.

136. The quarterly deflation and inflation methods are built up consistently with the annual ones. The supply and use table at the CPA (Classification of Products by Activity) 60 level is applied to compile the deflators of output and those of intermediate consumption for the non-financial corporation sector by using adequate price indices of products and services of the actual quarter as compared to the previous year average. The preliminary structural estimations of supply and use tables of the previous year is applied as weights to compute the deflators of gross output and those of intermediate consumption at the NACE 2-digit level.

137. For chain-linking, the annual overlap technique is applied, see the methodology in chapter 3.3.1 .

Gross value added of financial corporations

138. Institutions with financial principal activity are recorded in the financial corporations sector. Quarterly GVA of financial corporations sector is estimated at NACE 2 digit level (64, 65 and 66). For detailed description of quarterly accounts see 4.1.6.

Gross value added of households

139. In the production account two main groups of households are distinguished: sole proprietors and private individuals with tax number.

140. Sole proprietors: the calculation of output, intermediate consumption and gross value added of sole proprietors is performed in an identical way as in the sector of non-financial companies. The only difference is the data source. While in the corporate sector, the output value index used for extrapolation comes from short-term statistics (DS_01 and DS_02), in the households sector these indices are adjusted by the change in the number of sole-proprietors compared to the previous year's average. The data source is DS_03.

141. Private individuals with tax number: there are several industries where their activity is considerable and special estimations are prepared: agriculture (Small agricultural producers producing for market sale and for own final use), dwelling (Owner-occupied dwellings and privately rented dwellings) and construction.

142. Unregistered production activities: in several industries additional estimations are required for the main items of non-observed activities of households such as illegal activities of households, like prostitution, production and turnover of drug and smuggling and private households with employed persons.

143. In the production account there is a direct calculation for these items. These estimations affect the trade or other services industry that is shown in chapter 4.1.4 and 4.1.10. The imputed value of dwellings and privately rented dwellings in the industry named real estate activity is estimated separately as well. The detailed method is presented in chapter 4.1.7.

144. For all other items it is assumed that their performance follows the same run as that of sole proprietors in the corresponding industries.

Gross value added of general government

145. The Hungarian government sector has three sub-sectors:

i) Central government sub-sector: it includes the State (taxes, subsidies, social transfers, international cooperation, debt management and asset management), the central budgetary institutions, budgetary appropriations, extra budgetary funds, public corporations and non-profit institutions reclassified to central government. (DS_30)

ii) Local government sub-sector: it includes local governments, local budgetary institutions, local government owned public corporations and non-profit institutions founded and financed by local government units. (DS_31)

iii) Social security funds sub-sector: Pension Fund and Health Care Fund and budgetary institutions. (DS_29)

146. Calculation of GVA in general government is built on estimation of the following items:

$$GVA = D.1 + P.51c + D.29 – D.39$$

147. The data source of institutions are budgetary reports, quarterly balance sheets and profit and loss accounts for some corporations reclassified into general government. In case of the main part of corporations and all nonprofit institutions reclassified into general government data are estimated based on the previous year's accounts.

148. D.11: Wages and salaries are recorded in cash with time-adjustment, data of corporations and nonprofit institutions are recorded on accrual basis. Wages and salaries in kind are estimated on previous year's data.

149. D.12: Employers' actual social contributions are accounted on time adjusted basis, data of corporations and nonprofit institutions are on accrual basis.

150. D.29: Rehabilitation contributions are recorded in case of budgetary institutions. In case of corporations classified into general government rehabilitation contributions and training levies are recorded. (Eximbank: credit institutions special tax)

151. D.39: Deductions from training levy and social contribution tax are recorded. (Because social contributions tax and training levy are recorded in a gross way from 2012.) Corporations and non-profit institutions reclassified into general government receive subsidies of disabled workers as well.

152. P. 51c: Consumption of fixed capital consist of two elements: one fourth of P.51c, meaning the further consumption of fixed capital created before reference year at the same extent and the consumption of fixed capital created in reference year.

Growth (2017Q4) = GFCF (2016Q4)*Growth (2016Q4)*1/GFCF (2015Q4)

153. At the annual reconciliation the annual figures of 2017 are used to calculate the share of the industries from the total in every quarter. By D.1, D.11, P.51c, D.29: The total amount of item (2017Q4) is divided into industries (2-digit level of NACE Rev2 classification) based on the previous year's proportion.

154. Data for output for own final use (P.12) is not available, the previous year's figure is used at quarterly level.

Gross value added of non-profit institutions serving households

155. The activities of the units in the sector of non-profit institutions serving households (S.15) are broken down into 9 different NACE industries: 72, 85, 86, 87, 88, 90, 91, 93, 94. The quarterly estimations of S.15 production components are performed on this level.

156. Direct information for the calculations is not available. Estimation is made with the help of indicators. The same method in quarterly calculations of GVA and output are carried out for the non-profit institutions at all industry.

157. Calculation of GVA in NPISHs is built on estimation of the following items:

GVA = D.1 + P.51c + D.29 – D.39

158. D.1, D.11, D.12 estimations:

Available source: For estimation of wages and salaries of employees, monthly data from HCSO's data-collection, namely Monthly Institutional Labour Report (DS_37) was used until 2018 which was a sample survey with full-observation of reporting units above 50 employees only. Thus in case of NPISHs the number of the observed institutions was rather small and the sample was very alternate from quarter to quarter.

The figures follow the changes of the common set of reporting units included in the sample for 2017Q4 and in the sample for previous year corresponding quarter. Therefore the rate of change of the compensation of employees by industries are used for the estimations of D.1. This value should be adjusted by the figures of newly created NPIs getting in the current sample (+) and also by the figures of NPIs in the

previous year's sample (-) which have since ceased to exist. For this micro-validation purpose HCSO's Business Register information serve as a basis.

From 2019 Q1, Social Security Reports (DS_39) is the main data source for calculation.

D.11 and D.12 are estimated by applying for them the same rates that they represented in the previous year's annual D.1.

159. P.51c, D.29, D.39 estimations:

The previous annual data for each index are the bases to calculate quarterly data for the current year (dividing by 4).

160. The reconciliation of quarterly NPISHs data to annual figures is performed when the annual data are available. The revised quarterly estimates are fully consistent with the annual estimates for both the production and the consumption indicators.

161. For estimation GVA and IC at constant price the rates of change at current price for 2017Q4 against to the previous year's corresponding quarter are applied.

4.1. Gross value added, including industry breakdowns

4.1.1. Agriculture, forestry and fishing

162. According to the Handbook on Quarterly National Accounts, the agricultural production should be treated in a special way: its emission should be accounted for as production for the whole period not only during harvesting. Therefore, during a year a special estimate is made by experts for each quarter in which the output and intermediate consumption is expected. The estimations are based on data about sowing area, average yield of previous years and livestock size. The relevant data sources are DS_12- DS_19.

163. There is information in supply and use tables, in which other sectors' activities are present during the production of an industry. This information can be used to find out which sectors' activities are included in agriculture and forestry. The distribution based on supply and use tables for 2015 was in fourth quarter 2017 the following:

Table 8 The distribution of output by activities in Agriculture

Industry	Weights
Agriculture	94.56
Food industry	2.47
Construction	1.56
Wholesale	1.41

164. The output indices obtained from the corresponding department are suitable – using the weights – to extrapolate the existing time series. Similar is the procedure also for the calculation of previous year price data, as the statistic experts do not estimate value indices but volume indices.

4.1.2. Industry, excluding construction

165. For the estimation of the output value index in industry, the value index of the production values in industry obtained from the mid-year integrated economic statistics. The data source is DS_01. The difference is the excise tax which is included in production values, but is not part of the output according to national accounts. The relationship between the two indicators is strong and significant.

166. The output at current prices of the industry C, D, E of NACE Rev. 2. is calculated in following way:

$$[(1)-(2)]/[(1p)-(2p)]*(3)$$

where

(1): Total production value

(2): Excise tax of the quarter to be calculated.

(1p): Total production value

(2p): Excise tax at current prices of the corresponding quarter of the previous year

(3) Output at current prices of the corresponding quarter of the previous year

4.1.3. Construction

167. In the case of industry F, the production value index including the estimated data of small enterprises below 5 employees is received from the sector statistics department. Data for enterprises in the construction industry over 50 employees is fully observed, businesses with employees 5-49 are observed by using a sample by the statistical main activity (NACE Rev. 2). The data source is DS_01. Performance of small businesses with under 5 employees is estimated by the sector statistics department.

168. The output series of construction at current prices is extrapolated by this production value index of construction.

4.1.4. Trade, transport, accommodation and food services

169. Regarding to the industry G, the calculation of gross value added is carried out according to the main rule presented in Chapter 3.1. Exception is the industry of the trade and repair of motor vehicles and motorcycles where the suitable indicator is a weighted average of the output value index from short-term business statistics (DS_02) and the output value index from retail trade survey (DS_05 and DS_24).

170. Illegal activities of households, like production and turnover of drug and smuggling is calculated separately. Because of lack of quarterly information, the next annual value in current prices is forecasted, then this forecasted value is divided by four.

4.1.5. Information and communication

171. The calculation of information and communication is made according to the main rule presented in Chapter 3.1. The output is extrapolated by value indices coming from short-term business statistics. (DS_02.)

4.1.6. Financial and insurance services

172. The calculation of financial and insurance services is based on MNB statistics. The data sources are DS_20 and DS_21. Monthly profit and loss statement data of resident credit institutions and resident branches of non-resident credit institutions are the main data sources. These data are aggregated on quarterly level. Gross output has two relevant items as FISIM output (DS_22) and commissions and fees revenues. Main items of intermediate consumption are administrative costs, other operating costs, costs of other services and commissions and fees expenses.

173. Changes in provisions and reserves are so volatile on quarterly level so insurance services are estimated from annual figures and they are divided by 4 for quarterly calculation.

174. First step is to estimate volume indices by expertise estimation. Then volume indices are multiplied by COICOP price indices (DS_28) to get current price figures of financial corporations.

4.1.7. Real estate activities

175. The calculation of the real estate activity of non-financial companies and sole proprietors (households sector) is based on the above presented general way (see Figure 2). There is an exception for the owner-occupied dwelling services and the privately rented dwellings.

176. In Hungary the privately rented dwellings constituted less than 10% of the total dwelling stock and the disparity between private and other paid rents is more than a factor of three, therefore the user-cost method can be used to estimate the owner-occupied dwelling services.

177. The user-cost method estimates each cost component that owner of dwellings would need to be taken into account in fixing a market rent if the owner would choose to let out his dwelling to others rather than live in it himself. These costs are:

(1) Consumption of fixed capital

(2) Intermediate consumption

(3) Other taxes on dwellings

(4) Net operating surplus

178. To estimate the imputed rent for garages and holiday homes belonging to households the user-cost method is applied as well. According to the user cost method the output of garages and holiday homes services consists also of the above listed cost elements.

179. Components of user cost method are included in the following table.

Table 9 The components of user cost method

UC01	Consumption of fixed capital valued at current prices of the actual quarter
UC05	Expenditures on maintenance and repairs of dwellings
UC08	Insurance service charge paid by owner-occupants
UC09	Other taxes on dwellings
UC11	Average value of net stock of dwellings, at current prices of the actual quarter
UC14	Average value of land associated with dwellings at current prices of the actual quarter
UC18	Net stock of dwellings and land (UC11+UC14)
UC18/a	Fixed (2.5%) rate for real return
UC19	Net operating surplus (UC18*UC18/a)

UC23	Imputed rental value of services of dwellings (UC01 + UC05 + UC08 + UC09 + UC19)

180. Calculation of the closing value of the net stock in the current quarter, namely UC11 Average value of net stock of dwellings, valued at prices of the actual quarter (Yq) is the following: repriced net stock + investment +/-other stock modifying items – (repriced net stock/average remaining service lives). For calculation of the average value at prices of the actual quarter the following price indices are used: producer price indices of types of constructions (One dwelling building and two- and more dwellings building). Data source of the relevant price indices (previous quarter=100%) is DS_11.

$$Yq = Yq\text{-}1 + \text{Investment } q +/- \text{ Stock modifying items } q - (Yq/(ARL/4)) \quad (6)$$

where Y is the net stock, both quarters are converted in current prices of the actual quarter and ARL is the average remaining service lives. UC01 Consumption of fixed capital valued at current prices (at prices of the actual quarter) is Yq/(ARL/4). In the quarterly estimation process it is taken into account that the value of the stock modifying items are zero. The UC14 Average value of land associated with dwellings at current prices of the actual quarter is assumed to be 20% of the value of UC11 Average value of net stock of dwellings, valued at prices of the actual quarter (Yq). UC19 Net operating surplus is 2.5% of the net stock of dwellings and land (UC11+UC14).

The calculation of the Consumption of fixed capital valued at previous year's prices of the actual quarter is made using producer's price indices of types of constructions (One dwellings building and Two- and more dwelling building) (Corresponding period of previous year = 100.0%) based on data source (DS_11). For the calculation of the net operating surplus is used the total consumer price index (DS_28).

181. UC05 Expenditures on maintenance and repairs of dwellings are calculated using the following method:

The value of maintenance and repairs in Household Budget Survey (DS_23) cannot be used directly, because quarterly questionnaire focuses on only the regular (minor) maintenance expenditure, and only the annual questionnaire includes questions about the irregular (major) maintenance expenditures. Using the last 3 years average ratio of the given quarter's value and the annual value as well as the value index based on the quarterly HBS, the IC of the corresponding quarter of the previous year can be extrapolated.

index for extrapolation=value index /ratio

where

value index=Maintenance expenditure q /Maintenance expenditureq-4

ratio=average(Maintenance expenditure q,t-1 /Maintenance expendituret-1; Maintenance expenditure q, t-2 /Maintenance expenditure t-2 ; Maintenance expenditure q, t-3/ Maintenance expenditure t-3)

Charges for heating, water, electricity, etc. are excluded from intermediate consumption in dwelling services. As the available data (HBS) contains the total maintenance and repair costs of all type of dwellings together, irrespectively whether it was spent residential buildings, garages or holiday homes, the IC figure is divided between owner-occupied dwellings, garages, holiday homes and privately rented dwellings using the annual share of the appropriate dwelling category to their total stock in square meter. For calculation of the

IC items at previous year's prices are used the appropriate consumer price indices for corresponding COICOP group (04.3 and 04.4) (DS_28).

182. Annual value of UC08 'Insurance service charge paid by owner occupants' and UC09 'Other taxes on dwellings' are forecasted, and this forecasted value is divided into four parts. For calculation of the UC08 item at previous year's prices is calculated using the consumer price index COICOP 12.5 (DS_28).

183. The output of dwelling services of privately rented dwellings is estimated using value index based on the rent paid by tenants in HBS and the IC is calculated based on the above mentioned method. The output of dwelling services of privately rented dwellings at previous year's prices is estimated using the consumer price index in COICOP 4.11. IC items at previous year's prices are calculated using the appropriate consumer price indices for corresponding COICOP group (04.3 and 04.4) (DS_28).

4.1.8. Business services

184. The calculation of business services is made according to the way presented in Chapter 3.1. The applied output value indices come from the short-term business statistics (DS_02).

4.1.9. Public services, education and health

185. Industries of public services, education and health are mainly activities of the public sector and include mostly budgetary units. Calculation in the government sector is made according to the way presented in Chapter 4. (DS_29-DS_31)

186. The calculation of public services, education and health is made in non-financial corporations and households sectors according to the way presented in Chapter 3.1. The applied output value indices come from the short-term business statistics (DS_02). Only in the industry of social care another indicator is used, namely the corresponding output value index of the general government.

4.1.10. Other services

187. The calculation of other services in non-financial corporations and households is prepared according to the way described in Chapter 3.1. The used output value indices come from the short-term business statistics (DS_02). Only in the industry of advocacy another indicator is applied, namely the corresponding output value index of the non-profit institutions serving households.

188. Illegal activities of households, like prostitution is calculated separately. Due to lack of quarterly data, the next annual value in current price is forecasted, then this forecasted value is divided by four.

4.2. FISIM

189. A financial institution, such as a bank, accepts deposits from units wishing to receive interest on funds, and lends them to units whose own funds are insufficient to meet their needs. A 'reference rate' of interest is the rate at which both lender and borrower would be happy to strike a deal. The difference between the reference rate and the rate actually paid to depositors and charged to borrowers is a financial intermediation service charge indirectly measured (FISIM). The total FISIM is the sum of the two implicit fees paid by the borrower and the lender.

190. HCSO introduced FISIM allocation into NA and QNA in 2005. MNB provides the necessary input data for FISIM calculation (DS_22). MNB supplies quarterly data on stocks of loans and deposits and accrued interest by group of customers and also used in interbank transactions.

191. Input data for FISIM allocation are supplied on the second month after the reference quarter. Data contain resident and non-resident FI's (FISIM producers) quarterly average stock of loans and deposits and accrued interest in HUF and DEV breakdown. Input data are stored in MSCasir2/FISIM system since 2011.

192. Resident credit institutions are public limited-liability companies, cooperatives or branch offices. Non-resident central banks cannot be separated from non-resident credit institutions being partners of resident credit institutions and resident other financial institutions. That's why these kinds of institutions are treated as non-resident FISIM producers.

193. Within resident other financial intermediation credit granting (financial enterprises, Student Loan Centre) are taken into account as FISIM producers.

194. Non-resident credit institutions as non-resident FISIM producers are taken into consideration based on Balance of Payment data sources. That's why those non-resident OFI's granting loans to resident customers by a negligible sum are left out from the calculation. (Non-resident OFIs cannot be covered as FISIM producers.)

195. FISIM consumers are resident user sectors and sub-sectors: Non-financial corporations, Financial auxiliaries, Insurance, Pension funds, Central Government, Local Government, Social Security Funds, Households as consumers, Households as owner occupied dwellings, Households as owners of unincorporated enterprises and Non-resident non-financial institutions.

196. The allocation of FISIM is made in an integrated and consistent way using a matrix formula. FISIM is allocated to user sectors as S.11 Non-financial corporations, S.12 Financial Corporations, S.13 General Government, S.14 Households, S.15 Non-profit institutions and S.2 Rest of the World. Internal and external reference rates on HUF and DEV transactions are calculated on quarterly level and FISIM is allocated to user sectors on quarterly basis. FISIM is calculated separately for each user sector. Allocation of FISIM has an impact on GDP and GNI as well.

4.3. Taxes less subsidies on products

197. In Hungary in the course of QNA and QSA (S.13) the taxes on products (D.21) and the subsidies on products (D.31) are calculated separately by tax and subsidy types. The taxes less subsidies on products at current prices is determined as the difference between D.21 and D.31.

198. The principal data sources of calculation of taxes on products are monthly or quarterly data sources of the National Tax and Customs Administration, the Ministry of Finance and the Hungarian State Treasury. These data sources are on cash basis. To achieve accrual concept the cash figures are shifted by one, two or three months. (DS_29-DS_31))

199. The monthly figures, which are used to the time adjusted cash calculation, are mainly available for flash QNA. In case of 2- or 3-month correction figures are estimated with help of available monthly data. The local tax on company sales' figures are not available for flash QNA, therefore estimation is used from the previous year's data or the annual budget data. These figures are only available for QNA.

200. The calculation of value added tax (VAT) is the following. One month adjustment is used for the VAT deposits on the cash figures. The enterprises usually receives their VAT reimbursements within 75 days after the submitted declarations, however in certain special cases enterprises can receive their VAT reimbursement within 30 or 45 days. Therefore the following special correction is used for VAT reimbursements. The remaining obligation of VAT reimbursements are determined by difference between the amount of VAT reimbursements requires for annual period (which includes the given quarter) and the amount of VAT reimbursements (which are received de facto by enterprises under the same period). In the course of VAT reimbursements preliminary figures are available for flash QNA and QNA, the revised figures can be used for QSA. The above calculation method is shown in the following table for 2017 Q4 (t+2 months).

Table 10 The calculation method for remaining obligation of VAT reimbursements

	In million HUF
VAT reimbursement requests on VAT declarations from 01.01.2017 to 12.31.2017	2 318 136
VAT reimbursements which are received by the companies (cash data) from 01.01.2017 to 12.31.2017	1 519 430
The remaining obligation of VAT reimbursements	798 706

201. The VAT reimbursements cash data equal to 587 302 million HUF for 2017 Q4, the obligation of VAT reimbursements concerning to the previous periods is 704 348 million HUF, thus the accrual data of VAT reimbursements for 2017 Q4 is 587 302 – 704 348 + 798 706 = 681 660 million HUF.

202. Due to the available figures and that the tax bases are determined separately for different taxpayers in the case of some tax types, the available cash data must be split among taxes on products (D.21), other taxes on production (D.29) and other current taxes (D.5). For example duties, surtaxes payable by financial institutions etc. In these cases the proportions of previous year are used.

203. The main tax types under the taxes on products (D.21) are the following.

- Value added tax types (D.211): value added tax.
- Taxes on imports (D.212): import duty.
- Other taxes on products (D.214): budget excises, environmental protection fees, duties on conveyances, inheritance and gifts, motor vehicle registration duty, advertising tax, gambling tax, insurance tax, telephone tax, local tax on company sales, simplified corporation tax, innovation tax, tax on public financed medical products, public health product tax, hydrocarbons stockholding fee, nuclear contribution, waste disposal contribution and financial transaction fee.

204. From the Hungarian State Treasury's, the Ministry of Finance's and the National Tax and Customs Administration's data sources on a quarterly or monthly basis cash figures are available for subsidies on products (D.31) at current prices for flash and QNA estimation (t+2 months). Due to these data sources we calculate the subsidies on products separately by subsidy types and cash basis for the subsidies provided by the central government and the EU institutions. Quarterly figures for the passenger transportation subsidies which provided by local governments to local bus companies are not available, estimation based on previous year's data.

205. Subsidies on products are provided by central government (individual subsidies to railway and bus companies providing passenger transportation, agricultural subsidies), National Cultural Fund (cultural subsidies), local governments (subsidies to local bus companies), Hungarian National Film Fund and the EU institutions (agricultural subsidies).

206. The accrual adjustment is used solely for the individual subsidies to railway and bus companies which are provided by central government.

207. In the case of some agricultural subsidies which are provided by central government the figures come from the agricultural (satellite) account.

CHAPTER 5. GDP COMPONENTS: THE EXPENDITURE APPROACH

5.1. Household final consumption

208. Quarterly aggregate of household final consumption expenditure (HFCE) is made by extrapolation technic. Data of correspondent quarter of the previous year are extrapolated with value indices calculated using quarterly HBS (DS_23), retail trade statistics (DS_05 and DS_24) or other quarterly information. The previous year's current price figures are extrapolated with the value indices (previous year=100.0). In many cases the average of value indices from different sources are used.

209. That calculation is made at COICOP 4-digit level but only the main HFCE aggregate is published. Additional HFCE aggregates by durability are released quarterly. Concerning durability COICOP nomenclature uses clear group classification at 4 digit level.

210. The base of the extrapolation is an extrapolated and benchmarked quarter of SUT balanced annual data.

211. The correspondent quarter of previous year used for extrapolation is adjusted to meet the definitions and concepts of National Accounts during annual compilation. That is why it is assumed that the current result of extrapolated quarterly HCFE also meets them. At quarterly level the following consumption items are estimated and added directly to the HCFE aggregate: illegal activities (smuggling, drugs and prostitution), the owner-occupied dwelling services (dwellings, garages, holiday homes) and FISIM.

212. The main data sources are the quarterly HBS and retail trade statistics. The HBS covers the resident households both with Hungarian citizens as head of households and with non-Hungarian citizen head of households. Institutional households are also covered, as part of the SUT balance. In a technical sense, HBS consists of more than one survey in Hungary: the monthly diary keeping survey (DS_23) and two annual retrospective interviews. Hereinafter all of them are referred to as HBS.

213. HCSO conducts two surveys on retail trade activities. One of them is the survey on monthly retail sales and catering services (DS_05). The aim of this survey is to measure the monthly sales of the retail trade and catering services. The other survey is a quarterly survey on the retail trade turnover by commodities (DS_24). The data is collected by 42+6 commodity groups.

214. HFCE as a total refers to the consumption of resident households (national concept), though the detailed calculation is made for domestic consumption. To arrive from the domestic concept to the national concept the expenditure of resident households abroad is added and non-resident spending in Hungary is deducted from the total domestic consumption expenditure. For the transition items two surveys are in use. One surveys representative groups of foreign citizens (DS_26) and other Hungarian citizens (DS_25).

215. Consumer price indices are available at COICOP 4 digit level (DS_28) and used for calculation of figures at prices of previous year.

5.2. Government final consumption, including split individual/collective consumption

216. The Hungarian government sector has three sub-sectors: see paragraph 145.

217. Government final consumption expenditure is calculated from the output. Calculation of final consumption expenditure is the following: market output (P.11), output for own final use (P.12) and payments for non-market output (P.131) have to be deducted from output (P.1), and social transfers in kind via market producers (D.632) have to be added

$$P.3 = P.1 – P.11 – P.12 – P.131 + D.632$$

218. Data for output for own final use (P.12) is not available, the previous years' figure is used at quarterly level.

219. Individual consumption expenditure of government (P.31) include: Passenger rail transport, interurban (49.10), Accommodation (55), Other food service activities (56.29), Renting and operating of own or leased real estate connected to dwellings (68.20), Education (85, except Educational support activities 85.60), Human health activities (86, except Other human health activities is shared with individual and collective consumption expenditure), Residential care activities (87), Social work activities without accommodation (88), Creative, arts and entertainment activities (90), Libraries, archives, museums and other cultural activities (91), Gambling and betting activities (92), Sports activities and amusement and recreation activities (93) and Physical well-being activities (96.04).

220. Collective consumption (P.32) expenditure is calculated as residual item.

$$P.32 = P.3 – P31$$

5.3. NPISH final consumption

221. There is no direct data source available for calculating NPISHs' final consumption (P.3). Therefore the quarterly estimates for final consumption of non-profit institutions serving households at current price is calculated from the estimated output.

222. For estimation of output (P.1) it is applied a GVA/output ratio of the previous year's corresponding quarter. Then this output information is used for estimation of NPISHs' final consumption. The P.3/Output ratio for the previous year corresponding quarter is applied for the actual quarterly estimation.

223. For estimation at prices of previous year the P.3/Output ratio at constant price for the previous year's corresponding quarter is used.

5.4. Gross capital formation

a. GFCF with its breakdowns in the ESA2010 transmission programme

224. Quarterly GFCF is calculated by extrapolation technic. Base of the extrapolation is quarterly GFCF data of corresponding quarter of previous year.

225. The quarterly investment data at current prices are available for eight asset types (buildings, domestic machinery, imported machinery, domestic vehicles, imported vehicles, plantations, breeding animals and melioration) and for A88 industries from HCSO quarterly data survey (DS_32). Structural Business Statistics Section (SBSS) is responsible for

investment statistics in HCSO. It provides quarterly investment data and the price indices in the same structure for reference quarter.

226. These data are used indirect by QNA. First NA investment data are extrapolated. The NA investment data of previous quarter is multiplied by the price and volume indexes provided by SBSS.

227. Then for calculation of the corresponding GFCF data, the NA investment data is multiplied by the rate of last annual GFCF and NA investment data.

228. GFCF at previous year's price is calculated by using the total investment price index calculated from SBSS data.

229. GFCF breakdown is based mainly on the data of quarterly investment statistics survey (DS_32).

230. In case of dwellings (AN.111) we have separate estimation based on the new dwellings put into operation. The space of the new dwellings are multiplied by the average construction price. Total dwellings data consists also the renovation investments (which come from the Housing condition survey 2015 and data extrapolated) are and also the value of new garages and holiday homes.

231. As intellectual property products (AN.117) are not enough reliable from the quarterly investment statistics survey (DS_32), it is assumed that the share of IPP of the GFCF is the same as it was in the previous year's annual data.

232. Share of Other buildings and structures (AN.112), Transport equipment (AN.1131) and Cultivated biological resources (AN.115) compared to the total investment come from the quarterly investment statistics. As GFCF are calculated in total at first, the investment value of Machinery (Total machinery and equipment less transport equipment) is calculated as residual.

233. Quarterly GFCF data are adjusted to the annual data as soon as they are available.

234. Quarterly price indices by asset type are available to calculate previous year and constant prices come from the investment statistics.

b. Changes in inventories

235. Changes in inventories are estimated quarterly due to the velocity of turnover of the inventories and its seasonality manner. The data source of the quarterly estimation is the monthly and quarterly (DS_01 and DS_02) economic statistical survey. Bookkeeping data on opening and closing stocks are available at NACE two-digit level (not by CPA) by 2 types of inventories: own-produced (finished goods, work in progress) and purchased (materials, goods for resale).

236. Purchased asset stocks are valued at actual purchasing prices excluding reimbursed VAT. Inventories include materials, commodities, supplies, etc. purchased to be sold without transformation to a third party.

237. In case of selling purchased and own-produced inventories purchasing price is applied. The decrease of the stock of inventories because of normal losses is deducted from the stock. Various sources are used to estimate quarterly changes in inventories.

238. Data on inventories by industries are available from the direct data collection in the following breakdown: Own produced inventories, Purchased inventories

239. Holding gains and losses may occur during the accounting period as a result of price changes. Holding gains and losses (hereafter referred to as "holding gains") is purely a result of holding assets over time without transforming them in any way. Adjustment for holding gains is necessary because changes in inventories are based on bookkeeping data of opening and closing stocks, which may result in over or under estimation the changes in prices (inflation) over time. The difference between changes in inventories at book value and that of at current prices gives the value of holding gain.

240. For the deflation of quarterly stock data, monthly producers' price indices (DS_10) are employed, because monthly indices facilitate calculating quarterly average price indices. Price indices are used at NACE two-digit level, because quarterly data on inventories are available at this level only, although the prices are collected at product level.

241. In case of own-produced goods, the current price data of the NACE Rev. 2., branches 05-39 are deflated by the related industrial producer price indices which are calculated from initial products' prices. For the branches 41-43 the construction price index is used. Data of 45-47 branches (Trade) are deflated by consumer price index (DS_28). In the absence of adequate price indices the current price for the other activities are deflated by weighted average price indices of branches where producer price indices are available (NACE 05-47). The stocks of inventories are used as weights.

242. For purchased goods the weighted producer price indices are used which are calculated by branches. The weights are the ratios of intermediate consumption by industries in the input-output table. It was supposed that the industrial distribution of purchased goods (inventories) by origin corresponds to the industrial distribution of intermediate consumption of the given industry.

c. Acquisitions and disposals of valuables

243. For the quarterly estimation of acquisitions less disposals of valuables (P.53) the data source used is a monthly data from foreign trade statistics (DS_33 – DS 36) but it determines only a small part of estimated quarterly value of P.53 and it is not fully available in time. Therefore the value of last month of the quarter is estimated on the basis of data of available two months.

244. The larger part of the value at current prices of quarterly P.53 is estimated by extrapolation of annual NA figures. First the growth rate of the previous year is calculated. Next this annual value is divided into four equal quarter. Then these quarterly values are corrected and supplemented using the quarterly numbers received from foreign trade statistics.

245. In consecutive quarters data from all the three previous months are available and at this point, the quarterly values are corrected again, to arrive at a more precise estimate. The

final corrections are made in next September, when annual data become fully available for the whole amount of P.53.

5.5. Imports, exports

246. Exports and imports of goods and services have a high share of Hungarian GDP (80 and 74% in 2017 Q4), though the balance has a relatively smaller impact on it (5.3% in 2017 Q4).

5.5.1. External trade of goods

247. The main data sources of exports and imports of goods are the following:

- monthly data of the Intrastat and Extrastat,
- quarterly information of the international trade in services statistics,
- quarterly surveys on tourism and
- various other information (for example on illegal goods)

248. Share in total Exports and imports of goods by types of transaction, 2017 Q4, %

Table 11 Distribution of exports and imports of goods by types of transaction, 2017Q4 %

Transaction	Exports	Imports	Trade balance of goods
Goods, total (External trade statistics data)	103.1	98.0	587.5
Financial leasing	0.0	0.5	-50.6
Returned goods	-0.2	-0.1	-14.5
Bunkers	0.3	1.4	-101.6
Merchanting	0.2	0.0	22.7
Factory-less manufacturing	0.2	0.2	4.9
High-value goods	0.2	0.8	-53.1
Illegal goods (drugs)	0.0	0.1	-5.6
Adjustment of the VAT registration trade	-3.9	0.9	-454.0
C.I.F. / F.O.B. correction	0.0	-1.7	164.4
Goods, total, (F.O.B.) (NA data)	100.0	100.0	100.0

249. The direct data collection of Intrastat (DS_33) in line with the requirements of the basic regulation (Regulation No 638/2004) and it meets the rules of the implementing provision (Commission Regulation No 1982/2004) too. In principle Intrastat data are collected from a so called “taxable person”, practically the entity registered for Value Added Tax (VAT). Private individuals are not considered to be a taxable person and they are not registered for VAT in general. An exemption threshold is applied for Intra-EU traders and the exporter is not obliged to declare Intrastat report if its dispatch does not exceed 100 million HUF. Beside the resident operators the so called non-established traders carry out taxable

transactions in Hungary. The non-resident entities are registered only under VAT and the VAT-registrations of the foreign traders have not got establishment and employees and they are not incorporated under Hungarian laws (for example in business registers in courts). Several estimation is applied in order to complete Intrastat data. (f.i. the missing (non-response) data are estimated)

250. The Hungarian Extrastat meets the requirements of the basic regulation (Regulation No 471/2009) and implementing provision (Commission Regulation No 92/2010). Extrastat uses statistical data of the customs declaration (Single Administrative Document, SAD). Legal entities and natural persons are liable to lodge declaration and the statistical information of SAD arrives from the National Tax and Customs Authority (NTCA) in general. Data are collected directly from the trader in the case of centralized customs clearance (DS_35). The foreign operators are authorized to lodge export declaration in the place of its establishment abroad under this regime. Threshold is not introduced and Extrastat contains all trade with non-EU countries in principle.

251. The external trade data of Intrastat and Extrastat are recorded under the so called special trade system. The flows to and from the customs warehouse are not included in these statistics, except the inward processing or the processing under customs control transactions. Information on the goods arrived from non-EU countries and stored in customs warehouses by resident traders and delivered abroad without changes (merchanting transactions) are collected by the survey on international trade in services.

252. The goods in transit, delivered to Hungarian enclaves abroad, equipment arrived for repair and dispatched after services, movements for temporary use, means of transport and monetary gold are excluded from Intrastat and Extrastat.

253. The non-monetary gold, silver bullions, stones, paper money, coin not in circulation are recorded in Intrastat and Extrastat even as live-stock but the parcel post is measured only in the trade with non-EU countries.

254. External trade data compiled according to the national concept is the starting point for national accounts but some corrections are necessary. The main adjustments for purposes of national accounts are the following:

- Correction relating to trade of the non-established traders (VAT-registration).
- Adjustment concerning return of goods.
- The inward and outward processing goods are valued at gross value in external trade statistics and at net value in national accounts.

255. The trade recorded in external trade statistics is supplemented with other type of transactions. Relating transactions of bunkers, merchanting and factory-less manufacturing, data are collected in the international trade in services survey (DS_34); data on high-value goods and illegal goods come from different data sources.

5.5.2. External trade of services

256. The main data sources of exports and imports of services are the following:

- international trade in services quarterly survey;
- quarterly surveys on tourism;
- other different information (for example data from administrative sources or collected by National Bank) and;
- external trade in goods statistics relating to manufacturing services on physical inputs owned by others.

257. The international trade in services statistics meets the requirements of Regulation No. 184/2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment and of its amendments.

258. The international trade in services statistics survey (DS_34) collects information on the service transactions between residents and non-residents. The number of PSIs is about 3.400 and the non-established traders, commercial agencies of foreign entities, Hungarian travel agencies and some other entities are excluded. Cut off sample is used and the main sources for sampling are the VAT-information, different registers (for example National Transport Authority, National Bank, National Media and Info-communications Authority, etc.) and other information (news, internet, etc.). The Electronic data collection system is built up and several tools, checks, nomenclature and information help the PSIs to report. The data are checked, validated and tested according to credibility. The missing data are imputed and the information collected and imputed is grossed up.

259. The following types of services are recorded: transport services; telecommunication services; construction services; computer and information services; charges for the use of intellectual property; other business services; personal, cultural and recreational services; financial services; insurance services; FISIM; government services; trade of ownership rights; maintenance and repairing services; manufacturing services; travel (tourism) and illegal services (prostitution, consumption of drugs).

260. Surveys on tourism are in line with the principles laid down by Regulation No. 184/2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment and of its amendments. One survey (DS_26) measures the expenditure of ingoing visitors by different variable (the characteristics and the motivation of visitors, partner countries, the length of stays, etc.) of tourists. The other one (DS_25) measures the expenditure of outgoing visitors as a same way.

261. Exports recorded in external trade in goods statistics are measured at F.O.B value but exports registered in other sources are reported or estimated at invoice value and the F.O.B value is not calculated.

262. Imports recorded in external trade in goods statistics are measured at statistical (C.I.F type) value but it has to be registered at F.O.B value in the national account statistics. The C.I.F/ F.O.B conversion is calculated with the rates computed by partner countries. The data of external trade in goods statistics and other information from transport companies have been used to calculate the conversion rates. The supplementing import (bunkers, merchanting, etc.) is measured at invoice valued and F.O.B value is not computed for these items. The transport services are corrected with the value of the C.I.F/ F.O.B conversion. The conversion values are broken down between export and import of rail, road, inland waterway and pipeline transport with flat rates.

263. Asymmetries measured in external trade in goods statistics between Hungary and other member states are analysed regularly.

264. The consistency between the exports of goods and services recorded in external trade statistics and in other statistics serving as sources of the supply and use tables are investigated. The data are examined at micro (enterprise) level for PSIs with highest trade values and at product level for industrial companies. About 260 so called enterprise groups of resident and non-established traders are formed with using several information sources for purposes of analysis. Data of enterprise groups recorded in different statistics are compared and confronted.

265. Share in total exports and imports of services by types of transaction, in 2017 Q4, %

Table 12 Distribution of exports and imports of services by types of transaction, 2017Q4 %

Transaction	Exports	Imports	Trade balance of services
Transport services	23.9	23.0	26.3
Telecommunication services	0.8	1.2	-0.4
Construction services	1.7	1.8	1.5
Computer and information services	0.1	1.3	-3.2
Charges for the use of intellectual property	1.4	1.6	0.6
Other business services	8.9	9.1	8.4
Personal, cultural and recreational services	5.8	9.1	-3.3
Financial services	23.1	31.2	0.6
Insurance services	1.9	2.9	-1.0
FISIM	0.5	1.0	-1.0
Government services	0.7	1.2	-0.6
Trade of ownership rights	2.2	4.7	-4.8
Maintenance and repairing services	7.7	1.1	25.8
Manufacturing services	0.5	1.2	-1.3
Travel (tourism)	19.7	9.6	47.7
Of which: Illegal services (prostitution, consumption of drugs)	1.3	0.0	4.8
Services, total (NA data)	100.0	100.0	100.0

5.5.3. Breakdown of external trade

266. Direct information on direction of external trade is available by all data sources used for the calculation of exports-imports data. Data are aggregated into three main group of states: EU member states, EMU members and non-EU countries. Figures are published parallel and together with goods and services breakdown.

CHAPTER 6. GDP COMPONENTS: THE INCOME APPROACH

6.1. Compensation of employees, including components (Wages and salaries and Employers' social contributions)

6.1.1. Non-financial corporations sector (S.11)

267. Wages and salaries (D.11) data for non-financial corporations (S.11) was primarily collected by HCSO in the frame of Labour Statistics. In 2017 Q4 the data source was Monthly Institutional Labour Report (MILR) (DS_37). From 2019 Q1 the data source was changed. Recently D.11 data comes from the monthly Social Security Reports of National Tax and Customs Administration (DS_39). These source data are available NACE breakdown on 4-digit. Due to these data a Q (t)/A (t-1) type index is calculated for each sub-industry on NACE 2-digit. To get the amount of wages and salaries D.11 and employers' social contributions (D.12) for industries, the previous (t-1) annual national account data are extrapolated with calculated indices in both case of D.11 and D.12.

6.1.2. Financial corporations sector (S.12)

268. For financial corporations (S.12) the National Bank provides source data (DS_07 and DS_08) for sub-industries (NACE code: 64, 65, 66) every quarter. Source data is available only for D.1 data that is why they have to be divided into D.11 and D.12 on the basis of share of the last annual data by each sub-industry.

6.1.3. General government sector (S.13)

269. Source data of institutions are budgetary reports and quarterly balance sheets and profit and loss accounts for some corporations reclassified into general government. (DS_29 - DS_31) In case of the main part of corporations and all non-profit institutions reclassified into general government data are estimated based on the previous year’s accounts.

270. D.11: Wages and salaries are recorded in cash with time-adjustment, data of corporations and non-profit institutions are recorded on accrual basis. Wages and salaries in kind are estimated on previous year’s data.

271. D.12: Employers’ actual social contributions are accounted on time adjusted basis, data of corporations and non-profit institutions are on accrual basis.

272. D.29: Rehabilitation contributions are recorded in case of budgetary institutions. In case of corporations classified into general government rehabilitation contributions and training levies are recorded. (Eximbank: credit institutions special tax)

273. D.39: Deductions from training levy and social contribution tax are recorded. (Because social contributions tax and training levy are recorded in a gross way from 2012.)

274. Corporations and non-profit institutions reclassified into general government receive subsidies of disabled workers as well.

6.1.4. Households sector (S.14)

275. Estimation of wages and salaries of the households sector consists of wages and salaries in sole proprietorships and unregistered activities of households.

276. Though wages and salaries paid by sole proprietors to their employees are included in the personal income tax declaration of sole proprietors, the total amount of these data is not reliable, because of the tax evasion and the mistakes are made during filling-in.

Therefore, calculations for wages and salaries are based on labour statistical surveys, namely:

- the number of employees in sole proprietorships is obtained from the Labour force survey (DS_38).

- monthly average earnings - for the total economy- are derived from the earnings figures of Monthly Institutional Labour Report (DS_37), which include all kinds of remuneration.

277. The total wages and salaries is estimated as the number of the employees in sole proprietorships in a given quarter of the year are multiplied by the quarterly average of the monthly average earnings for the total economy.

278. This result has to be corrected because the employers don't pay their employees their whole wages and salaries on legal way. In 2017 the minimum wage was 127 500 HUF and the officially guaranteed lowest wage for the qualified workers was 161 000 HUF. This wage proportion, 0.79 was used as a correction coefficient in 2017.

Table 13 Calculation of wages and salaries in sole proprietorships, 2017

Million HUF

		Q1	Q2	Q3	Q4
Number of employees	a	175 704	179 029	171 056	157 637
Average earnings (monthly per person)	b	0.281912	0.298775	0.291945	0.315501
Wages and salaries without correction	c=a*b*3	148 599	160 468	149 817	149 204
Wages and salaries (corrected)	d=c*0.79	117 393	126 770	118 355	117 871

279. There are additional sources of wages and salaries from the unregistered activities of households in Agriculture, hunting and forestry (A), Health and social work (Q), Private households with employed persons (T) on yearly basis. Because of lack of quarterly data, the ¼ of the previous year's annual value is estimated for each quarter for these industry branches.

280. Estimation of social security contribution of households sector consists of social security contribution in sole proprietorships and unregistered activities of households.

281. Social security contribution is calculated similarly to wages and salaries. The number of the employees in sole proprietorships in a given quarter of the year is multiplied by the minimum wage in the country. The minimum wages are used due to the existing tax evasion experience. The minimum wages are the input of the social security contributions calculation. The employer contribution is also added to the calculated sum.

Table 14 Social security contribution in sole proprietorships, 2017

Million HUF

		Q1	Q2	Q3	Q4
Number of employees	a	175 704	179 029	171 056	157 637
Minimum wage (monthly per person)	e	0.127500	0.127500	0.127500	0.127500
Rate of social security contribution	f	0.22	0.22	0.22	0.22
Social security contribution	g=a*e*3*f	14 785	15 065	14 394	13 265

282. Because no social security contributions are paid in the unregistered activities of households, no calculation is mode for these items.

6.1.5. Non-profit institutions serving households sector (S.15)

283. For estimation of wages and salaries of employees (D.11), the monthly data source is the Monthly Institutional Labour Report. The calculation method is described detailed in the paragraph 158.

284. D.11 and D.12 are estimated by applying for them the same rates that they represented in the previous year's annual D.1.

285. By D.29 and D.39 estimations the previous annual data for each index are the bases to calculate quarterly data for the current year (dividing by 4).

286. The reconciliation of quarterly NPISHs data to annual figures is performed when the annual data are available. The revised quarterly estimates are fully consistent with the annual estimates for both the production and the consumption indicators.

6.2. Taxes less subsidies on production

287. Other taxes on production (D.29) and Other subsidies on production (D.39) data are compiled separately by tax and subsidy types for QNA and for the quarterly accounts of general government sector.

288. In case of D.29 there are three principal monthly and quarterly data sources: the National Tax and Customs Administration, the Hungarian State Treasury and the Ministry of Finance. These figures are measured on cash basis. That is why they have to be adjusted to achieve accrual concept. In this way cash data are shifted by 1 or 3 months. (DS_29 - DS_31)

289. For 1 month accrual adjustment source cash data are available during QNA compilation. But in case of 3-month correction cash figures are available only for the first month of the quarter that is why cash data for second and third months are estimated by using first month data.

290. Taxes on production comprises the following major items in Hungary: building tax; development land tax; tax of public utility system; tax on domestically registered vehicles; company car tax; rehabilitation contribution; training levy; itemised tax of small taxpayers; stamp duties; extra capital taxes; Protection Funds levies; sale of emission allowances; tax on sales representative employees medical corporation; environmental pollution tax.

291. The quarterly cash figures for Protection Funds levies are available from the settlements of Protection Funds'. The quarterly revenue from sale of emission allowances is estimated using previous year's cash data. The amount of the quarterly revenue from sale of emission allowances equal to the average quarterly data of the previous year.

292. The splitting of taxes on production between sectors is determined in the following way. By general government and NPISH sectors (S.13 and S.15) own calculations are used for the sectorization. In case of financial corporations sector (S.12) cash data is used. In case of households sector (S.14) the previous year's proportion is applied and the residual principal is used for the non-financial corporations sector (S.11).

293. D.29 data are broken down into sub-industries (NACE 2-digit) due to the latest annual data of correspondent sector.

294. Quarterly cash figures are available for calculation of other subsidies on production (D.39) from the Hungarian State Treasury's, the Ministry of Finance's and the National Tax and Customs Administration's data sources. Accrual adjustment is not applied for D.39.

295. Other subsidies on production comprise the following major types of subsidies: subsidies on employment and training; agricultural subsidies; development and innovation subsidies.

296. Other subsidies on production are provided by the central government, the National Employment Fund, the National Research, Development and Innovation Fund and the EU institutions.

297. In the case of some major agricultural subsidies (for example Single Area Payment Scheme) the own calculation of the agricultural (satellite) account is used. For some items of subsidies the cash figures are not available quarterly therefore in these cases estimation is made using the previous year's data.

298. The splitting of other subsidies on production between sectors is similar to the splitting of taxes on production with one difference that is the financial corporations did not receive subsidies on production for QNA and QSA. The amount is so small that it is estimated on annual basis so far.

299. D.39 data are broken down into sub-industries (NACE 2-digit) due to the latest annual data of correspondent sector.

6.3. Gross operating surplus & mixed income

300. Gross operating surplus is calculated as a residual by non-financial corporation (S.11) and financial corporation sector (S.12).

(+) Gross value added

(-) Compensation of employees

(-) Other taxes on production

(+) Other subsidies on production

= Gross operating surplus

301. Gross operating surplus of the Households sector (S.14) is equal the GVA of the owner-occupied dwelling services estimated via the user cost method and contains the net operating surplus and the consumption of fixed capital.

302. The mixed income of Households sector is a balancing item and calculated as follows:

(+) Gross value added

(-) Compensation of employees

(-) Other taxes on production

(+) Other subsidies on production

(-) Gross operating surplus

= Mixed income

CHAPTER 7. POPULATION AND EMPLOYMENT

7.1. Population

303. Currently the population data are based on the last population census taken in 2011, updated on the basis of data on vital events (births, deaths), internal and international migration.

304. Definition: Population definition based on the usual residence concept in accordance with the Regulation (EC) No 1260/2013 on European demographic statistics means all persons having usual residence in Hungary at the reference time.

305. Geographical coverage: The population data cover the whole country, Hungary.

306. The mid-term population of the quarter: the arithmetic mean of the population number on the first day of the given quarter and on the last day of the given quarter.

7.2. Employment: persons

307. The number of employment in national concept comes directly from Labour Force Survey (LFS). LFS follows definitions set by the International Labour Organisation (ILO), therefore mostly internationally harmonised. An advantage of LFS is that it covers a broad range of employment situations, including self-employed, unpaid family workers informal employment and collects information on multiple-job holdings. Though its main limitation from the perspective of national accounting, is the often limited consistency with output and value added measures, in particular, by industry.

308. The main data source of the compilation of the number of employment in domestic concept is the LFS (DS_38) that provides the number of employment in national concept. The transmission between the two concepts is ensured by ESA-bridges, like employed persons living in Hungary, but working abroad for a non-resident company (-); employed persons living abroad, but working in Hungary for a resident company (+); foreign residents employed at Hungarian embassies (+);unpaid workers in household sector (+), employed persons living in institutional households (+); employed persons above the age of 74; agricultural producers for own final use (+); estimation on illegal workers (drugs and prostitution) (+).

309. Due to the fact that not all adjustment items are available quarterly, an index method is applied to extrapolate the time series at 2 digit level of NACE by employees and self-employed. For extrapolation, the quarterly data from monthly (institutional) labour report (MILR, regarding to STS) (DS_37) is used to estimate employees. Since 2018 this report became quarterly and available only t+50 days, therefore the newly available monthly number of employees from Social Security Reports (DS_39) are used and the Quarterly Institutional Labour Report is applied for validation.

310. For estimating self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series. (This data comes from the BR. Each month a snapshot is made on the current BR status to provide a basis for statistics.) Total employment is the sum of employees and the self-employed.

311. The existing time series are adjusted to the annual ones as soon as they become available. Therefore bridges are ensured indirectly. This method is used due to the lack of bridge data quarterly.

312. Estimations are prepared at two digit level since 2015 Q1 to be more coherent with the annual one. Before estimations were prepared at A10 level. This may cause a slight break in the series.

313. The results are sent to EUROSTAT quarterly at t+2 months but not published in Hungary yet.

7.2.1. Agriculture, forestry and fishing

314. To estimate employees in this branch, quarterly data from the monthly (institutional) labour report is used.

315. Self-employed, agricultural producers for own final use are also taken into consideration. Data sources for labour input of private farms: Agricultural census (AC): 2000, 2010; Farm Structure Survey (FSS): 2005, 2007, 2010, 2013, 2016 (sample size around 100 000 farms). Annual Sample Survey in every December (sample size around 30 000 farms).

316. Through the FSS and AC a quite detailed information are collected about the characteristics of farms, including family labour force at person level and purpose of farming (e.g. only for own final use). The annual survey contains data on labour force in a less detailed format. Only the number and working days of paid and unpaid (family) employment is asked. Therefore the only survey information available is the labour input of farms producing solely for own final use in years when FSS was carried out. This information regards to the reference time of the survey. For intermediate years and quarters the estimation is the following:

317. In FSS years, there is information about the number of family workers and amount of their AWU (Annual Work Unit) for the entire population and for farms which are classified producing only for own final use. So we can calculate the ratio of own final use part of the universe.

318. For intermediate years (till the next FSS) this ratio is modified based on its own trend. The yearly estimation is computed based on this calculated ratio and based on the total number of family labour force and their labour input (expressed in AWU), collected by annual survey.

319. The quarterly distribution is done based on the agricultural intermediate consumption.

7.2.2. Manufacturing, mining and quarrying and other industry

320. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

321. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.2.3. Construction

322. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

323. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.2.4. Trade, transport, accommodation and food services

324. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

325. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.2.5. Information and communication

326. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

327. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.2.6. Financial and insurance services

328. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

329. In this industry, the self-employed work only in other financial services. Here the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series of self-employed.

7.2.7. Real estate activities

330. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

331. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.2.8. Business services

332. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

333. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.2.9. Public services, education and health

334. In public administration and defence, there are only employees employed by general government. Quarterly data from monthly (institutional) labour report is used to extrapolate number of employees in this industry.

335. The self-employed working in education and health estimated applying growth in number of persons with private entrepreneurship as a primary job for the extrapolation.

7.2.10. Other services

336. To estimate employees in this industry, quarterly data from monthly (institutional) labour report is used.

337. For the self-employed, the growth in number of persons with private entrepreneurship as a primary job is applied to extrapolate the correspondent time series.

7.3. Employment: total hours worked

338. To estimate total hours worked a ratio of total hours worked per employment is calculated at 2 digit level of NACE. For estimation of total hours worked by employees this ratio is reached from MILR (since 2018 from Quarterly Institutional Labour Report) and multiplied by the number of employees in the correspondent period estimated according to domestic concept as described before.

339. For estimation of total hours worked by the self-employed this ratio is reached from LFS as there are information on total hours worked by self-employed. To derive total hours worked by self-employed according to National Accounts concept this ratio is multiplied at 2 digit level of NACE by the number of self-employed estimated as described previously, that of domestic concept.

340. This calculation method is applied from 2010. The backward calculation is under preparation.

CHAPTER 8. FLASH ESTIMATES

8.1. Flash GDP estimate

341. Starting in 2006, the Hungarian Central Statistical Office has performed several studies on the feasibility of a flash GDP estimate for 45 days after a quarter, in line with Eurostat intention. Naturally, it has faced a trade-off between reliability and availability in time.

342. The current practice of publication is that the regular quarterly GDP growth rate is published 45 days after the reference period.

343. The used method consists of three pillars: an expert forecast, an econometric forecast and a reconciled forecast.

344. The expert forecast is based on the estimates of the Specialized Sections of HCSO responsible for the production and the expenditure approach aggregates.

345. The econometric forecast includes a direct GDP estimate at constant prices and a bottom-up model that focuses on the constant price of the aggregates in the production side of GDP based on the data that are available approximately 38 days after the end of the quarter. The used forecasting procedures are ARIMA models supplemented with one or more quarterly explanatory variable(s).

346. The used indicators in the bottom-up models from production side depend on the aggregates:

Table 15 The explanatory variables for flash GDP estimation

Industry	Indicators
A	Volume index of output (DS_12 – DS_19)
BCDE	Volume index of industrial production value (DS_01, DS_10)
F	Volume index of construction production value (DS_01, DS_11)
G	Retail volume index (DS_04, DS_05)
H	ARIMA
J	Physical indicators (e.g. mobile calls, internet subscriptions)
L	Lagging values of housing investments and ESI indicator
MN	ESI indicator
RST	ESI indicator
Taxes less subsidies on products	Retail volume index and taxes on products at current price of the actual quarter

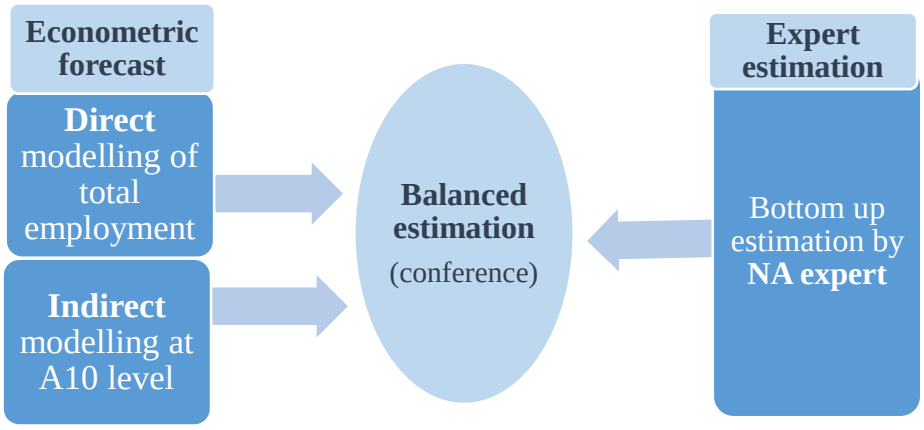
For the industries K and OPQ, there are not models estimated separately.

347. The reconciled forecast is based on the estimation results of the expert forecast and the econometric forecast. The procedure unites the advantages of the two methods, the know-how of the experts and the methodological development. The final volume index of GDP is the result of the chain-linking of the aggregates at constant prices.

8.2. Flash employment estimate

348. HCSO estimates total employment for 45 days after the end of the quarter. The work on this field has started in year 2017, by contributing the Task Fork on feasibility study on quarterly flash estimation of employment organised by Eurostat. The results are not published yet in Hungary, but it is submitted to EUROSTAT.

Figure 3 The process of decision making



349. The main data source to flash estimate quarterly employment according to NA is Labour Force Survey (DS_38). The quarterly data is available at t+35 days. The estimation process contains three steps as shown is the following illustration:

350. An econometric model is set up directly for estimating the total employment, and indirectly for estimating at A10 level. From the other side a previous expert estimation is also prepared (as it is done for t+2 months). By this estimation, an index method is used to extrapolate the time series. The main data source is LFS, but quarterly data from Social Contribution Declarations is also used. The results of this two approaches are confronted in a balancing estimation meeting where the experts of each field are present and discuss the results and make the best decision.

351. The econometric model is set up directly using total employment except those working abroad from Labour Force Survey as an explanatory variable. Least square ARIMA model is applied using Eviews 8.0 software. The bottom up modelling is also prepared at A10 level using total employment of the correspondent branch except those working abroad from Labour Force Survey as an explanatory variable.

8.3. Other existing flash estimate

352. HCSO makes GDP estimation for the growth rate of GDP total at the 30th day after the end of quarter and the result is sent to the Eurostat for calculation of the total GDP of the EU. The result of the estimation is not published officially.

353. The used estimation method is an econometric forecast. It uses fewer explanatory variables than one for t+45 days. Where monthly data are used calculating quarterly data in many case the values of the last month in the quarter should be estimated because they are not available during the compilation process.

CHAPTER 9. MAIN DATA SOURCES USED

354. This chapter contains descriptions of the main data sources, which are used for estimation of quarterly GDP. The individual data sources are numbered by unique code (DS_xx), which is used in the previous chapters. This chapter presents only data sources that are used as the basis for the quarterly national accounts compilation, ones for annual national accounts are left.

Table 16 Summary list of data sources

List of data sources		Used in the approach of estimating GDP			Other
Code	**Name of the data source**	**Production**	**Expendi-ture**	**Income**	**Employment**
DS_01	Monthly survey on performance statistics (OSAP 2235)	x			
DS_02	Quarterly survey on performance statistics (OSAP 2236)	x	x		
DS_03	Data of sole proprietors in business registers (OSAP 2281)	x			
DS_04	Online cash-register data (OSAP 2360)	x			
DS_05	Report on the sales turnover of retail trade and catering (OSAP 1045)	x	x		
DS_06	Monthly data on the tobacco sales of national tobacco shops (OSAP 2338)	x	x		
DS_07	Reports of insurance corporations and insurance associations (OSAP 2426)	x	x		
DS_08	Quarterly reports of financial corporations (OSAP 2466)	x	x		
DS_09	Quarterly survey on the output prices of business services (OSAP 2130)	x			
DS_10	Price survey on industrial products and services (OSAP 1007)	x			
DS_11	Prices of construction activities (OSAP 1831)	x			
DS_12	Survey of agricultural products procurements (OSAP 1097)	x			
DS_13	Production of ear cereals (OSAP 1084)	x			
DS_14	Production of main crops (OSAP 1085)	x			
DS_15	Livestock slaughter (OSAP 1280)	x			
DS_16	Sales price of animal feeding stuff (OSAP 1824)	x			
DS_17	Sales price of plant protection products (OSAP 1826)	x			
DS_18	Sales price of veterinary products (OSAP 1827)	x			
DS_19	Livestock (OSAP 1087)	x			

List of data sources		Used in the approach of estimating GDP			Other
Code	**Name of the data source**	**Production**	**Expendi-ture**	**Income**	**Employment**
DS_20	Data of credit institutions and branches of credit institutions (OSAP 1713)	x			
DS_21	Cumulative profit and loss statement of the National Bank of Hungary, operating costs and expenses of the banking operations (OSAP 1917)	x			
DS_22	Data supply to the allocation of FISIM by user sectors (OSAP 2005)	x			
DS_23	Household Budget and Living Condition Survey, diary keeping (OSAP 2153)	x	x		
DS_24	Report on the sales turnover of retail trade and catering by commodity groups (OSAP 1646)		x		
DS_25	Cross-border survey for outbound tourism (OSAP 2007)		x		
DS_26	Cross-border survey for inbound tourism (OSAP 1943)		x		
DS_27	Changes in expenditures spent on gambling and revenues originating from gambling (OSAP 1633)		x		
DS_28	Consumer price survey (OSAP 1006)	x	x		
DS_29	KIVES files of the central government, budgetary funds and social security funds (OSAP 2484)	x	x	x	x
DS_30	Monthly report on the expenditures and revenues of the central government (OSAP 2198)	x	x	x	x
DS_31	Balance sheets and budgetary reports of local subsystem of government budget (OSAP 2038)	x	x	x	x
DS_32	Quarterly survey on investment statistics (OSAP 2237)		x		
DS_33	Foreign Trade Statistics – Intrastat dispatches and arrivals (OSAP 2010-2013)		x		
DS_34	Exports and imports of services survey (OSAP 1470)		x		
DS_35	Extrastat dispatches and arrivals (OSAP 2193)		x		
DS_36	Representative price statistics of external trade (OSAP 1005)	x	x		
DS_37	Monthly Institutional Labour Report (MILR) (OSAP 2238)	x	x	x	x
DS_38	The Labour Force Survey (LFS) and its additional recordings (OSAP 1539)				x
DS_39	Social Security Reports (OSAP 2326)			x	x

DS_01. Monthly survey on performance statistics (OSAP 2235)

This data source, monthly performance of industry and construction is obtained by survey of HCSO. The data are individual data.

In mining and manufacturing, enterprises with more than 49 employees are observed by a full-scale survey, between 5 and 49 persons by a sample survey. The target population covers all working enterprises. The sampling frame is the register of the Central Statistical Office. The sampling is stratified. The method of grossing up is the multiplication of the sample mean by the sample size for the various strata. The standard error is calculated in the traditional way. The enterprises with less than 5 employees are not selected for survey, their data are estimated from administrative records. The gross output value of industrial activities of enterprises classified to the industry is calculated by correcting the net sales value of industrial activities with changes in own-produced stocks. The value of energy received for distribution and sold further is subtracted from the industrial gross output volume of electricity, gas, steam and air conditioning supply (netting out the multiplication).

In construction, data on enterprises with more than 49 employees classified to the construction section are collected by a full-scale survey, that on enterprises with 5–49 employees by a sample survey. Grossing up is the estimation of averages based on multiplying up along with the determination of the standard error. The enterprises with less than 5 employees are not selected for survey, their data are estimated from administrative records. Data on territorial units are referring to enterprises with more than 4 employees. Construction activity is observed according to two aspects separated from one another: character of implemented works (NCA 2. Rev.) as well as type of the implemented construction (Building Register).

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+37 days
Main variables used in QNA: Volume indices and current price data of industry and construction
Further adjustments made to the survey data: -

DS_02. Quarterly survey on performance statistics (OSAP 2236)

This representative data source, quarterly performance of enterprises from the total economy is obtained by survey of HCSO. The data are individual data. Enterprises with more than 49 employees are observed by a full-scale survey, between 5 and 49 persons by a sample survey.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+19 days
Main variables used in QNA: Total gross output value of all industries, Excise duties in the turnover of the producers and the importers, Opening and closing stock of finished products and work in progress (from own production), Opening and closing stock of goods purchased
Further adjustments made to the survey data: -

DS_03. Data of sole proprietors in business registers (OSAP 2281)

This data source, the data of sole proprietors in business registers, is an administrative data source. Data are managed by the Ministry of Interior.

Link to surveys undertaken at the European level: -
Periodicity: continuous
Time of availability of results: t+48 days
Main variables used in QNA: Number of sole proprietors
Further adjustments made to the survey data: -

DS_04. Online cash-register data (OSAP 2360)

Due to Ministry of National Economy Decree 48/2013. (Hereafter Decree) enterprises operating cash machines involved in the online cash register system (OPG) are obliged to send online information about their sales to the National Tax and Customs Administration (NTCA). The use of online cash register (OPG) data provides administrative data, allowing to replace previous questionnaire data. Data transmission is based on a HCSO-NTCA agreement.

The turnover for year 2016 was first estimated according to the new methodology, in which online cash register data were also used. Turnover data for year 2015 were back casted using volume indices produced according to the former methodology. As a result, volume indices for 2016 change first.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+47 days
Main variables used in QNA: Retail sales data
Further adjustments made to the survey data: -

DS_05. Report on the sales turnover of retail trade and catering (OSAP 1045)

The data collection is based on operating licenses issued by local governments as well as on the HCSO aggregate register of officially declared activities (Commercial Register). In the data collection, the scope of data providers consists of two parts. The following units are in the so-called full-scope part: enterprises with at least 50 employees operating at least 6 shops; enterprises operating at least 7 shops regardless of the number of employees; enterprises with a significant floor area of shops in the relevant field of activity. The selection of all other shops is made on the basis of a stratified simple random systematic sample. Among shops in the sample a 25–30% rotation is performed per year. Smaller sample adjustments are made in every six months with the selection of new shops to replace liquidated shops.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+28 days
Main variables used in QNA: Volume indices of retail trade and catering, total

Value indices of retail trade and catering, by NACE 4-digit-level
Further adjustments made to the survey data: -

DS_06. Monthly data on the tobacco sales of national tobacco shops (OSAP 2338)

On 1 July 2013, the structure of tobacco retailing was transformed. At the same time, there was a change in the source of retail data: the full-scope data of the National Tobacco Trading Non-profit Company have been available since July 2013. Instead of the previous sample survey based estimate, HCSO uses the comprehensive tobacco sales data to provide statistics on the sales of specialized tobacco stores, which are included in the turnover of specialized food, beverage and tobacco stores.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Sales data on tobacco
Further adjustments made to the survey data: -

DS_07. Reports of insurance corporations and insurance associations (OSAP 2426)

Data is supplied by Hungarian National Bank. Total cost is used. Annual personnel costs per total costs rate is applied for calculating compensation of employees on quarterly basis.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+45 days
Main variables used in QNA: Data for compensation of employees
Further adjustments made to the survey data: -

DS_08. Quarterly reports of financial corporations (OSAP 2466)

Data is supplied by Hungarian National Bank. Personnel costs of all kinds of pension funds are used for calculating these units' compensation of employees on quarterly level.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: 15 working days after the second month of reference quarter
Main variables used in QNA: Data for compensation of employees
Further adjustments made to the survey data: -

DS_09. Quarterly survey on the output prices of business services (OSAP 2130)

The services producer price index (SPPI) covers services delivered by the resident business service producers and sold to all customers (economic units or persons representing economic units, public bodies, households and other users) and reflect the average price development of selected service activities compared to the several base periods (e.g. year 2015=100.0%).

Both domestic prices of services (sold to the resident customers) and export prices of services (sold to the non-resident customers) are collected. Price data are collected quarterly via internet by the questionnaire: No 2130 on business services producer prices. The production and transmission of data (indicator D310) is required by the current STS regulation.

Product-based price indices of services provided for businesses (B-B) are the aggregates of enterprise-level product-based price indices of CPA 2.1 / TESZOR'15 categories (previous quarter = 100%).

Price indices of services provided for all customers (B-All) are also computed – as weighted averages of Service Producer Price Indices (SPPI, B-B) and Harmonised Indices of Consumer Prices at Constant Tax (HICT-CT).

The sub-indices for "large" and "smaller" enterprises are computed using product-type annual sales data for the year preceding the reference year as weights, covered by the SPPI survey. The national weights for the 4-digit level of NACE Rev. 2 are annual SBS sales data from the second year prior to the reference year. The frame of the survey is Business Register.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+48 days
Main variables used in QNA: Output price indices of business services
Further adjustments made to the survey data: -

DS_10. Price survey on industrial products and services (OSAP 1007)

The monthly representative price observation concerns about 1350 economic enterprises and nearly 5900 products. The observed price, in case of domestic sale, is a basic price since 1994, excluding value added tax, and including price supplement belonging to turnover; in case of external trade turnover, it is a price at border parity converted into forint at the actual rate of exchange, valid on the day of fulfilment. Data suppliers are selected corporations listed to Mining (B), Manufacturing (C), Energy industry (D), Water and waste management (E).

Calculation method: as a first step a chain relative number had been calculated by representatives of the respective month. Following this the commodity-group indices were determined as arithmetic means of price ratios, then price indices by branches were calculated as weighted arithmetic means of commodity-group price indices. The weight was the annual sales value of the respective product group to a respective destination of sales of two years before. As the weights are annually changed the effects of weighting system are also reflected in the base indices of aggregates.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+37 days
Main variables used in QNA: Producer prices and volumes of industrial products sold for export and domestic markets
Further adjustments made to the survey data: -

DS_11. Prices of construction activities (OSAP 1831)

Construction producers' price index reflects the average price development of construction activity performed in construction branch. The indices are based on the survey of market

prices of selected construction operations, including material and fee prices without VAT. Scope of data suppliers is designated enterprises classified to the construction industry (a total of 900).

These prices are taken from the entrepreneur fee establishing budgets of the contracts' and contracts modifications' from the reference period. The basic element of the calculation is the elementary price relative by representatives, which is the quotient of the construction operation's reference and base period prices. From these quotients first we calculate – using arithmetical averages – enterprise indices; subsequently sub-branch and branch indices aggregated from enterprise indices weighted by staff size categories and main groups of construction. The construction price index is computed from the branch indices. Production values from two years before the reference year are used as weights.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+37 days
Main variables used in QNA: Unit price of construction operations
Further adjustments made to the survey data: -

DS_12-DS_15 Output price index and absolute prices of agricultural products

The source of producer price indices and price data of agricultural products is the monthly questionnaire on the procurement activity of enterprises that acquire agricultural products for processing or resale purposes, and the monthly survey of agricultural crop markets, conducted by the HCSO. Price indices encompass the changes of prices paid directly to agricultural producers for agricultural products processed or resold (procured) or sold directly to households on markets, and exclude the price changes of animal products (young and breeding animals) and fodder crops sold among agricultural producers for intermediate consumption purposes. Price indices are computed according to the Laspeyres formula.

DS_12. Survey of agricultural products procurements (OSAP 1097)

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Quantity, value and average price of agricultural products procured by processors and resellers directly from agricultural producers. Prices of output of agriculture
Further adjustments made to the survey data: -

DS_13. Production of ear cereals (OSAP 1084)

Link to surveys undertaken at the European level: -
Periodicity: annual
Time of availability of results: t+48 days (only in the fourth quarter)
Main variables used in QNA: Harvested area and harvested production yield of ear cereals
Further adjustments made to the survey data: -

DS_14. Production of main crops (OSAP 1085)

Link to surveys undertaken at the European level: -
Periodicity: annual
Time of availability of results: t+48 days (only in the fourth quarter)
Main variables used in QNA: Harvested area and harvested production yield of ear cereals
Further adjustments made to the survey data: -

DS_15. Livestock slaughter (OSAP 1280)

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Slaughtering of livestock by animal species (cattle, pigs, sheep, goats, horses, rabbits and poultry)
Further adjustments made to the survey data: -

DS_16-DS_18 Agricultural input price index

Among the price indices of goods and services used for the intermediate consumption of agricultural production HCSO collects the sales prices of animal feeding stuffs, plant protection products and veterinary products on a monthly basis. Since 2009 the individual data collection of HCSO on fertilizers and soil improvers has ceased to exist and it has been integrated into the appropriate data collection of the Ministry of Agriculture and Rural Development, which body now performs this task and whose data are transmitted to HCSO. For the calculation of the price indices of energy, machinery, building maintenance and other expenditure, given sub-indices of the industrial producer price index, the construction output price index and the consumer price index are taken into account. The price index of agricultural investment goods is calculated by taking into account sub-indices of construction output price index and, in case of machinery, sub-indices of industrial producer price index and external trade (import) price index. Indices are calculated according to the Laspeyres formula

DS_16. Sales price of animal feeding stuff (OSAP 1824)

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Prices of IC of agriculture
Further adjustments made to the survey data: -

DS_17. Sales price of plant protection products (OSAP 1826)

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Prices of IC of agriculture
Further adjustments made to the survey data: -

DS_18. Sales price of veterinary products (OSAP 1827)

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Prices of IC of agriculture
Further adjustments made to the survey data: -

DS_19. Livestock (OSAP 1087)

This data source is a representative agricultural survey implemented twice a year. The sample of the survey is based on the agricultural census carried out in 2010 (AC 2010) and the farm structure survey conducted in 2016 (Agrárium 2016). From the 13,633 agricultural survey districts in Hungary 648 were chosen, which were fully observed (house to house method) by enumerators. The data collection refer to

- Agricultural enterprises: enterprises with or without legal personality.
- Private holdings: households engaged in agricultural activities and private entrepreneurs with tax number.
- Holdings: private holdings and agricultural enterprises.

Full-scale observation was applied in the case of agricultural enterprises keeping animals. This group supplied data compulsorily via the Elektra system of HCSO.

Link to surveys undertaken at the European level: -
Periodicity: twice a year
Time of availability of results: t+48 days (only in the second and fourth quarter)
Main variables used in QNA: Livestock by legal forms, species, age, sex and weight
Further adjustments made to the survey data: -

DS_20. Data of credit institutions and branches of credit institutions (OSAP 1713)

Data is supplied by Hungarian National Bank. Fees and commissions received and paid, other administrative costs and other operating costs are used for calculating quarterly GVA for credit institutions.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Fees and commissions received and paid,

Other administrative costs, Other operating costs
Further adjustments made to the survey data: -

DS_21. Cumulative profit and loss statement of the National Bank of Hungary, operating costs and expenses of the banking operations (OSAP 1917)

Data is supplied by Hungarian National Bank. Wages and salaries, social contributions, material costs, cost of contracted services and costs of other services are used for compiling production account of Hungarian National Bank.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+48 days
Main variables used in QNA: Wages and salaries, social contributions, material costs, cost of contracted services and costs of other services of MNB
Further adjustments made to the survey data: -

DS_22. Data supply to the allocation of FISIM by user sectors (OSAP 2005)

Data is supplied by Hungarian National Bank. Data contain resident and non-resident FI's (FISIM producers) quarterly average stock of loans and deposits and accrued interest in HUF and DEV breakdown. It is used for allocation of FISIM by user sectors.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+45 days
Main variables used in QNA: FISIM
Further adjustments made to the survey data: -

DS_23. Household Budget and Living Condition Survey, diary keeping (OSAP 2153)

In technical sense HBS consists of more than one survey in Hungary: the biweekly diary keeping survey and two annual retrospective interviews. Hereinafter all of them are referred to as HBS. The target population of the survey consists of all Hungarian citizens living in private households in the territory of Hungary. Consequently the survey does not cover people living in institutional households. The HBS is based on a representative random sampling. The unit of sampling is the dwelling. The unit of observation is the household. One-fourth of the sample is rotated every year. So, a fourth of the households participate in the survey for four consecutive years. This part of sample is considered as a panel, which can be used for longitudinal studies.

Link to surveys undertaken at the European level: SILC and HBS
Periodicity: biweekly
Time of availability of results: t+48 days
Main variables used in QNA: Expenditures of households
Further adjustments made to the survey data: -

DS_24. Report on the sales turnover of retail trade and catering by commodity groups (OSAP 1646)

The observation units of this survey are the enterprises classified into the Divisions 45, 46, 47 and 55, 56 of NACE Rev.2.0. With 50 employees and more are observed by full scope survey, while enterprises with 5-49 employees are observed by a sampling survey. In addition, legal units classified into other divisions of NACE Rev.2.0 are also covered by the survey if they have more than 50 employed persons and over 5 outlets in the Hungarian Outlet Register, or at least 10 outlets (irrespective of the number of employees). Sample selection from a sampling frame is made by a random stratified sampling. The representative sample units stay among the data suppliers not more than five years. The data collected by 42+6 commodity groups. The turnover of retail sales is valued at purchaser (actual market) prices, i.e. contains the value-added tax and the excise duties. This survey does not include the turnover of open-air markets, street vendors and repairing services either.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+48 days
Main variables used in QNA: Retail sales data by 42+6 commodity groups Value indices of retail sales data by 42+6 commodity groups
Further adjustments made to the survey data: -

DS_25.-DS_26. Cross-border surveys (OSAP 2007 and OSAP 1943)

Since 2009 data from border statistics are used to identify the purchases of residents abroad and the purchases of non-residents on the domestic territory. Both total expenditure of inbound and outbound tourism are available from surveys including the main motivation of traveller or types of expenditures connected to journey. These additional information make it possible to separate private and business tourism expenditures.

DS_25. Cross-border survey for outbound tourism (OSAP 2007)

Link to surveys undertaken at the European level: -
Periodicity: continuous
Time of availability of results: t+48 days
Main variables used in QNA: Tourism expenditures of resident households by motivation of trips and by expenditure categories
Further adjustments made to the survey data: -

DS_26. Cross-border survey for inbound tourism (OSAP 1943)

Link to surveys undertaken at the European level: -
Periodicity: continuous
Time of availability of results: t+48 days
Main variables used in QNA: Tourism expenditures of non-resident households by motivation of trips and by expenditure categories

Further adjustments made to the survey data: -

DS_27. Changes in expenditures spent on gambling and revenues originating from gambling (OSAP 1633)

This data source, monthly changes in expenditures spent on gambling and revenues originating from gambling is obtained from the Hungarian Gambling Ltd. This is individual data. Selected items from this survey is used for the estimation of consumption of households.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+23 days
Main variables used in QNA: Expenditures spent on gambling by households
Further adjustments made to the survey data: -

DS_28. Consumer price survey (OSAP 1006)

The consumer price index is calculated monthly and covers the whole country and all private households. It is the measure of the price changes of goods and services intended for household consumption. Selections of representative items (goods and services) as well as the outlets are based on information from various sources (retail trade, regional offices etc.) The purposive selection is concentrated on the volume selling items and outlets proportionate to size. In case of seasonal products „markets" are also selected for price observation. At present there are approximately 1000 items to be observed monthly in 35–150 outlets depending on their character. Altogether more than eighty thousand prices are collected monthly. The weights used for the compilation of the Consumer Price Index (CPI) represent the ratio of goods and services within the final monetary consumption of households. From 2012 the weights are based on the provisional macro data of National Accounts relating to the year t-2 while in previous years this data source was completed with the HBS data as well.

Link to surveys undertaken at the European level: CPI
Periodicity: monthly
Time of availability of results: t+25 days
Main variables used in QNA: Consumer price indices, total and at COICOP 4-digit level
Further adjustments made to the survey data: -

DS_29. KIVES files of the central government, budgetary funds and social security funds (OSAP 2484)

The data source is obtained from the Ministry of Finance. These reports cover all revenue and expenditures of central government institutions, budgetary funds and social security funds.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+10 days
Main variables used in QNA: revenues and expenditures of the central government, budgetary funds and social security funds
Further adjustments made to the survey data: -

DS_30. Monthly report on the expenditures and revenues of the central government (OSAP 2198)

The data source is obtained from Hungarian State Treasury. The statement is determined for central budgetary organisations. It is the main source for these organisations, which contents revenue and expenditure data for their main activity.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+25 days
Main variables used in QNA: Revenues and expenditures of the central government
Further adjustments made to the survey data: -

DS_31. Balance sheets and budgetary reports of local subsystem of government budget (OSAP 2038)

The data source is obtained from Hungarian State Treasury. It is determined for local subsystem of government budget.

Link to surveys undertaken at the European level:
Periodicity: quarterly
Time of availability of results: t+45 days
Main variables used in QNA: Balance sheets and budgetary reports of local subsystem of government budget
Further adjustments made to the survey data: -

DS_32. Quarterly survey on investment statistics (OSAP 2237)

HCSO collects data on investment quarterly from members of non-financial corporation (S.11) and public (S.13) sectors according to types of investment (like buildings, machines, cars etc.). Data supplying in S.13 concerns the whole sector and in S.11 concerns the whole sector with above 50 employees and the part of the sector with between 5-49 employees.

Link to surveys undertaken at the European level: -
Periodicity: quarterly
Time of availability of results: t+48 days
Main variables used in QNA: Investments of economic units
Further adjustments made to the survey data: -

DS_33. Intrastat dispatches and arrivals (OSAP 2010- 2013)

The direct data collection of Intrastat are in line with the requirements of the basic regulation (Regulation No 638/2004) and it meets the rules of the implementing provision (Commission Regulation No 1982/2004) too. In principle Intrastat data are collected from so called "taxable person", practically the entity registered for Value Added Tax (VAT). Private individuals are not considered as taxable person and they are not registered for VAT in general. An exemption threshold is applied for Intra-EU traders.

Link to surveys undertaken at the European level: Intrastat
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Free-at-frontier value of exports and imports
Further adjustments made to the survey data: -

DS_34. Exports and imports of services survey OSAP 1470

The international trade in services statistics survey collects information on the service transactions between residents and non-residents. The number of PSIs is about 5.000 and the non-established traders, commercial agencies of foreign entities, Hungarian travel agencies and some other entities (companies under liquidation or liquidated, negative responders or enterprise with low value of international service transactions, etc.) are excluded. Cut off sample is used and the main sources for sampling are the VAT-information, different registers and other information (news, internet, etc.). Electronic data collection system is built up and several tools, checks, nomenclature and information help the PSIs to report.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+50 days
Main variables used in QNA: Exports and imports of services by services groups
Further adjustments made to the survey data: -

DS_35. Extrastat dispatches and arrivals (OSAP 2193)

The Hungarian Extrastat meets the requirements of the basic regulation (Regulation No 471/2009) and implementing provision (Commission Regulation No 92/2010). Extrastat uses statistical data of the customs declaration (Single Administrative Document, SAD). Legal entities and natural persons are liable to lodge declaration and the statistical information of SAD arrives from the National Tax and Customs Authority (NTCA) in general.

Link to surveys undertaken at the European level: Extrastat
Periodicity: continuous
Time of availability of results: t+48 days
Main variables used in QNA: Free-at-frontier value of exports and imports
Further adjustments made to the survey data: -

DS_36. Representative price statistics of external trade (OSAP 1005)

Price indices of homogeneous commodity groups (food, beverages, tobacco; crude materials; fuels) are worked out on the basis of HUF values and quantity data. As for the price indices of heterogeneous commodity groups (manufactured goods; machinery and transport equipment) data supplied by enterprises are used. Indices are aggregated by total turnover weights of commodities. From 2003 price indices are calculated on a monthly basis by the Fisher type formula. Price indices may change during the reference year.

Link to surveys undertaken at the European level:-
Periodicity: monthly
Time of availability of results: t+48 days
Main variables used in QNA: Transaction unit price of the exported and imported products observed as representative items
Further adjustments made to the survey data:-

DS_37. Monthly Institutional Labour Report (MILR) (OSAP 2238)

The MILR contains on the organisational level such disbursements as payroll expenses and other staff expenses (traditional earnings and other labour income), and data regarding the staff number and working hours broken down by staff groups (employed: full-time, not full-time, manual/non-manual occupation; other workers). The data collection itself has a history going back several decades at the HCSO.

Units of the data collection:

- Enterprises employing at least 5 persons

- The employers employing 5-49 persons are observed by using a sample on the branches A-C, E-N, and P-S by the statistical main activity (NACE Rev. 2)
- A full-scope observation is carried out on the employers employing at least 5 persons that belong to branch D by the statistical main activity (NACE Rev. 2)
- A full-scope observation is carried out on the employers employing at least 50 persons that belong to the branches A-C, E-N, and P-S by the statistical main activity (NACE Rev. 2)

- Full-scale observation of budgetary institutions produced from data of central payroll system provided by the Hungarian State Treasury

- Observed non-profit organisations

- A full-scope observation is carried out on the employers employing at least 3 persons that belong to the branches P and Q by the statistical main activity (NACE Rev. 2)
- A full-scope observation is carried out on the employers employing at least 50 persons that belong to the branches A-O and S by the statistical main activity (NACE Rev. 2)

The last year for MILR was 2018. From 2019 it became quarterly named Quarterly Institution Labour Report (OSAP 2009), available at t+50 days.

Link to surveys undertaken at the European level: STS
Periodicity: monthly, (from 2019 Q1 quarterly)
Time of availability of results: t+37 days
Main variables used in QNA: Employment, Total hours worked
Further adjustments made to the survey data: -

DS_38. The Labour Force Survey (LFS) and its additional recordings (OSAP 1539)

This data source, the Labour Force Survey (LFS) collects data about the economic activity of population aged 15–74 years living in private households. From December 2014, grossing up of LFS data is based on the adjusted population number of the 2011 census. The Labour Force Survey is based on a multi-stage stratified probability sample design. In case of larger, "self-

representing" settlements the primary sampling units are dwellings. On the other hand, in case of smaller settlements, the first stage of sampling is the selection of settlements. Since 1998, the number of addresses selected for the sample in a quarter is about 38 thousand. The survey is continuous, the quarterly sample consists of three statistically independent monthly sub-samples. The basis of grossing up is the population number in the survey period estimated with the help of a mathematical model. The number of population (living in private households) in each population group is calculated by multiplying the sample values of the different strata with the proper weight and summing them up.

Link to surveys undertaken at the European level: LFS
Periodicity: monthly
Time of availability of results: t+27 days
Main variables used in QNA: Employment, Total hours worked
Further adjustments made to the survey data:-

DS_39. Social Security Reports (OSAP 2326)

This is a monthly administrative data source since 2018 based on social security reports provided by the National Tax and Customs Administration. It is used for the estimation of number of employee in S.1 and compensation of employees in S.11 since 2018.

Link to surveys undertaken at the European level: -
Periodicity: monthly
Time of availability of results: t+40 days
Main variables used in QNA: Compensation of employees, Number of employees
Further adjustments made to the survey data: -