National Accounts

Output and Value-Added by Activity

This explanatory note is provided by the

CSO National Accounts Integration Division

for users of our annual publication

Output and Value-Added by Activity.

It provides background and descriptive material on these estimates. The note also introduces the data sources and methods used in the compilation of these estimates.

The latest tables describe 1995 to 2021 inclusive and were published in November 2022.

https://www.cso.ie/en/statistics/nationalaccounts/nationalaccountsoutputandvalueaddedbyactivity/

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Any views expressed are the authors and do not necessarily reflect the views of the CSO.

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Output and Value-Added by activity tables provide a powerful tool to analyse the structure of the Irish economy and the sources of economic growth that lie behind the National Accounts main aggregates.

Output and Value-Added by activity tables can also be used to investigate linkages between microeconomic and macroeconomic analysis.

Introduction

Why Output and Value-Added Tables?

To begin, these tables will be placed in context by asking three simple questions.

- **Why** are they produced?
- **What** is produced?
- **When** are they produced?

- **Why are they produced?**

The short answer is because Ireland is legally obliged, under European regulation, to produce these tables. Failure to fulfil these legally binding obligations could result in Ireland, through the Central Statistics Office (CSO), receiving warnings and possible financial penalties from the European Commission through its statistical arm Eurostat. Such penalties can be levied at a daily rate.

Most official CSO releases and publications (perhaps 80% plus overall, as much as 90% plus in the macroeconomics area) are required under European legislation. These requirements, particularly since the introduction of the Economic and Monetary Union (EMU), Euro and the 'Great Recession', have significantly increased in the macroeconomics area. These tables are required under ESA2010 (European System of Accounts), the EU version of the United Nations standard SNA2008 (System of National Accounts).

- **What is produced?**

Ireland is obliged to produce annual Output, Intermediate consumption and Value-Added tables in current prices. The latest tables cover 1995-2021 and were published by the CSO in November 2022. They are part of ESA Table 0301. These estimates provide more detail on Output, Intermediate consumption and Gross Value Added (GVA) than are found in the benchmark Annual National Accounts (ANA) publication formerly known as the National Income and Expenditure (NIE). Tables use the NACE Rev. 2 classification (see below).

The publication contains an introductory chapter which provides an overview of these Output method estimates. Separate chapters describing the Output method components of Output, Intermediate consumption and GVA are provided. Additionally, a chapter disaggregating the economy into sectors dominated by foreign multi-national enterprises (MNE) and other sectors is included. The final chapter displays these Irish estimates in the context of other EU Member States.

All tables and graphs are available on the CSO website. Follow this link to the 1995-2021 publication: **https://www.cso.ie/en/statistics/nationalaccounts/nationalaccountsoutputandvalueaddedbyactivity/**

- **When are they produced?**

The EU legal transmission programme requires different levels of detail to be provided at intervals following the reference period. Tables at A21 (splitting the total economy into 21 specific categories) are required at t+9 months while tables at A64 (splitting the total economy into 64 specific categories) are required at t+21 months. Irish figures are provided at A64 at t+9 months, exceeding

the legal requirement. Publication follows transmission and validation. Eurostat examine and publish these transmitted ESA Table 0301 estimates.

The difference in the level of detail required at different periods is due, in part, to the use of SBS (Structure of Business Statistics) in the compilation of these tables across EU member states. In Ireland, the Census of Industrial Production (CIP) and the Annual Services Inquiry (ASI) are the main SBS data sources used in the creation of these tables. Both will be discussed in more detail below. Both are generally published with at least an n+18-month lag. For example, the latest SBS publicly available (as of November 2022) describe 2020 and was published in September 2022. National Accounts would like to thank our colleagues in Business Statistics for their assistance with these data.

Methodology

The Output Method measures GVA as the value of Output (what is produced) less the value of goods and services used in producing these outputs (the inputs or intermediate consumption). The basic elements of the Output method are therefore Output, Intermediate Consumption and Value Added (GVA = Output minus Intermediate Consumption). Outputs minus inputs equals value added.

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 and products bought and sold without further transformation.

As referenced above, 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**.**

Overview of publication structure

In the 1995-2021 publication of November 2022 the following structure was employed. In addition to the main 2021 table (Table 1.2) presented at A64 in the overview **Introduction** chapter, the publication is structured into **five distinct themes** covering the period 1995-2021. These are:

- Theme 1 - **Output**
- Theme 2 - **Intermediate Consumption**
- Theme 3 - **Gross Value Added (GVA)**

In the Output **method**, GVA equals Output minus Intermediate consumption.

A fourth theme splits the total Output, Intermediate Consumption and GVA into NACE sectors dominated by Foreign-owned Multinational Enterprise (MNE) and Other sectors.

- Theme 4 - **Foreign-owned Multinational Enterprise (MNE) dominated sectors**

Foreign-owned Multinational Enterprise (MNE) dominated sectors occur where MNE turnover on average exceeds 85% of the sector total. In this Output publication, these 'Foreign' owned MNE dominated sectors contain NACE 20, 21, 26, 27, 31-32, 58 and 62-63.

A fifth theme compares various aspects of these Irish estimates with other EU Member States.

- Theme 5 – **EU Member State comparisons**

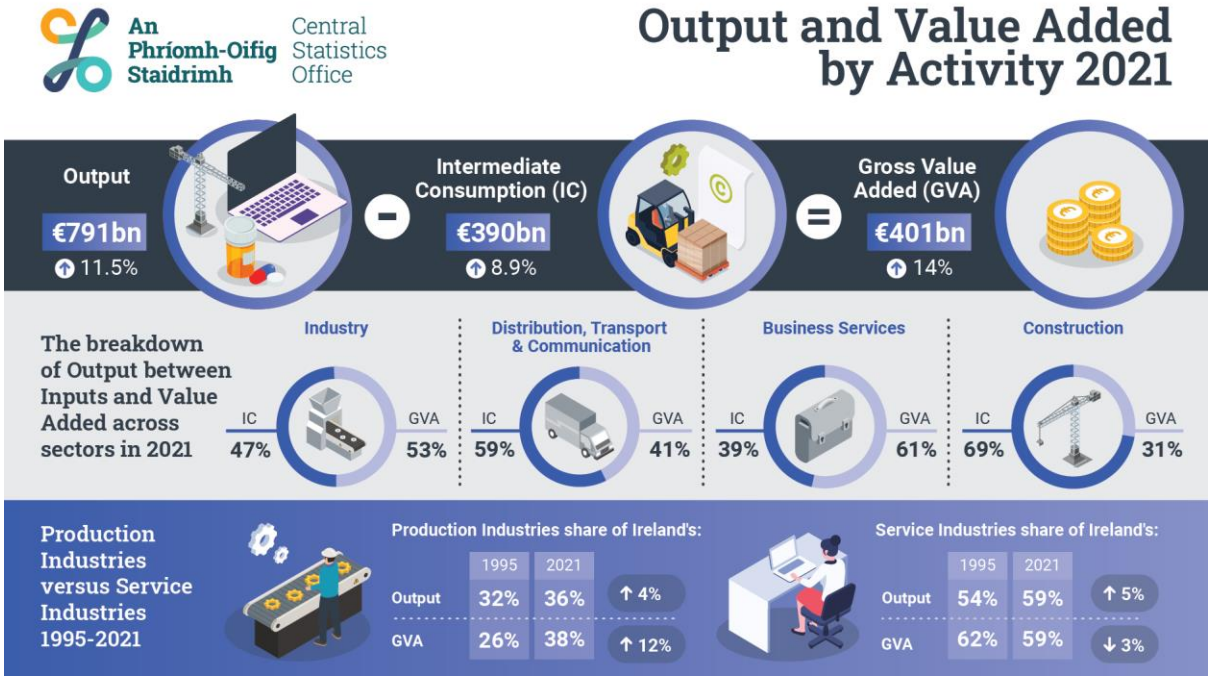
The three themes describing the Output method estimates have a general, repeated, structure.

- Proportional composition time-series by A21, graphs
- Value time-series by A64, table
- Value time-series by A21, table
- Proportional ranking time-series by A21, table
- Constant price time-series by A10, table
- Selected sectors time-series, chart

The A10 table at constant market prices for 2013-2021 is chain linked annually and referenced to 2020. Users should note that chain linked series are not additive except for 2020 and 2021. As with the current price data in the publication, chain linked data are consistent with the relevant benchmark Output method data in the Annual National Accounts 2021 (ANA21) published in July 2022 which was formerly known as the National Income and Expenditure (NIE).

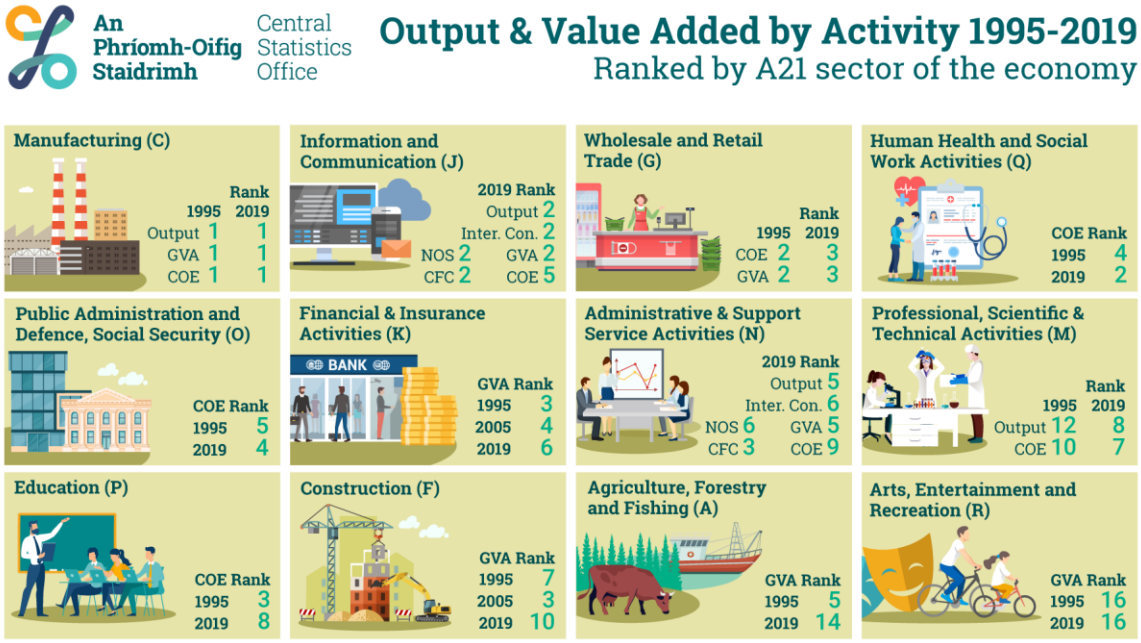
The proportional ranking tables and proportional composition charts allow us to see the relative contributions of different sectors to the economy across the years 1995 to 2021.

These tables and charts allow us to look at contributions of different sectors across time. For example, if we look at the Construction (F) sector we can see that it contributed 5.9% of all GVA in 1995 rising to 9.8% in 2005. By 2010 it had decreased to 1.5% of total GVA but increased to 2.2% in 2021. The infographic used in the 2021 publication (November 2022) is shown below.



Explanatory note on Output & Value-Added by activity

The compilation of these tables may be used as a statistical tool to compile and reconcile independent Income and Output estimates. This publication shows Gross Value Added (GVA) by industry, the contribution to GDP made by each individual industry branch across the economy. This type of sectoral split is illustrated in the following infographic used in the 2019 publication (November 2020) consistent with the NIE19 National Accounts estimates.



Classifications used in the Output and Value-Added tables

NACE (Nomenclature des Activités Économiques dans la Communauté Européenne) is a European industry standard classification system. NACE is the acronym used to designate the various statistical classifications of economic activities developed since 1970 in the European Union (EU). NACE provides the framework for collecting and presenting a large range of statistical data according to economic activity in the fields of economic statistics (e.g. production, employment, national accounts) and in other statistical domains. Statistics produced using NACE are comparable across Europe and, generally, globally. The use of NACE is mandatory within the EU statistical system.

CPA (Classification of Products by Activity) is the classification of products (goods as well as services) at the level of the European Union (EU). Product classifications are designed to categorize products that have common characteristics. CPA product categories are related to activities as defined by the statistical classification of economic activities in the European Community (NACE). Each CPA product - whether a transportable or non-transportable good or a service - is assigned to one single NACE activity. This linkage to NACE activities gives the CPA a structure parallel to that of NACE at all levels.

Definitions and terminology are explained in **Annex 1**.

The composition of the A10, A21 and A64 groups are described in **Annex 2**.

Abbreviations and acronyms are described in **Annex 3**.

National Accounts

A modern open economy engages in four basic economic activities:

1. **Production** (industries produce goods and services)

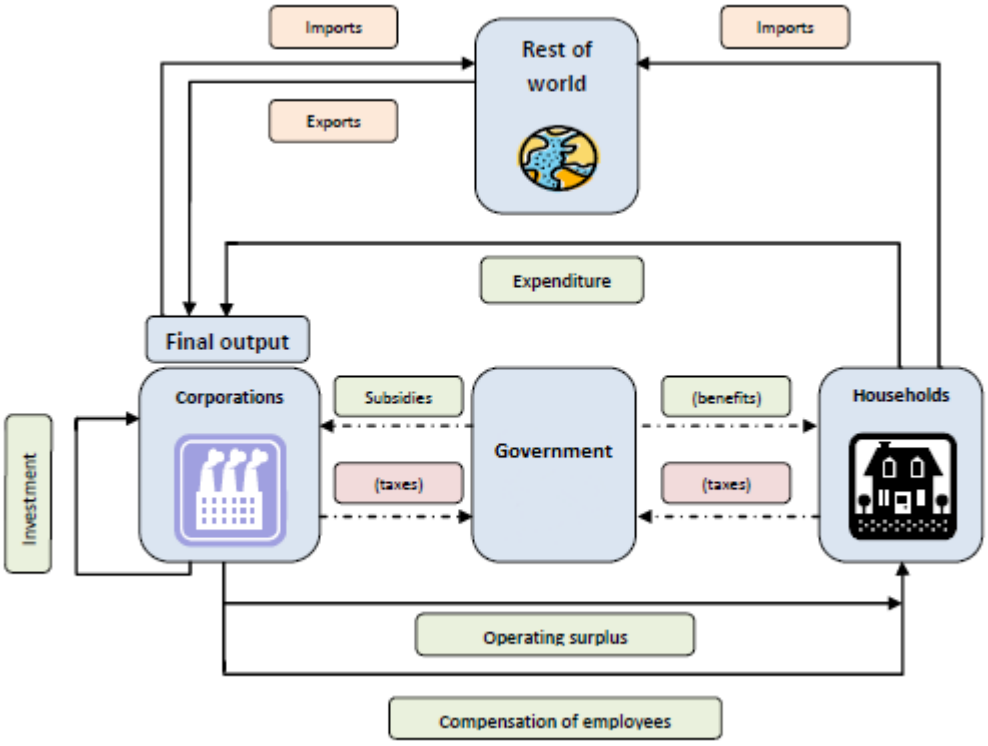
2. **Consumption** (purchases of goods and services)

3. **Accumulation** (capital transactions, i.e. fixed investment expenditure and changes in stocks)

4. **Trade** (imports and exports)

Elements of all four activities are captured in different ways in these estimates. The resulting tables serve several purposes, all of which contribute in different ways to understanding the economy.

The economy can be considered as a series of relationships. Flow diagrams can be created describing different elements of these relationships. For example, in economics the reciprocal circulation of income between producers and consumers is referred to as the **circular flow of income**. The circular flow of income shows how financial payments flow between corporations and households within the economy. It also shows the interaction between different sectors of the economy and the rest of the world. An overview of these interactions is presented below[1]. These tables enable important relationships (for example the flows between households and firms) to be unpicked and examined discretely, sector by sector.

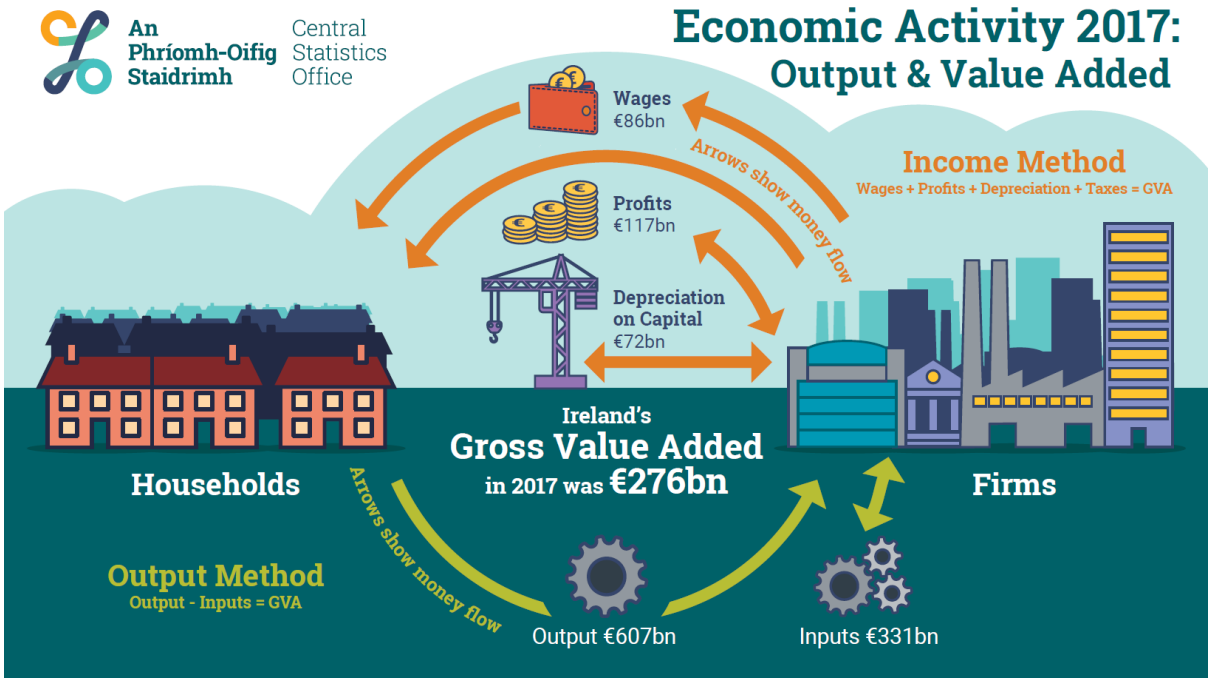


[1] Diagram based on ONS. The arrows in the diagram show the flow of money between the different institutions due to transactions between them.

Three independent methods of calculating GVA/GDP

The consistency of these **Output & Value-Added by Activity** publication tables with the estimates in the benchmark 2021 Annual National Accounts (ANA21) published in July 2022 (formerly known as the National Income and Expenditure or NIE) can be illustrated using the **three methods** of calculating GVA/GDP. Output method data is included in the ANA in current and constant prices.

An important feature of these tables is that they present Gross Value-Added (GDP at basic prices) at a detailed industry level as measured using one of these **three** distinct approaches. These are the **Output method** (also known as the **Production method**). The second and third methods are the **Income method** and the **Expenditure method**. The circular flow of income, as shown in the diagram below with point-in-time 2017 Irish data used in the 2017 Output & Value-Added by Activity publication consistent with NIE17, for the **Output** and **Income** methods. The arrows in the diagram show the money flow between households and firms. GVA here excludes the NIE statistical discrepancy, the difference between the initial estimates which are then balanced for consistency.



- **GDP measured using the Output/Production approach**

GDP at basic prices is also known as Gross Value Added (GVA); that is, it is a measure of the gross value added to the economy by each producing unit. Broadly speaking, it is simply the sum of each company's outputs (sales) less inputs (purchases).

The output of an organisation is approximately equal to the total value of sales (turnover) over a given period although account is taken of goods and services bought and resold without further processing as well as goods manufactured but held in inventory and work in progress. The final component of output includes any items of a capital nature created in-house for the companies own

final use e.g. certain software, databases and other computer systems. These are valued and added to the other items to form a figure for the total value of goods and services produced by an organisation - their Output at basic prices. The meaning of a valuation in basic prices will be described in more detail below.

In producing these outputs, an organisation will have to purchase goods and services, e.g. raw materials, energy and other intermediate inputs. These are subtracted from the output (including any taxes relating to these purchases) to yield Gross Value Added. It may be summarised as follows:

Output by Industry minus Intermediate consumption by Industry = GVA by Industry

The following shows the calculation of 2021 GVA using the **Output approach**, also known as the **Production approach**, as shown in the Annual National Accounts (ANA21) published in July 2022, formerly known as the National income and Expenditure (NIE) and available at the following link: https://www.cso.ie/en/releasesandpublications/ep/p-ana/annualnationalaccounts2021/

Calculation of 2021 GDP (Output/Production approach)		
Total output at basic prices	A	€790.994 billion (= ANA Table 6.1)
Minus intermediate consumption	B	-€389.547 billion (= ANA Table 6.1)
Plus statistical discrepancy		-€0.040 billion (= ANA Item 47 Table 6.1)
= **Gross Value Added at basic prices**	A-B	€401.408 billion (= ANA Item 51 Table 6.1)
Plus Taxes less Subsidies on products	C	+€26.300 billion – €1.425 billion (Items 52 & 53 Table 6.1)
= Gross Domestic Product at market prices	**A-B+C**	**€426.283 billion (= ANA Item 54 Table 6.1)**

- **GDP measured using the Income approach**

Gross Value added (GDP at basic prices) is also equal to the costs of employment, taxes less subsidies levied upon production (e.g. business rates, vehicle excise duty) and Gross Operating Surplus (broadly analogous to profit plus depreciation on capital).

The following shows the calculation of 2021 GVA using the **Income approach** as shown in the Annual National Accounts (ANA21) published in July 2022:

Calculation of 2021 GDP (Income approach)		
Compensation of Employees	A	€111.194 billion (= ANA Items 2, 3, 9, 10 Table 3.1)
Plus Taxes less Subsidies on production	B	+€3.998 billion – €6.977 billion (= ANA Items 30 & 31 Table 3.3)
Plus Net Operating Surplus	C	€181.178 billion (= ANA Items 1, 4, 5, 6, 7, 8 Table 3.1)
Plus Depreciation	D	€112.055 billion (= ANA Item 28 Table 3.3)
Plus statistical discrepancy		-€0.040 billion (= ANA Items 12 & 26 Tables 3.1 & 3.3)
= Gross Value Added at basic prices	A+B+C+D	€401.408 billion (= ANA Item 32 Table 3.3)
Plus Taxes less subsidies on products	E	+€26.300 billion – €1.425 billion (ANA Items 52 & 53 Table 3.4)
= Gross Domestic Product at market prices	**A+B+C+D+E**	**€426.283 billion (= ANA Item 54 Tables 3.4 & 6.1)**

- **GDP measured using the Expenditure approach**

GDP (Gross Domestic Product at Market Prices) is usually defined and calculated as the sum of total final demand minus total imports.

Explanatory note on Output & Value-Added by activity

Total domestic demand comprises purchases (including all taxes that may apply) by: Households, Non-profit institutions serving households, Tourists (specifically expenditure by non-residents), and Government. Gross fixed capital formation, changes in inventories and valuables are also included.

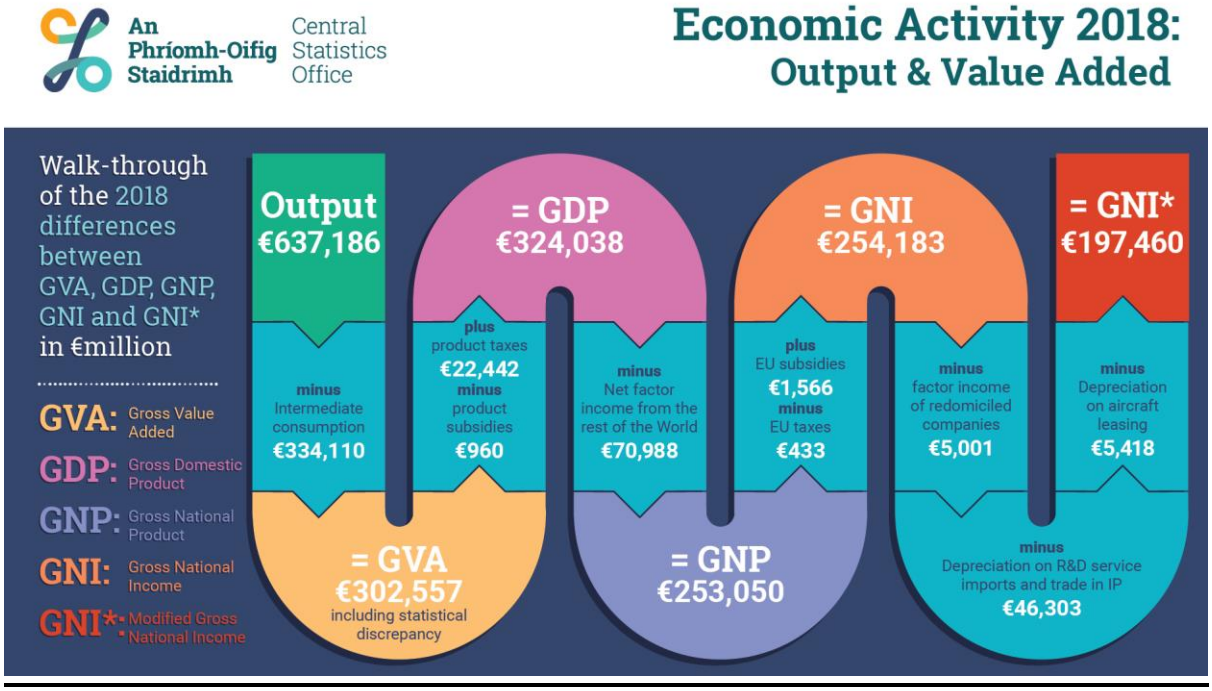
Final demand also includes the value of exports. Imports include goods and services and includes expenditure by Irish residents outside Ireland.

The following shows the calculation of 2021 GDP using the **Expenditure approach** as shown in the Annual National Accounts (ANA21) published in July 2022:

Calculation of 2021 GDP (Expenditure approach)		
Household final consumption Plus Non-profit making institutions serving households	A	€100.812 billion (= ANA Item 79a Table 8.1)
Plus general Government final consumption expenditure	B	€7.645 billion + €44.598 billion (= ANA Item 79b & Item 80 Table 8.1)
Plus Gross capital formation	C	€99.196 billion + €6.107 billion (= ANA Item 81 & Item 82 Table 8.1)
Plus statistical discrepancy		€0.040 billion (= ANA Item 85 Table 8.1)
Plus Exports	D	€572.988 billion (= ANA Item 83 Table 8.1)
Minus Imports	E	-€405.102 billion (= ANA Item 84 Table 8.1)
= Gross Domestic Product at market prices	**A+B+C+D-E**	**€426.283 billion (= ANA Item 86 Table 8.1)**

What is the difference between Output, GVA, GDP, GNP, GNI and GNI*?

The difference between these National Accounts concepts are shown in the diagram below which provides a walk-through of these items using point-in-time 2018 Irish data which was used in the 2018 Output & Value-Added by Activity publication, which are consistent with figures in NIE18.



Output and Intermediate consumption

What is meant by Output?

The Output figures provide estimates of the supply of goods and services presented by the industry branches that produce these goods and services. Each industry is classified according to whichever product accounts for the largest part of its output. The output of that industry is the total output of that industry irrespective of the product composition of that output.

Output can be generalised as being of one of three types: output for final domestic use, output for export, and output used for intermediate use.

Output and GVA are valued at basic prices, but Intermediate consumption can be valued in purchasers' prices. What is the difference?

This transition occurs through the addition of distributors' trading margins and taxes less subsidies on production. Distributors' trading margins represent the difference between the prices at which distributors buy and sell their products.

Another way of thinking about it is as the difference between the actual or imputed sale price realised on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold.

The basic price is the price receivable by the producer for a unit of a good or service produced, minus any tax payable as a consequence of its production or sale (i.e. taxes on products), plus any subsidy receivable on that unit as a consequence of its production or sale (i.e. subsidies on products). The basic price excludes the well-known product taxes such as VAT, excise duties, import duties, etc. In theory, the basic price excludes any transport charges invoiced separately by the producer but includes any transport charges charged on the same invoice. It does not include any trade margin. The basic price measures the amount retained by the producer and is therefore the price most relevant for the producer's decision making.

The purchaser's price is the price the purchaser actually pays for the product including any taxes less subsidies on the product (but excluding deductible taxes). The conversion from basic prices to purchasers' prices involves distributing the trade margins of retailers and wholesalers among the products on which they are charged.

More detail on the treatment of the motor trade, retail trade and wholesale trade sectors

The outputs of the distribution sector are defined in a special way for national accounts purposes and may not be as expected. The motor trade, retail and wholesale activities are regarded as producing a service which is measured as the price at which their products are sold minus the purchase price of these products (which they purchased for direct resale). This is referred to as the gross margin or output. The retail supermarket is not regarded as providing food or drink nor is the drapery outlet regarded as providing clothes. The food and clothes are the products of their respective industries or are imported and retailers are regarded as providing a sales service.

The gross margin is also used to measure the output of distribution activity by firms that are mainly involved in another activity such as manufacturing.

Are all output totals for each sector in the Output tables measured the same way?

No. There are three specific areas of interest here.

First, most of the output of government is non-market output and cannot be identified as uses of any specific institutional sector. Conventionally, this non-market output is valued according to the sum of the inputs used in its production (pay, procurement, gross operating surplus). The sum of these costs, when added to the value of market output and own-account production, goes into the relevant industry column.

Second is imputed rent. This is the amount an owner-occupier would need to pay to rent their own property. This affects NACE 68.

Third is FISIM. The output of the banking sector in the national accounts is called FISIM (Financial Intermediation Services Indirectly Measured). For borrowing from banks, this is essentially the difference between the interest rate actually paid and what would have been paid at a reference rate (such as the ECB's base rate). For deposits with banks, it is the difference between the interest actually received and what would have been received had the deposits received interest at the reference rate. All sectors of the economy can pay FISIM. So, in principle, the levels of bank deposits and borrowing are needed by sector and industry, split by country of residence of the bank. This information is not readily available, though in many sectors is relatively small compared to the total.

What is meant by Intermediate Consumption?

Output presents the supply of goods and services for consumption, while Intermediate consumption shows the demand by industry for the purposes of achieving its output. As described above, output may be generalised as being of one of three types: output for final domestic use, output for export, and output used for intermediate use. The latter type of use, output for an intermediate use, is described here.

Intermediate consumption shows the use of products by domestic industry. The figures for industries NACE 1 - 98 show the total value of the goods and services used by each industry for the purposes of achieving its output. The purchases relate to intermediate consumption only, not for final use.

If the domestic output can be thought of as showing industries' outputs, inter-industry use can be thought of as being either the intermediate consumption of imports or of domestic supply, for both of which the resulting output may be one of the three options previously described.

Consistency of Output tables with National Accounts

Are aggregates in the tables consistent with those in the National Income and Expenditure results?

Yes, tables are consistent with the National Income and Expenditure (NIE) reference year totals.

Comparison with other CSO sources

Although these tables are consistent with National Accounts GVA data published in the NIE20, it is not possible to achieve full agreement with all CSO publications. There are four main reasons for differences that occur between the aggregates presented in these tables and the aggregates presented in other publications, particularly the Census of Industrial Production (CIP) and Annual Services Inquiry (ASI) carried out as part of the Structure of Business Statistics surveys (SBS).

- Terminology

For the most part, the underlying definitions are consistent throughout CSO publications, but certain differences do arise. For example, the output in these tables is inclusive of freight and of the margin gained on goods resold without further processing. Additionally, the term 'compensation of employees' in National Accounts can include the employer's contribution to social insurance and other labour costs, which are not included in the wages and salaries variable in the CIP and ASI.

- Accounting practices

Some international sales by Irish companies may be included in the CIP gross turnover but are treated on a net basis (i.e. sales less purchases) in the Balance of Payments (BoP). This can arise particularly where Irish companies sell products abroad which they have also purchased abroad. The products purchased may never have come into Ireland or undergone any further processing following purchase by the Irish enterprise. Conversely, there are companies manufacturing on a fee basis whose transactions may be recorded gross in the international trade statistics. This can arise where companies process goods for another company in their enterprise group abroad. The goods are imported and exported and may therefore have been included in the merchandise trade statistics although ownership of the goods did not change in the process.

- Classifications

Output by product may be classified differently in the PRODCOM Inquiry to the export statistics. This difficulty is corrected by realigning at a product level the production with the exports or vice versa. Sometimes the classifications in the two systems are quite unrelated. For example, what appears in one classification as a chemical may be classified in the other as food and beverages.

Conflicts in classification also occur at the overall activity level of companies. The company's NACE code in the National Accounts and Balance of Payments may differ from the NACE code used by CIP or ASI. Usually the classification used in the CIP or ASI is adopted in the Output and Value-Added tables. It can also happen that the mismatch highlights a problem that is resolved by transferring the company within the CIP or ASI.

- Conflicting data

Explanatory note on Output & Value-Added by activity

The Output and Value-Added tables are compiled using data from different sources which will be described in more detail below. It is therefore not surprising that there are occasional instances of contradictory and conflicting information. Some examples are: the value of production by a company, measured in the CIP, may be less than their exports, measured by the international merchandise trade statistics; the value added of a company, measured by National Accounts from administrative sources, may not concur with the same variable derived in the CIP or the ASI; compensation of employees calculated in National Accounts based on employment figures can conflict with the wages and salaries figures in the CIP and ASI, which are assembled from company data. Reconciliation of these types of problem can result in differences between the variable presented in the Output and Value-Added tables and the same variable in the CIP or ASI.

Data sources

Main data sources used in compiling the Output and Value-Added tables

The main aggregates in the tables have previously been described (Output, Intermediate consumption, Value-Added) which are consistent with the estimates shown in the benchmark Annual National Accounts 2021 (ANA21) published in July 2022.

However, the starting point of the tables are the SBS (Structure of Business Statistics) surveys. The Census of Industrial Production (CIP) covers NACE 5-39, the Building and Construction Inquiry (BCI) covers NACE 41-43 and the Annual Services Inquiry (ASI) covers NACE 45-96. There are notable exceptions to this coverage, particularly for services. For example, A21 sectors K (NACE 64-66) and O, P, Q (NACE 84-88) are not included in the ASI. The SBS also operates at a lag of approximately 18 months from the end of the reference year.

Considerable use is also made of other CSO data, such as Agriculture, Balance of Payments, Environment, Government Accounts, as well as other areas within National Accounts and other published Government reports and financial statements.

Other data sources

Where appropriate, use is made of published reports of Government Departments, semi-state bodies and financial institutions. Company accounts and administrative records are also used. Part of the compilation process is an examination of the consistency between these data and the Income method data, which are based mainly on administrative sources. Although the initial Output method GVA figures are broadly consistent with the Income method figures, some initial inconsistencies are found between the methods. The following are some of the causes of these inconsistencies:

- **Non-response and data errors**. Survey data and administrative records are both subject to non-response and data errors. The approach for correcting these may give different results.
- **Definitions/concepts**. There are differences between the definitions/concepts used for the data collected in the surveys and the definitions/concepts applying to the data collected from administrative sources. The data from administrative sources are converted as far as possible to National Accounts definitions/concepts.
- **Activity coverage**. The coverage of some activities in the SBS differs from the coverage of data collected from administrative sources. A variety of methods are used to estimate the aggregate total for each sector.
- **Company/enterprise**. The SBS collect data from companies, some of which have complicated organisation structures. Data from administrative sources do not always map to the same structure, i.e. for a particular enterprise, there might be a single survey response covering the whole group of companies, whereas several separate responses for companies within the same group might be contained in the administrative records. As a result, components of such groups may be classified to different activities in the Output and Income methods, respectively.

Balancing

As described above, the compilation of the tables involves the use of a range of different data sources and assumptions. This generally means that when first put together the tables do not balance between the Output method and Income method.

In general, data on purchases is more difficult to assemble than data on turnover. A degree of balancing is necessary in the construction of these tables to fit these data with SBS data and data from other surveys and administrative sources. Because of the relative strength of production data compared to purchases data, these are more likely to be placed within intermediate consumption. Consequently, allowance must be made for a lack of absolute accuracy in the figures. They are, as with the wider National Accounts, overall estimates and not absolute definitive data. The tables display details of the economy in terms of A10, A21 and A64 industry groups. The sectoral classification used is the two-digit level of the NACE Rev. 2 referred to as the A64 coding of industry activities. The tables are condensed for confidentiality and quality purposes.

Annex 1

Definitions

Output at basic prices covers the value of all goods produced for sale, including unsold goods, and all receipts for services rendered. Output furthermore covers the market equivalent of goods and services produced for own use, such as own account capital formation, services of owner-occupied dwellings and agricultural products produced by farmers for own consumption. The output of such goods is estimated by valuing the quantities produced against the price that the producer would have received if these goods had been sold. Goods purchased for direct resale are not included in Output. Consequently, **Output** and **Value Added** are very different concepts in the National Accounts and these terms should not be used interchangeably.

Output is valued at basic prices, defined as the price received by the producer excluding trade and transport margins and the balance of taxes and subsidies on products. This is the price the producer is ultimately left with.

- **Some special cases:**

Distributive trade, particularly the retail and wholesale trade in goods where no physical transformation occurs. The value of these services is the difference between the sales value and the purchase value of traded goods.

Real estate activities not only include services of non-residential buildings and rented dwellings, but also of owner-occupied dwellings. The latter are valued based on rents of comparable rented dwellings.

Banking mainly deals with financial intermediation, which is the acquisition, transformation and issuing of financial assets. The compensation for these services is implicitly included in the interest paid to and received from banks. The value of these imputed bank services is calculated as the margin received by banks on loans and paid by banks on deposits.

Insurance and pension funding mainly transform individual risk into collective risk. The value of these services is set as the difference between contributions and benefits. In the case of pension funds and life insurance companies, corrections are made for changes in actuarial reserves.

Government mainly produces collective services. Since there are no market prices available, Government output is determined from production costs and is estimated as the total of **Intermediate Consumption**, **Compensation of Employees**, **Consumption of Fixed Capital** and the **Net taxes on production** paid by the Government itself.

Market output is the output of goods and services sold at economically significant prices.

Non-market output is the output of own-account production of goods and services provided free or at prices that are not economically significant. Non-market output is produced mainly by the general government and non-profit institutions serving households (NPISH) sectors.

Explanatory note on Output & Value-Added by activity

Output for own final use is the production of output for final consumption or gross fixed capital formation by the producer. This is also known as own-account production.

Intermediate consumption at market prices includes all goods and services used up in the production process in the accounting period, regardless of the date of purchase. This includes for example fuel, raw materials, semi-manufactured goods, communication services, cleansing services and audits by accountants. **Intermediate consumption** is valued at purchasers' prices, excluding deductible Value Added Tax (VAT). For companies, which do not need to charge VAT on their sales, the VAT paid on their purchases is non-deductible. It is therefore recorded as a component of **Intermediate Consumption**.

Not included in **Intermediate Consumption** are:

- Purchases of goods, particularly by retail or wholesale enterprises, which are resold without undergoing any processing.
- Purchases of goods used in the production process with a life span of more than one year. These purchases are recorded as fixed capital formation. The use of these goods is spread over their economic life span and recorded as consumption of fixed capital.

Gross Value Added (GVA) is conceptually the same aggregate as **Gross Domestic Product (GDP)**. They both measure the added value generated in an economy by the production of goods and services. The difference between the two concepts is that **GDP** is measured after including **product taxes** (e.g. excise duties, non-deductible VAT, etc.) and deducting **product subsidies** while **GVA** is measured prior to adding **product taxes** but includes **product subsidies**. **GVA** can be computed for industrial groups and can be looked upon as the sum of wages and profits (**Compensation of Employees** and **Operating Surplus** in National Accounts terminology) in each industry group. See below for further details on **Compensation of Employees (COE)** and **Net Operating Surplus (NOS)**.

Gross Domestic Product at market prices is the final result of the production activity of resident producer units. It is the sum of the **GVA** of the various industries plus taxes and less subsidies on products. It is presented in the accounts at market (or purchasers') prices.

Net Domestic Product equals **Gross Domestic Product** minus **Consumption of Fixed Capital (CFC)**.

Value added at basic prices is the value generated by any unit engaged in production and the contributions of individual sectors or industries to **GDP**. It is measured at basic prices, excluding taxes less subsidies on products. Value added at basic prices by industry is equal to the difference between **Output** (basic prices) and **Intermediate Consumption** (purchasers' prices).

Value added at factor cost is calculated as follows:

Value added at basic prices

minus Non-product taxes

plus Non product subsidies

equals Value added at factor cost

Consumption of Fixed Capital (CFC) represents the depreciation of the stock of produced fixed assets resulting from the normal technical and economic ageing and insurable accidental damage. The Consumption of Fixed Capital is the depreciation of the net stock of produced fixed assets during the year not caused by revaluations because of price changes, new fixed capital formation or discarding of fixed assets.

Taxes on production and imports are compulsory payments to the Government and the European Union (EU), which are related to production, imports and to the use of production factors. Taxes on production and imports are classified into taxes on products and other taxes on production.

Taxes on products are related to the value or the volume of products. They are levied on domestically produced or transacted products and on imported products. Taxes on products include taxes on domestic products, taxes on imports and VAT.

Other taxes on production include all taxes on production paid by producers, not related to the value or volume of products produced or transacted. Examples are rates and licences.

Subsidies are current payments from the Government or the EU to producers with the objective to influence output prices, employment or the remuneration of production factors. Subsidies include subsidies on products and other subsidies on production.

Subsidies on products are related to the value or the volume of products. They can be separated into subsidies on domestic products and subsidies on imports.

Other subsidies on production include all subsidies on production paid to producers, not related to the value or volume of products domestically produced or transacted. These consist mainly of certain payments to farmers, e.g. Green, Low-Carbon Agri-Environment Scheme (GLAS).

Compensation of Employees (COE) is the total remuneration paid by employers to their employees in return for work done. Employees are all residents and non-residents working in a paid job. Managing directors of limited companies are considered employees. Therefore their salaries are also included in the Compensation of Employees. The same holds for people working in sheltered workshops. Compensation of Employees includes both wages and salaries and employers' social contributions.

Gross Operating Surplus (GOS) by industry is the balance that remains after deducting from the **value added** (basic prices) the **Compensation of Employees** and the balance of **other taxes and subsidies on production**. The operating surplus of the self-employed is called mixed income, because it includes compensation for work done by the owners and their family members.

Net Operating Surplus (NOS) and mixed income remains after deducting **Consumption of Fixed Capital (CFC)** from **Gross Operating Surplus (GOS)** and mixed income.

Annex 2

Classifications

The activity classification used is NACE Rev. 2. For National Accounts purposes, the economy is classified by 10, 21 and 64 activities using the Eurostat ESA2010 A10, A21 and A64 coding schemes respectively. Some activities must be combined due to confidentiality. The corresponding NACE Rev. 2 division codes are shown below.

Composition of A10, A21 and A64 industry categories

A10

- Agriculture, forestry and fishing (NACE 1-3)
- Industry (except construction) (NACE 5-39)
- Construction (NACE 41-43)
- Wholesale and retail trade, transport, accommodation and food service activities (NACE 45-56)
- Information and communication (NACE 58-63)
- Financial and insurance activities (NACE 64-66)
- Real estate activities (NACE 68)
- Professional, scientific and technical activities; administrative and support service activities (NACE 69-82)
- Public administration, defence, education, human health and social work activities (NACE 84-88)
- Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies (NACE 90-98)

A21 (of which 20 used in National Accounts)

- A NACE 1-3 Agriculture, Forestry and Fishing
- B NACE 5-9 Mining and Quarrying
- C NACE 10-33 Manufacturing
- D NACE 35 Electricity, Gas, Steam and Air Conditioning Supply
- E NACE 36-39 Water Supply; Sewerage, Waste Management and Remediation Activities
- F NACE 41-43 Construction
- G NACE 45-47 Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles
- H NACE 49-53 Transportation and Storage
- I NACE 55-56 Accommodation and Food Service Activities
- J NACE 58-63 Information and Communication
- K NACE 64-66 Financial and Insurance Activities
- L NACE 68 Real Estate Activities
- M NACE 69-75 Professional, Scientific and Technical Activities
- N NACE 77-82 Administrative and Support Service Activities

- O NACE 84 Public Administration and Defence; Compulsory Social Security
- P NACE 85 Education
- Q NACE 86-88 Human Health and Social Work Activities
- R NACE 90-93 Arts, Entertainment and Recreation
- S NACE 94-96 Other Service Activities
- T NACE 97-98 Activities of Households as Employers; Activities of Households for Own Use
- U NACE 99 Activities of Extraterritorial Organisations and Bodies (not included in National Accounts**)**

A64

ESA A64	NACE Rev. 2	Activity
1	1	Crop and animal production, hunting and related service activities
2	2	Forestry and logging
3	3	Fishing and aquaculture
4	05-09	Mining and quarrying
5	10-12	Manufacture of food products, beverages and tobacco products
6	13-15	Manufacture of textiles, wearing apparel and leather products
7	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
8	17	Manufacture of paper and paper products
9	18	Printing and reproduction of recorded media
10	19	Manufacture of coke and refined petroleum products
11	20	Chemical industry
12	21	Manufacture of pharmaceutical products
13	22	Manufacture of rubber and plastic products
14	23	Manufacture of other non-metallic mineral products
15	24	Manufacture of basic metals
16	25	Manufacture of fabricated metal products, except machinery and equipment
17	26	Manufacture of computer, electronic and optical products
18	27	Manufacture of electrical equipment
19	28	Manufacture of machinery and equipment not elsewhere classified (n.e.c.)
20	29	Manufacture of motor vehicles, trailers and semi-trailers
21	30	Manufacture of other transport equipment
22	31-32	Manufacture of furniture; Other manufacturing
23	33	Repair and installation of machinery and equipment
24	35	Electricity, gas, steam and air-conditioning supply
25	36	Water collection, treatment and supply
26	37-39	Sewerage, waste management and remediation activities
27	41-43	Construction
28	45	Wholesale and retail trade and repair of motor vehicles and motorcycles
29	46	Wholesale trade, except of motor vehicles and motorcycles
30	47	Retail trade, except of motor vehicles and motorcycles
31	49	Land transport and transport via pipelines

32	50	Water transport
33	51	Air transport
34	52	Warehousing and support activities for transportation
35	53	Postal and courier activities
36	55-56	Accommodation; food and beverage service activities
37	58	Publishing activities
38	59-60	Audio-visual and broadcasting activities
39	61	Telecommunications
40	62-63	Computer programming, consultancy and related; information service activities
41	64	Financial service activities, except insurance and pension funding
42	65	Insurance, reinsurance and pension funding, except compulsory social security
43	66	Activities auxiliary to financial services and insurance activities
44	68	Real estate activities
45	69-70	Legal & accounting activities; head offices; management consultancy activities
46	71	Architectural and engineering services; technical testing and analysis
47	72	Scientific research and development
48	73	Advertising and market research
49	74-75	Other professional, scientific and technical activities; veterinary activities
50	77	Rental and leasing activities
51	78	Employment activities
52	79	Travel agency, tour operator and other reservation services and related activities
53	80-82	Security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities
54	84	Public administration and defence; compulsory social security
55	85	Education
56	86	Human health activities
57	87-88	Social work activities
58	90-92	Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities
59	93	Sports activities and amusement and recreation activities
60	94	Activities of membership organisations
61	95	Repair of computers and personal and household goods
62	96	Other personal service activities
63	97-98	Activities of households as employers of domestic personnel; undifferentiated goods- and services-producing activities of households for own use
64	99	Activities of extraterritorial organisations and bodies (not included)
01-64	**01-99**	**All NACE economic sectors**

Annex 3

List of abbreviations and acronyms

ASI = Annual Services Inquiry

BOP = Balance of Payments

CFC = Consumption of Fixed Capital

CIP = Census of Industrial Production

COE = Compensation of Employees

EMU = Economic and Monetary Union

ESA = European System of Accounts

EU = European Union

GDP = Gross Domestic Product

GFCF = Gross Fixed Capital Formation

GNI = Gross National Income

GVA = Gross Value Added

IIU = Inter-Industry Use

NACE = Nomenclature générale des Activités économiques dans les Communautés Européennes (Classification of Economic Activities within the European Communities)

NATACC = National Accounts

NEC = Not Elsewhere Classified

NIE = National Income and Expenditure

NOS = Net Operating Surplus

NPISH = Non-Profit Institutions Serving Households

N/R = Not Relevant

PCE = Personal Consumption and Expenditure

PRODCOM = PRODuction COMMunautaire (Community Production)

SBS = Structure of Business Statistics

S&UT = Supply and Use Tables

SNA = System of National Accounts

VAT = Value Added Tax