



An
Phríomh-Oifig
Staidrimh

Central
Statistics
Office

Standard Report on Methods and Quality for National Accounts

Standard Report

On

Methods and Quality

For

**NATIONAL ACCOUNTS RESULTS
COMPILATION**

This documentation applies to the reporting period:

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1 Overview

The National Accounts compilation system consists primarily of statistical surveys which are supplemented by the use of internal CSO data on merchandise trade and internationally traded services as well as administrative data from public bodies and miscellaneous data collected from a variety of sources along with some minor additional estimation.

The data collection, capture and processing arrangements are designed to meet not only a number of national accounts- related statistical requirements but also institutional sector financial accounts demands.

Services data collection is statutory and providers are required to supply information under the Statistics (Balance of Payments and Financial Accounts) Order of 2016 issued under the Statistics Act of 1993. The collection system is a multi-survey operation. Financial services, manufacturing and non-financial service enterprises are required to supply transactions data during the reference period on services sold or purchased, income receipts and payments, transfer receipts and payments and also balance sheet data. In addition, transaction/position data vis-à-vis Irish residents are collected for national and financial accounts purposes. A geographical breakdown of the above information is also reported. To reduce the reporting burden, companies with lower levels of activity report annually.

Quarterly information on merchandise trade and travel statistics are obtained from the relevant compiling divisions within the CSO. Administrative data from government departments (or their agencies) and from the Central Bank of Ireland (CBI) are also used.

Apart from the quarterly data obtained from direct collection, internal CSO or external administrative sources, ancillary information to assist with the compilation of results is also used. This largely consists of: Irish Stock Exchange listings; currency exchange and interest rates; CBI statistics; and any other relevant statistical information from industry association or other sources.

Qualitative information useful for statistical register purposes is obtained from the CSO Central Business Register (CBR) and from other sources. In addition, information from the Department of Finance, the CBI and the Companies Registration Office (CRO) is used in the maintenance of the financial services enterprises section of the register. Individual company data from the internal CSO merchandise trade statistics database, along with any useful information from newspapers, periodicals, etc., are used as inputs into the statistical register system.

Data from the CSO's structural business statistics Annual Services Inquiry (ASI) and Census of Industrial Production (CIP) feeds into the compilation of the annual results.

The results, which are of a macro-economic nature, are published nationally by CSO in statistical release form on a quarterly and annual basis as follows:

- Quarterly National Accounts
- Annual National Income & Expenditure Accounts
- Quarterly & Annual Gross Value Added for Foreign-owned Multinational Enterprises and Other Sectors
- Quarterly & Annual Institutional Sector Accounts
- Annual National Accounts Output and Value Added by Activity
- Annual Supply and Use Accounts
- Annual Regional Accounts & County Incomes
- Annual Productivity in Ireland

The results are also available on CSO's website (www.cso.ie) and on the CSO databank (Statbank).

Various results tables are also supplied to the EU Commission (Eurostat) and to the European Central Bank (ECB) as statutorily required. In addition, we transmit results to the International Monetary Fund (IMF) and to the Organisation for Economic Co-operation and Development (OECD).

The results are used for a variety of purposes depending on particular user requirements. Nationally, the figures are used in conjunction with the Balance of Payments results to assess Ireland's economic

performance. They are also used to assess investment trends in relation to the type and magnitude of foreign investment into Ireland as well as investment abroad by Irish residents. In addition, individual industry bodies and public and semi-state bodies assess foreign trade patterns and developments.

The international organisations use the figures for similar purposes but the ECB has a particular interest in them for assessing and developing monetary policy for the euro area. Eurostat and the ECB use national data to compile aggregate statistics for the EU and Euro Areas respectively.

2 General Information

2.1 Statistical Category

Primary statistical surveys combined with internal CSO data and data obtained from administrative records and from other miscellaneous sources.

2.2 Area of Activity

National Accounts output volumes (GDP), institutional sector accounts, supply and use accounts (S&U), regional accounts.

2.3 Organisational Unit Responsible, Persons to Contact

National Accounts and related statistical compilation in the CSO is the responsibility of four divisions within the Directorate Macroeconomic Statistics. These are the Integration, Data Collection & Quality, Annual Outputs and Government Accounts divisions.

The Data Collection & Quality division is responsible for compiling data on operating surplus, mixed income and compensation of employees. The Annual Outputs division produces estimates of personal consumption, capital formation and stocks. Regional accounts and Supply and Use tables are also compiled in this division. The Integration division is responsible for overall co-ordination of the accounts. It includes a Large Cases Unit (LCU) dealing with the consistency of statistical returns from major enterprises. This consistency exercise plays a major role in validating and balancing the accounts. This division is also responsible for the compilation of estimates of output at constant prices, the non-Financial Institutional Sector Accounts and the measurement of gross national income (GNI).

The Government Accounts division, comprising Compilation & Outputs and Classifications, produces Government Finance Statistics (GFS) accounts; this includes supporting the compilation of Excessive Debt Procedure (EDP) statistics.

The other two divisions in the Macroeconomic directorate are Balance of Payments and External (Merchandise) Trade. In addition to publishing their own results, they also provide a large amount of data for use in the national accounts.

Two other statistical directorates also help provide much of the data used in compiling the accounts. The Business statistics directorate provides structural data on industry and services, data on earnings, stocks and investment as well as detailed product data (Prodcum) for use in the commodity flow calculations. The Agriculture accounts division provides estimates of value added in that sector.

The Social and Demographic statistics directorate provides regular information on employment levels from the Labour Force Survey (LFS), while information on prices is provided for use in the constant price estimates.

Queries should be directed to the following contacts:

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2.4 Objectives and Purpose; History

National accounts in Ireland are compiled according to the European System of National and Regional Accounts (ESA) framework. In 2014, the ESA 2010 framework replaced the ESA 95 version.

The National Accounts form a comprehensive framework within which economic data can be presented in a coherent, consistent manner. There are three approaches to measuring National Income, each of which theoretically gives the same answer, i.e.

- * output (value added by each producer);
- * income (all income generated);
- * expenditure (all spending on final demand)

In Ireland, the income and expenditure approaches primarily are used.

For the income estimate, the main components are:

- * profits of companies and of the self-employed
- * remuneration of employees (wages, salaries and employers' contributions to social insurance and pension funds including imputed contributions in respect of public service employees)
- * rent of dwellings (imputed in the case of owner-occupied dwellings)

Adjustments are made in respect of stock appreciation (to eliminate the effect of price changes on the level of stocks).

On the expenditure side, estimates are made of:

- * personal expenditure on consumers' goods and services
- * expenditure by central and local government on current goods and services

- * gross domestic fixed capital formation
- * value of physical changes in stocks.

The value of exports is then added and imports are deducted. The two approaches (income and expenditure) should theoretically give the same answer. However, they will always diverge to some extent as they are derived from different data sources. The components of the two original estimates are shown unadjusted. The official level of GDP is taken to be an average of the expenditure and income estimates and a balancing item (statistical discrepancy) is displayed, which is half of the difference between the two estimates. This is the amount by which both estimates have to be adjusted to agree with the official level of GDP.

Across the compilation of the GDP approaches, the available data sources themselves are analysed for consistency at a company/enterprise level (most significantly for Large Case Unit (LCU) company returns), to achieve balanced results as much as possible. The final balancing adjustment made i.e. the statistical discrepancy, is computed as the arithmetic mean of the remaining difference between the aggregates.

From last year onwards, we have also included output and intermediate consumption data generated under the output approach. Comparing this data with the existing income approach aggregates is a means of informing and validating any adjustments made. The process of adjustments results in a sectorally balanced output approach and income approach gross value added (GVA) total. The company/enterprise level interrogation process also informs major components of the expenditure approach i.e. exports, imports, inventories, gross fixed capital formation (GFCF). The consumption of fixed capital (CFC) flows related to the GFCF results feed back into the gross operating surplus (GOS) calculations under the Income Approach (IA). It also informs the property income flows in the transition from GDP to GNI.

For internationally-traded goods and services (export and imports), the quarterly Balance of Payments (BOP) data, based on statutory CSO statistical surveys and supplemented with administrative data, is an input to the national accounts aggregates, GDP (Gross Domestic Product) and GNI (Gross National Income). The BOP compilation methodology adheres as closely as possible to the international statistical recommendations, chiefly the IMF's BOP Manual 6th Edition, 2008 (known as BPM6).

While the CSO is the official compiler of the BOP statistics referred to, over the years there has been very close on-going liaison and co-operation between the CSO and the Central Bank of Ireland (CBI) concerning compilation of the quarterly and annual results, as well as monthly estimates for ECB purposes. This co-operation primarily centres on statistics relating to financial enterprises and continues to deepen with developments both nationally and at European level.

The national accounts results are also supplied to Eurostat, the IMF and OECD and presented according to each organisation's requirements in terms of frequency, content and analytical detail.

As economic and financial globalisation develops and as statistical requirements change, the national accounts compilation system is modified and developed as necessary and appropriate to reflect the resulting changes.

2.5 Periodicity

The detailed annual accounts for year t are published in June of year t+1, alongside the results for Quarter 1 of year t+1. An initial GDP estimate for year t, based on the sum of the quarterly accounts is available in mid-March, upon publication of the results for Quarter 4 of year t. We publish quarterly national accounts data for Quarters 2, 3 or 4 within 70 days after quarter-end.

Quarterly institutional sector accounts are prepared subsequently, with a deadline of 90 days after quarter-end. An annual time series from 1999 onwards is also updated by end-year.

The other national accounts publications are annual:

- Supply and Use tables (latest edition is for 2016, published November 2019).
- County Incomes and Regional Accounts (latest edition is for 2017, published February 2020).
- Capital Stock of Fixed Assets (latest year 2018, published November 2019).

2.6 Client

The national accounts statistics are compiled for use by both national users and by the international organisations (primarily Eurostat, ECB, IMF and OECD). Eurostat and the ECB have statutory bases for requiring the supply of the data.

2.7 Users

National users: The CSO, Department of Finance (DoF), Department of Public Expenditure and Reform (DPER), CBI, Irish Fiscal Advisory Council (IFAC), National Treasury Management Agency (NTMA), economic commentators, the media, third level educational institutions, the public at large.

International users: Eurostat, ECB, IMF, OECD, World Bank, UN.

2.8 Legal basis

The Statistics Act of 1993 is the primary legal basis for collecting the required data from providers. It came into operation on 1 November 1994 and updated existing statutory provisions. The statistical legislation gives the CSO the authority, via Statutory Orders made by the Taoiseach, to compel any persons, households, businesses, etc. to provide statistical information on any matters relating to the general economic and social aspects of the country.

National Accounts draws on several internal CSO releases & publications to compile results. These, in turn, meet their data reporting obligations by invoking the various relevant European Communities Regulations, e.g.

Annual Services Inquiry (ASI) and Census of Industrial Production (CIP): European Structural Business Statistics Regulation No. 295/2008; also Statistics (Structural Business Inquiries) Order 2017 (S.I. No. 572 of 2017)

Earnings, Hours and Employment Costs Survey (EHECS): Council Regulation No. 1216/2003 and Council Regulation No. 1503/2006 concerning structural statistics on earnings & labour costs; also Statistics (Labour Costs Survey) Order 2018 (S.I. No. 115 of 2018).

Quarterly National Household Survey (QNHS): Council Regulation No. 577/1998 for quarterly labour force survey; Note that the Labour Force Survey (LFS) replaced the Quarterly National Household Survey (QNHS) from Q3 2017. The purpose of the survey is the production of quarterly labour force estimates and occasional reports on special social topics.

A recent example of a Statutory Order is the Statistics (Balance of Payments and Financial Accounts) Order No. 91 of 2020. It essentially provides for a comprehensive data collection system concerning balance of payments related statistics as well as national accounts-related information, including the acquisition of information on the transactions and activities of entities acting on behalf of clients.

3 Statistical Concepts, Methods

3.1 Subject of the Statistics

The statistics produced and published tend to be broadly described as national accounts and related statistics. As such, they cover the following specific statistical outputs:

- National Accounts
- Institutional Sector Accounts
- Supply and Use Accounts
- Regional Accounts & County Incomes

National Accounts

The National Accounts form a comprehensive framework within which economic data can be presented in a coherent, consistent manner.

The following are the main features of the principal economic aggregates. Note that the term *GDP* (Gross Domestic Product) is reserved for valuation at market prices while *Value Added* is used for other valuations of the aggregate previously known as GDP.

Of the three valuations being shown i.e. Market Prices, Factor Cost and Basic Prices, the first two were always provided in the publications which preceded the adoption of the ESA 2010 methodology.

Gross Value Added at factor cost is equal to the sum of the values of the goods and services (or part thereof) produced in the country without deducting an amount in respect of capital consumption (i.e. depreciation). It excludes taxes on production and includes subsidies on production.

Net Value Added at factor cost is equal to Gross Value Added at factor cost minus depreciation.

Gross Value Added at basic prices is equal to Gross Value Added at factor cost plus other (i.e. non-product) taxes on production minus other (i.e. non-product) subsidies on production. It can be also measured as GDP (at market prices) minus product taxes plus product subsidies.

Gross Domestic Product at market prices is equal to Gross Value Added at basic prices plus taxes on products less subsidies on products. It represents total expenditure on the output of final goods and services produced in the country (“final” means not for further processing within the country) and valued at the prices at which the expenditure is incurred.

Gross National Income at market prices is equal to Gross Domestic Product minus primary income payable by resident institutional units to non-resident units plus primary income receivable by resident units from the rest of the world. It therefore represents total primary income available to resident institutional units of the country.

Alternatively it may be described as GNP plus EU subsidies minus EU taxes.

Net National Income (NNI) is equal to GNI minus depreciation

Gross National Product (GNP) is the equivalent GDP plus or minus Net Factor Income (NFI) flows from the Rest of the World. While NFI can take either a positive or negative value, it has been negative in Ireland's case for all years from 1995 onwards, both at Current Prices and Chain Linked).

Modified Gross National Income (GNI*) at current market prices is equal to Gross National Income less the factor income of re-domiciled companies, less depreciation on research and development (R&D) service imports and trade in intellectual property products (IPP) and less depreciation on aircraft related to aircraft leasing.

National accounts are compiled according to the European System of National and Regional Accounts (ESA) framework. In 2014, the new ESA 2010 framework replaced the ESA 95 version. ESA 2010 is the European version of the current UN mandated international standards for national accounts statistics, the System of National Accounts (SNA) 2008. The results for all years in CSO national accounts releases are published on an ESA 2010 basis. For Ireland, the ESA 2010 change with the greatest impact on gross domestic product (GDP) was the new treatment of research and development (R&D) expenditure. Under ESA95, R&D expenditure was treated as an ancillary cost to the main production of an enterprise. Under ESA2010, R&D expenditure is recognised as capital investment.

Volumes or Constant price estimates

Two measures of GDP (output and expenditure) are compiled annually at previous year's prices and chain linked to a reference year. (Prior to 2004, the volume (constant price) measures were calculated to a fixed base). The output measure is obtained by using various output indicators to project forward the previous year's value added. On the expenditure side, the current price estimates are deflated to the previous year's prices using appropriate price indices. The average of the two provides the official GDP to base the previous year and is used to produce the annual volume change in GDP. The annual volume changes are then chain linked.

It should be noted that under the system of chain linking individual components are chain linked independently of their aggregates. Thus, the expenditure estimate of GDP, in constant prices on a chain linked basis, is not derived by adding the chain linked values of personal consumption, government expenditure, capital expenditure, stock changes and exports minus imports. Rather it is estimated by linking the year to year volume changes in GDP (which have been calculated to base the previous year) to the GDP value in the base year. This results in the loss of additivity for years prior to the Chain Linked reference year (i.e. for years prior to 2018 for NIE 2019) by which is meant that the sum of the chain linked components do not add to the chain linked aggregate.

In addition there is the extra complication that the official volume estimate of GDP is the average of the expenditure estimates of GDP (to base the previous year) and the output estimate of GDP (to base the previous year). Thus, before the chain linking process even begins, the GDP volume estimate cannot be derived as the sum of its components.

A summary of the volume estimates calculation by sector is as follows:

Two principal methods have been used to derive gross value added at factor cost at constant prices as given in the tables.

The first method, which may be called the *double deflation* method, consists of valuing both the output and the input (expenses) of the sector at base year prices (now previous year prices). The difference between output and input is the gross product, *gross* signifying that depreciation has not been deducted as an expense. This is the basic approach used for the agricultural sector and for rent of dwellings.

The second method consists of estimating an index of volume of output for the sector for a series of years and then multiplying the base year (now previous year) gross value added by these index numbers to derive the gross value added figures for other years. This method is widely used since, for most sectors, there is considerable difficulty in expressing the inputs at constant prices. If at constant prices the ratio of input to output remains unchanged, both methods would give identical results.

The estimates for agriculture incorporate the official indices for agricultural output. In the case of industry, the estimates are based on the official industrial production indices adjusted for the impact of royalties on intermediate consumption. The choice of suitable volume indicators on which to base volume index numbers in certain other sectors, however, raises conceptual problems which have not yet been solved satisfactorily. The service type industries include distribution, transport, software and communication, insurance, banking and finance, education, health, professional and miscellaneous services and public administration and defence. In certain industries, e.g. transport, suitable volume indicators such as passenger-miles and freight tonne-miles are available; in other industries it is more difficult to obtain volume indicators.

Particular difficulty is experienced in estimating the output of public administration and defence and other services provided by central and local government. In most of these cases no reasonable measure of output is available and the practice adopted is to apply an index of employment, where available, to the base year remuneration. Where reliable data are not available the implied index of rates of remuneration is used to deflate current values. The effect of using this method is to assume no increase in productivity. However, since NIE 2005, special methodologies have been developed for the calculation of the value added of the education and health services provided by government. The revised methodology for education uses pupil numbers, stratified by level of education in primary and second level, and by level of education and subject at third level to derive an overall volume index. This index is applied to base year unit costs. A quality adjustment is included in the calculation to take account of the number of teachers working in the education system.

The output of the health service is measured using a weighted index comprising measures of in-patient services, out-patient services and medical card services, applied to the base year remuneration. The value added for both education and health are captured as part of the total "Public administration, education and health" figure in NIE Table 4.

In the external account imports and exports of merchandise are expressed at constant prices by using import and export unit value indices. Invisible (i.e. non-merchandise) non-factor items are deflated separately by the most appropriate price index on consideration of the nature of the flow in question. The aggregate value of the imports of goods and non-factor services at constant prices is then determined and a general price index for the aggregate is deduced. Similarly, a general price index for the aggregate value of the exports of goods and non-factor services is calculated.

This implied price index for exports of goods and non-factor services is then used to deflate net factor income from abroad in years when this item is negative. In years when it is positive it is deflated by the implied price index for imports of goods and non-factor services. Net current international transfers are similarly deflated. The rationale for this approach is that a positive net factor income flow can be used to finance imports while a negative net factor income flow must be met with increased exports. From the year 1999 onwards exceptional income payments have had to be deflated separately.

Where taxes on expenditure and subsidies relate to particular goods, the rate of tax or subsidy per unit quantity of the item taxed or subsidised, if available, is used to derive an index to deflate current values. In the case of *ad valorem* duties both the rate of duty and an appropriate price index are used to compile constant price data. If neither of these methods of deflation can be used the estimation of a constant price series is made by using volume indicators appertaining to the relevant industry or by deflating by a suitable price index. In a few cases, where the taxes on expenditure or subsidies were not in operation in the base year, they are by definition, omitted from the constant price series.

Gross Value Added for Foreign-owned Multinational Enterprises and Other Sectors

Gross value added at basic prices is measured as the difference between output at basic prices and intermediate consumption at purchasers' prices. This annual release provides gross value added at current basic prices and constant basic prices (to be chain linked and referenced to 2018 for its latest edition) for the economy divided into two sectors, namely

- (a) the economic sectors dominated by Foreign-owned Multi National Enterprises and
- (b) all other remaining sectors.

It also provides data concerning the composition of the Foreign-owned multinational dominated sector. The results for all years are published on an ESA 2010 basis.

The sectoral data underlying the aggregates in the release are the same as those used for National Income & Expenditure (NIE 2019) Table 4, which gives a breakdown of the economy at Constant Basic Prices by 10 principal economic sectors (Nace Rev.2 A10), and NIE Table 22 which illustrates a 37 sector breakdown of the Irish economy. The following is the correspondence with the relevant NIE and Nace Rev. 2 sectors.

NIE Sectors	Nace 2 Sections	Foreign-owned MNE dominated (Nace codes)	Other (Nace codes)
Agriculture, forestry and fishing	Section A		01-03
Industry (excluding Construction)	Sections B to E	18.2, 20, 21, 26, 27 and 32.5	05-18.1, 19, 22-25, 28-32.4 and 32.9-39
<i>Of which: Manufacturing</i>	<i>Section C</i>	18.2, 20, 21, 26, 27 and 32.5	10-18.1, 19, 22-25, 28-32.4 and 32.9-33
Construction	Section F		41-43
Distribution, transport, hotels and restaurants	Sections G to I		45-56
Information and communication	Section J	58, 63	n.a.
Financial and insurance activities	Section K		64-66
Real estate activities	Section L		68
Professional, admin and support services	Sections M to N		69-82
Public admin, education and health	Sections O to Q		84-88
Arts, entertainment and other services	Sections R to T		90-98

Output and Value Added by Activity

This publication presents the results of the calculation of Gross Value Added (GVA) by the CSO using the Output method. GVA can be considered as Gross Domestic Product (GDP) in basic prices (i.e. with product taxes and product subsidies removed). The Output Method measures GVA as the value of Output less the value of goods and services used in producing these outputs. The basic elements of the Output method are therefore Output, Intermediate Consumption and Value Added (GVA = Output minus Intermediate Consumption).

Output includes production of goods and services supplied or intended for supply to units other than their producers, including those used up in the production process. Also included are own-account production of goods retained by their producers for their own final consumption or gross fixed capital formation and own-account production of housing services produced by owner-occupiers. Excluded from the production boundary are domestic and personal services produced and consumed within the same household.

The underlying definitions used are those of the European System of Accounts (ESA) 2010. ESA 2010 is the European version of the current UN mandated international standards for national accounts statistics, the System of National Accounts (SNA) 2008.

Productivity in Ireland

This publication is in its third year and aims to develop understanding and inform the discussion around productivity in the globally-integrated Irish economy. Productivity growth which drives the change in value added is explained in terms of labour productivity, capital services and multi-factor productivity. Labour productivity is the contribution of hours worked to changes in value added, while capital services measure the contribution of the stock of capital to changes in productivity. Multi-factor productivity, critically, measures the impact of improvements in production methods on productivity.

The publication also includes estimates for KLEMS or Gross Output based productivity and a quality adjusted (QALI) estimate for labour input covering several key economic sectors in the Irish economy. KLEMS (stands for Capital, Labour, Energy, Materials and Services) provides a more detailed statistical decomposition on the inputs, which include capital, labour, energy, materials and services that contribute to output growth and production efficiency. Under the KLEMS framework, gross output can be broken down into the contributions from Labour, Capital and Multi-factor productivity, as well as contributions from intermediate inputs. The intermediate inputs can be broken down into the individual contributions from Energy, Materials and Services.

For the Gross Value Added (GDP based) approach, estimates of labour productivity, capital services and multi factor productivity are all detailed for an extended twenty- one economic sector model of the Irish economy.

Increases in productivity growth are generally associated with improvement in living standards. However, in the case of the Irish economy a note of caution must be sounded; because of the high concentration of foreign owned Multinational Corporations, there are instances of very high productivity growth that result in a limited spill-over into the Domestic and Other sector of the economy. Therefore, where it is meaningful and technically feasible the productivity measures for the economy have been reported separately for the Foreign Sector which is dominated by Multinational Corporations and the remaining Domestic and Other Sector, as presented in the CSO's *Gross Value Added for Foreign-owned Multinational Enterprises and other Sectors*.

Institutional Sector Accounts

The institutional sector accounts present the national accounts aggregates in an alternative way; they provide comprehensive information on the economic activities of households, non-financial corporations, financial corporations and the government, and also on the interactions between these sectors and the rest of the world. In addition, the accounts link financial and non-financial statistics, thereby allowing for an integrated analysis of non-financial economic activities (such as gross fixed capital formation) and financial transactions (such as the issuance of debt). Important economic indicators can be derived from institutional accounts such as the household saving rate, the profit share of corporations and the investment rates of the households and corporate sectors.

The institutional sector accounts draw on a wide range of sources, including many that are used in the compilation of other sets of CSO statistics; the main relationships to other published CSO series are as follows:

- the non-financial accounts are based on, and are largely consistent with, the annual reports on National Income and Expenditure (NIE) and Balance of Payments (BoP). However, there are some methodological differences between the data contained in the NIE and BoP reports and those published in the present report. The sector accounts comply with the revised European System of Accounts (ESA2010) methodology in order to ensure greater international comparability.
- the financial transactions account is consistent with the balance on the financial account in the Balance of Payments.

Supply and Use Accounts

Supply and Use tables are prepared, transmitted and published annually, in line with both ESA95 and ESA2010 requirements. The latest version, describing 2016, was transmitted to Eurostat and published domestically in November 2019. While the Supply and Use tables are not yet integrated into the annual GNI compilation process, they are used to inform our work under the output, income and expenditure approaches.

They are initially constructed using 82 industry and 82 product groups, and balanced at this level.

The tables are then condensed as necessary for both confidentiality (primary and secondary) and quality purposes; the level of detail in the transmitted tables is the NACE Rev.2 A64 industry groups and A64 product groups.

In these tables the final demand aggregates and the components of value added are taken from the national accounts which provide control totals. In other words the relevant year main aggregates and sub-aggregates are consistent with the NIE compiled simultaneously with the Supply and Use tables. The 2016 Supply and Use tables are consistent with the 2016 aggregates in NIE2018 published in the summer of 2019.

The starting point of the tables is the CSO business surveys (e.g. Census of Industrial Production, the Prodcum Inquiry and Annual Services Inquiry). Considerable use is also made of published reports of government departments, semi-state bodies and financial institutions. Tax datasets from the Revenue Commissioners provide income-based information. Producing Supply and Use and Input-Output tables thus requires the examination of consistency and coherency of data and aggregates from national accounts, external trade statistics, balance of international payments results and data provided by the business surveys.

Regional Accounts & County Incomes

Regional accounts have been published annually since 1997, and county income data since 2000. The regional classifications are based on the NUTS (Nomenclature of Territorial Units) classification used by Eurostat. In Ireland's case, results are presented for the eight Regional Authority NUTS3 regions outlined in section 3.12 below. We also calculate aggregate results for the State's two NUTS2 regions i.e. "Border, Midland and Western" region and "Southern and Eastern" region.

The more significant aggregates in all tables in these accounts (e.g. gross value added, compensation of employees) are further broken down by economic sector according to the NACE Rev.2 classification system.

Household Primary Income is defined for National Income purposes as follows: compensation of employees *plus* Income of self-employed *plus* Rent of dwellings (including imputed rent of owner-occupied dwellings) *plus* Net interest and dividends.

The last component is a net item, which implies that payments by households of interest are deducted in deriving primary income.

Total Income is defined as: Primary income *plus* Social benefits *plus* Other current transfers

Disposable Income is defined as Total income *minus* Current taxes on income (i.e. Income taxes, other current taxes) *minus* Social insurance contributions.

3.2 Units of Observation/Collection Units/Units of Presentation

The unit of observation is primarily the enterprise. The unit of collection is either the observation enterprise or an entity acting on behalf of the observation enterprise or a number of such enterprises. The results are macro-economic in nature and are published for the economy of Ireland as a whole with a variety of analytical breakdowns (gross value added by component of final demand like compensation of employees or gross operating surplus, by expenditure component such as personal consumption or gross fixed capital formation, by industrial sector using the NACE Rev.2 classification, by type of institutional sector involved, etc.).

3.3 Data Sources

Much of the data is drawn from internal CSO surveys e.g. Balance of Payments surveys. These are supplemented by quarterly information on merchandise trade and travel statistics obtained from the relevant compiling divisions within the CSO. Administrative data from government departments, and/or agencies such as the Revenue Commissioners are also used. Apart from the quarterly data obtained from direct collection, internal CSO or external CBI and administrative sources, ancillary support information to assist with the compilation of results is also used. This largely consists of: Irish Stock Exchange listings; currency exchange and interest rates; CBI statistics; and industry association or any other relevant statistical information.

3.4 Reporting Unit/Respondents

n/a

3.5 Type of Survey/Process

n/a

3.6 Characteristics of the Sample/Process

3.6.1 Population and Sampling Frame

n/a

3.6.2 Sampling Design

n/a

3.7 Survey Technique/Data Transfer

n/a

3.8 Questionnaire (including explanations)

n/a

3.9 Participation in the Survey

n/a

3.10 Characteristics of the Survey/Process and its Results

n/a

3.11 Classifications used

The statistics published and disseminated are presented to show a broad economic activity breakdown which is based on the EU NACE Rev. 2 classification.

In tables 2 to 4 of the *National Income and Expenditure* (NIE) publication, the following is the correspondence with the relevant sections of NACE Rev. 2:

Agriculture, forestry and fishing	Section A
Industry (excl. construction)	Sections B to E
Construction	Section F
Distribution, transport, hotels and restaurants	Sections G to I
Information and communication	Section J
Financial and insurance activities	Section K
Real estate activities	Section L
Professional, administrative and support services	Sections M & N
Public Administration, Defence, Education and Health	Sections O to Q
Arts, Entertainment and Other Services	Sections R to U

For further information on the NACE Rev. 2 classification of industrial activity, see:

<https://www.cso.ie/en/methods/classifications/industrialactivity/>

Since 2012, the annual NIE has included a much more detailed sectoral breakdown of GVA for 37 sectors of the economy in current and constant values, at basis prices (in contrast to NIE Table 3 which

uses the “factor cost” valuation). “Basic prices” is the valuation used in EU publications and differs from “factor cost” in that overhead taxes (such as rates) are included in the basic prices valuations while overhead subsidies are excluded.

The institutional sector accounts use the ESA 2010 classification system. They distinguish the following: non-financial corporations (S.11), financial corporations (S.12), general government (S.13), households and non-profit institutions serving households (S.14/15), and Rest of World (S.2).

The regional and county income accounts follow the Eurostat NUTS (Nomenclature of Territorial Units) classification.

3.12 Regional Breakdown of Results

The annual and quarterly national accounts statistics refer to Ireland as a single regional unit. The regional accounts (see the Eurostat classification by county below), published annually with a t+2 year time lag, are described in section 3.1 above.

Note that the Eurostat classifications were revised for the two most recent editions, as required under EU directive, into three NUTS 2 Regions which correspond to the Regional Assemblies (Northern & Western, Southern, Eastern & Midland) established in the 2014 Local Government Act.

Northern and Western NUTS 2 Region

Border	Cavan, Donegal, Leitrim, Monaghan and Sligo
West	Galway County, Galway City, Mayo and Roscommon

Southern NUTS 2 Region

Mid West	Limerick County, Limerick City, Clare and Tipperary
South East	Waterford County, Waterford City, Carlow, Kilkenny, Wexford
South West	Cork County, Cork City and Kerry

Eastern and Midland NUTS 2 Region

Dublin	Dublin City, Dun Laoghaire-Rathdown, Fingal and South Dublin
Mid East	Kildare, Louth, Meath and Wicklow
Midland	Laois, Longford, Offaly and Westmeath

4 Production of the Statistics, Data Processing, Quality Assurance

4.1 Data Capture

For BOP survey operations, the CSO operates an integrated computer processing system (Bopfacts) using Sybase relational database technology. A standard processing approach applies to all quarterly surveys and administrative data. The system was designed to streamline the entire statistical production operation. Where data are returned in electronic form, they are imported through a bulk loading process into the database. Any forms received in hard copy are keyed manually into the database.

4.2 Coding

Country and currency codes are assigned automatically in Bopfacts. Other codes (e.g. economic activity, institutional sector) are obtained automatically from the Balance of Payments register (SMS).

4.3 Data Editing

On receipt in the CSO, all quarterly (and annual) returns in paper form are manually checked for obvious reporting errors. If no errors are apparent, the data are keyed into the Sybase database (Bopfacts) and undergo various automated consistency and plausibility data checks. Where data are returned in electronic form, they are subjected to a similar checking procedure once imported into Bopfacts. If the data fail the more important checks, the CSO contacts the company concerned to query the data and make any necessary corrections.

4.4 Imputation (for Non-Response or Incomplete Data Sets)

Estimates are made for partial or complete non-responses using either automated or manual imputation procedures. These estimates are based on previous returns made by the entity or on returns made by similar entities. Data available from Revenue, CBI and CRO are also used in making these estimates. This facility is largely applied only to non-returning smaller companies surveyed, as the larger companies are pursued until the data are supplied.

4.5 Grossing and Weighting

Profits and trade in services of the relevant manufacturing and non-financial service companies not covered by the BOP surveys are estimated from Census of Industrial Production and Annual Services Inquiry returns. These are geographically allocated according to the overall country breakdown for the relevant BOP survey, and are added to the results of the surveys.

4.6 Computation of Outputs, Estimation Methods Used

The quarterly survey data are converted to single euro within the BOP IT system, Bopfacts. Once verified and further processed as necessary, the data from all surveys are summarised in the National Accounts IT System to produce the results. Apart from the analyses available within BOP and National Accounts processing systems, further analyses are undertaken using SAS (Statistical Analysis System) software. The outputs required by various users are generated from the database and these are then used to prepare the tables for national publication and also to provide the data required by the ECB, Eurostat, IMF and OECD.

4.7 Other Quality Assurance Techniques Used

The Large Cases Unit (part of National Accounts Division) of the CSO carries out data collection and checks the consistency of quarterly and annual data returned by large manufacturing and non-financial services companies for various divisions within the CSO, including the BOP Division. The Large Cases Unit liaises on an on-going basis with these divisions and with any company concerned to

determine the reasons for any significant discrepancy or inconsistency. In an on-going effort to improve data quality the Large Cases Unit operates a programme of company visits and liaison so that the CSO becomes aware as early as possible of any material change in companies' operational, accounting or reporting practices affecting the data returned. BOP personnel may participate in these visits and also make visits independently as and when specific BOP problems need to be resolved.

Prior to publication, some further manual checking is also carried out on the trade data, production statistics and profits data to assess its consistency with the BOP results.

As regards financial enterprises, the quality analyses undertaken by the CSO involve comparison of its results with aggregate data available from other sources. These include representative associations for insurance companies, pension funds, collective investment institutions (CIIs e.g. mutual funds, UCITS), government departments, and Revenue Commissioners etc. In addition, the CSO and the CBI undertake a detailed reconciliation of aggregate statistics for Monetary Financial Institutions (i.e. credit institutions and money market funds) each quarter.

5 Quality

5.1 Relevance

The statutory inquiries conducted meet the requirements of Regulation (EC) No 184/2005 of the European Parliament and of the Council of 12 January 2005 on community statistics concerning balance of payments, international trade in services and foreign direct investment (as amended by Regulation Nos. 601/2006, 602/2006, 1137/2008 and 707/2009) and the ECB Guideline ECB/2004/15 (as amended by ECB Guideline ECB/2007/3 and recast in Guideline ECB/2011/23) on the statistical reporting requirements of the European Central Bank in the field of balance of payments and international investment position statistics.

As a result of its role in monitoring Ireland's economic performance, the Department of Finance is interested in all aspects of the National Accounts and BOP. The annual Gross National Income (GNI) results at current market prices are used to determine the level of Ireland's contribution to the EU Budget. In addition, the annual and quarterly Gross Domestic Product (GDP) aggregate is the denominator used in the calculation of general government budget debt and deficit ratios.

Government Finance Statistics (GFS) form the basis for fiscal monitoring in Europe, in particular in relation to the Excessive Deficit Procedure (EDP). European GFS, including EDP statistics are produced according to the legally binding accounting rules of the *European System of Accounts* (ESA2010). The *Manual on Government Debt and Deficit* (MGDD) provides further guidance on the implementation of ESA 2010 in the context of GFS.

EU Member States are required to report government deficit/surplus and debt data biannually under the EDP (before 1 April and 1 October in year N) for years N-4 to N-1 calendar years as well as a forecast for the current year. The data are reported in harmonised tables, providing a consistent framework for the presentation of this data by Member States. The tables as structured can link national budgetary aggregates with government deficit and debt.

In addition to the EDP transmission programme, detailed statistics on Government revenue and expenditure are also provided to Eurostat under the ESA transmission programme.

The main focus of the Department of Enterprise, Trade and Employment is on industrial development in the manufacturing and services sectors. This Department and Forfás, an agency operating under its aegis and involved in attracting foreign direct investment to Ireland, are particularly interested in the direct investment aspects of the BOP, as well as in the data on merchandise and services. Data are also used by stockbrokers, analysts in the field of economic and social research as well as universities.

The CSO supplies data to international organisations such as the ECB, the European Commission (Eurostat), the IMF and the OECD.

5.2 Non-sampling effects

5.2.1 Quality of data sources used

Most of the data collected directly is via the various CSO divisions, such as the Balance of Payments surveys. These are supplemented by, administrative data from other government departments and agencies e.g. Revenue Commissioners. These data sources are considered to be reliable.

5.2.2 Register coverage

Every effort is made to ensure the register coverage is complete. The CSO's Central Business Register (CBR) is the source for non-financial enterprises while information from CBI, Department of Finance, Companies Registration Office and the Revenue Commissioners is used to ensure coverage of relevant financial enterprises.

5.2.3 Non-response

For financial enterprises the response rate for the quarterly BOP surveys is close to 100% while that for non-financial enterprises is over 90%. For the annual surveys the response rate is approximately 70% at the time of first publication. This increases to over 80% at the time of first revision.

5.2.4 Measurement errors

The BOP survey forms were designed in consultation with industry representatives. Large multinational companies provide early estimates on a best effort basis. These are subject to revision and definitive data are provided when final audited accounts become available. The revisions can be substantial at times. Changes in company structure can also lead to revisions.

5.2.5 Accuracy and Reliability

5.2.5.1 Size of revisions

5.2.5.2 Direction of revisions

Over time, it is expected that both positive and negative revisions will occur. If they are systematically positive or negative, it is necessary to analyse the underlying reasons for this, e.g. a lack of coverage in early estimates, and attempt to correct any systematic bias. The availability of data is another factor and the table below illustrates this for a selection of primary statistics.

Data source	Data for Year T available in	Comment
Statistical surveys	T+2 & T+3	Established annual surveys such as the Census of Industrial Production, Annual Services Inquiry and the Prodcom inquiry now generally available in Year T+1.5.
Administrative data including data for Government	T+1 & T+2	Administrative data is generally available in year T+1. This includes information for Central Government. Information for the Local Government sector is slower, but fairly final figures are generally available in Year T+2
Corporate Profits/Gross Operating Surplus & Mixed Income	T+3	Data in the Corporation and Income tax files are finalised in T+3. However, the data available in T+2 would be substantially finalised and revisions in year T+3 would tend to be small.
Imports and exports	T+2	Substantially finalised in Year T+1

5.2.5.3 Reliability of trends

5.3 Timeliness and Punctuality

5.3.1 Provisional Results

The quarterly National Accounts for Quarters 2, 3 or 4 are first published within 70 days after the end of the previous reference quarter. The detailed annual accounts for year t are scheduled for publication in late June of year t+1, alongside the results for Quarter 1 of year t+1. An initial GDP estimate for year t, based on the sum of the quarterly accounts is available by mid-March, upon publication of the results for Quarter 4 of year t.

Quarterly institutional sector accounts are published subsequently, with a deadline of 90 days after quarter-end.

Quarterly and annual results sent to Eurostat, ECB, IMF and OECD follow broadly the same dissemination frequency.

5.3.2 Final Results

As previously stated, the target date for national publication of the annual national accounts estimates is June ($t + 6$ months).

- At the time of publication of first estimates for year t , in June of year $t+1$, these estimates are provisional and subject to amendment;
- Revised estimates for year $t-1$ are published at the same time and are still subject to significant revision as, in certain instances, the full results of major structural statistical inquiries may not be available at that stage;
- New estimates for years $t-2$ and $t-3$ are also published. The estimates for year $t-2$ are still subject to some amendments. The estimate for year $t-3$ is generally, at that point, considered final unless any serious error is subsequently discovered. New data from periodic inquiries such as the Census of Population could occasionally result in revisions to years prior to $t-3$, but any such revisions would tend to be small.
- The first annual estimate is produced at $T+3$ months which is the result for the fourth quarter of the National Accounts; it has less detail than the annual series.

Note that the official level of gross domestic product (GDP), from 1995 onwards under EU Directive 89/130, is calculated as the average of two measures - the income and expenditure methods. The components of both are shown in unadjusted form in the final calculation. A balancing item (called the 'statistical discrepancy' in the national publication) is displayed; this is half of the difference between the two estimates and is the amount by which both estimates are adjusted to arrive at the final level of GDP.

Estimates are revised and updated, as more final information becomes available. This process extends over a few years, during which the national accounts undergo a number of successive updates, as more and more final data becomes available.

Under the income approach to measure GDP for example, we receive updated versions of the annual corporation tax datasets for a given year from the Revenue Commissioners the State tax collection agency. The scale of revisions at the beginning may be significant, but after a year or two any further changes will tend to be small because, by then, most of the final data are already available and included in the accounts.

Revisions in the National Accounts may also be the result of more fundamental changes in calculation procedures and methodology. The accounting rules used are updated periodically and the calculation methods employed may also be significantly altered, as for instance, when new data sources become available. In such cases, in order to provide a consistent and continuous set of data for economic analysis, the new methodology and accounting rules may also have to be applied retrospectively to the national accounts estimates for historic years.

The Irish National Accounts do not follow a 5-yearly benchmark revision cycle. It is CSO policy to incorporate all revisions and updates to the accounts on an annual basis, whenever a new series of results are being published. This applies both to routine changes involving the use of more final data

and to the less frequent revisions resulting from major methodological developments. In the past, such major methodological revisions would also have been incorporated in the historic estimates (back to 1995) published at the same time.

From 1999, the introduction of quarterly accounts necessitated the formulation of a new policy on revisions. Over the course of a given year, we introduce revisions on an ongoing basis rather than revising at the time of the fourth quarter or annual estimate. The policy is as follows:

When publishing data for Quarters 2, 3 or 4 of year t, then

- Estimates for earlier quarters of that year will be subject to revision
 - Estimates for earlier years will not be revised, other than in exceptional circumstances
- The detailed annual accounts for year t will be available, usually in late June of year t+1. We publish earlier, by mid-March, the initial GDP estimates for year t that year, based on the quarterly accounts. These detailed annual results will result in revised annual estimates for earlier years and, consequently, revised quarterly estimates also for earlier years. As heretofore, these revisions will generally affect the years from t-1 to t-3, with the results for years t-4 and earlier normally remaining unchanged.

5.4 Coherence

The National Accounts are compiled by the CSO to integrate and be compatible with the Balance of Payments and merchandise trade data also compiled by the CSO. The consistency of the various types of data from large multi-national enterprises available to the CSO (e.g. production, turnover, exports/imports, profits) is checked and balanced by the Large Cases Unit in order to ensure that the accuracy and reliability of this information is as well based as possible. This information as well as balance sheet transactions and stocks are also checked against the companies' audited accounts when they become available later.

5.5 Comparability

The statistics are compiled to meet, to the greatest extent possible, the recognized statistical standards recommended in the Eurostat European System of Accounts 2010 (ESA 2010). They are regarded as being methodologically sound and therefore comparable over time and between those countries subscribing to the standards. This applies to the results calculated in current price and constant price terms, and (for the quarterly accounts) seasonally adjusted in line with international standards. It is important to note that the statistics for the internationally traded elements of the economy (captured in BOP data) tend to be quite volatile in both magnitude and direction. Sudden changes in trends and patterns can therefore occur depending on actual or anticipated events taking place in local and global financial markets. This can make statistical comparability over time and across countries quite difficult.

5.6 Accessibility and Clarity

5.6.1 Assistance to Users, Special Analyses

The various results are published nationally in hard-copy statistical release format as well as on the CSO website (www.cso.ie). Selected extracts from the results are posted on the CSO's data dissemination database, *Statbank*.

Each statistical release presents the relevant statistical tables along with an opening commentary on the main results. In addition, the *background notes* provided at the end of the release give the reader detailed information on the methodological basis underpinning the results and any connections with other related statistics. The quarterly BOP results and the quarterly National Accounts (National Income and Expenditure) results are generally published simultaneously. A media briefing is held to

assist media interests as well as economic commentators, research institutions, government departments and other users of the statistics. In addition, the CSO assists users generally by way of written, telephone, or e-mail contact as well as through arranged appointments to meet personal callers.

The published BOP and IIP results provide data back to 1998, the year of introduction of the current series. In the case of related statistical series retrospection is generally provided back to 2001 but the series of annual geographical results for imports and exports of services was introduced for 2003.

5.6.2 Revisions

Under normal circumstances, the nationally-published quarterly BOP, IIP and External Debt results and the related calendar year results are first revised at end-June of each year when the first quarter's results are published. They are revised for a second time one year later. At that point these results are normally considered final.

The nationally-published detailed annual results are normally revised once and are then considered final. A very similar revision and results finalization policy applies to the data sent to Eurostat, ECB, IMF and OECD.

Figures, particularly of a quarterly frequency, may be occasionally revised more frequently than described if a very significant revision is required or following introduction of significant methodological changes.

5.6.3 Publications

5.6.3.1 Releases, Regular Publications

National Statistical Releases:

All available at:

<http://www.cso.ie/en/statistics/nationalaccounts/>

National Accounts (Quarterly)

National Income and Expenditure (Annual)

Gross Value Added for Foreign-owned Multinational Enterprises and Other Sectors (Quarterly)

Gross Value Added for Foreign-owned Multinational Enterprises and Other Sectors (Annual)

Institutional Sector Accounts (Quarterly)

Institutional Sector Accounts (Annual)

Capital Stock of Fixed Assets (Annual)

County Incomes and Regional Accounts (Annual)

Supply and Use and Input-Output (Annual)

Productivity in Ireland (Annual)

National Accounts Output and Value Added by Activity (Annual)

Other CSO releases including data used in national accounts are available at:

<https://www.cso.ie/en/statistics/internationalaccounts/>

<https://www.cso.ie/en/statistics/governmentaccounts/>

<https://www.cso.ie/en/statistics/externaltrade/>

Eurostat:

Eurostat no longer publishes much data in hard copy. Data is available on the statistical database:

https://ec.europa.eu/eurostat/statistics-explained/index.php/National_accounts_and_GDP#Developments_for_GDP_in_the_EU-28:_growth_since_2013

ECB:

Only Euro area aggregate statistics are published

IMF:

BOP Statistical Yearbook

OECD:

Economic Outlook: <http://www.oecd.org/economy/outlook/economicoutlook.htm>

Main Economic Indicators: <http://www.oecd.org/std/oecdmaineconomicindicatorsmei.htm>

Databases:

<http://www.oecd.org/std/its/> - International Trade and Balance of Payments Statistics

<http://www.oecd.org/investment/statistics.htm> - Foreign Direct Investment Statistics

5.6.3.2 Statistical Reports

None

5.6.3.3 Internet

<http://www.cso.ie/en/statistics/nationalaccounts/>

CSO Statbank link (Select Economy, National Accounts and then National Accounts Quarterly or National Income and Expenditure Annual Results or Institutional Sector Accounts or Gross Value Added for Foreign-owned Multinational Enterprises and Other Sectors or County Incomes and Regional Accounts or Supply and User and Input-Output tables or Capital Stock of Fixed Assets or Government Finance Statistics or Productivity in Ireland or Output and Value Added from the menu on the left):

<http://www.cso.ie/px/pxeirestat/statire/SelectTable/Omrade0.asp?PLanguage=0>

5.6.4 Confidentiality

The confidentiality of individual data collected for compilation of BOP and other related statistics is protected under the provisions of the Statistics Act, 1993 and, where relevant, under European legislation i.e. Council Regulation (EC) No. 322/97 of 17 February 1997 on Community Statistics and Council Regulation (EC) No. 2533/98 of 23 November 1998 concerning the collection of statistical information by the European Central Bank (ECB).

Aggregated statistical results which are published nationally may include analytical statistical elements which are statistically confidential and which therefore have to be suppressed. Such confidential data can arise where there are small number of contributors (enterprises) to a particular piece of information or in other cases where one or two contributors are very dominant. The information is suppressed in a way that renders it undisclosed either directly or indirectly by derivation.

In supplying aggregated statistical information to Eurostat and the ECB certain elements of the information may be confidential. The European legislation referred to above obliges EU member countries to provide this information so that the two organisations can compile EU and Euro-area aggregate BOP and IIP statistics. Both organisations are obliged to protect the confidentiality of data under the above legislation.