

Standard Report
on
Methods and Quality (v1)
for
<National Accounts >

This documentation applies to the reporting period:

2009

Last edited: <6 October -2009>

CENTRAL STATISTICS OFFICE

Skehard Road, Cork

021 4545000

www.cso.ie

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1. Overview

The National Accounts form a comprehensive framework within which economic data can be presented in a coherent, consistent manner. The first official estimates of national income and expenditure for Ireland for the period 1938-1944 were published in 1946. In time the national accounts developed into an annual series and later (in 1999) quarterly accounts were introduced.

Estimates are provided at current and constant prices. The impact of price changes is eliminated from the estimates at constant prices so that these measure the real or volume changes in the various aggregates over time.

The principal outputs are

- the annual National Income and Expenditure (NIE) report that contains details of all the main aggregates
- quarterly national accounts that provide measures of the trend in the main aggregates on a quarterly basis
- annual institutional sector accounts that provide a systematic description of various stages of the economic cycle for individual institutional sectors (non-financial and financial corporations, government, private households, private non-profit organisations and others)
- Annual estimates of output and value added by activity
- Regional GVA and Household Income data and
- supply and use and input-output tables that provide more detailed information on the structure of the economy.

The national accounts are produced within an integrated statistical framework that is based on the European system of National and Regional Accounts (ESA95). The use of this standard ensures that Ireland's national accounts are comparable with those of other EU member states. As well as being used for monitoring developments in the economy, some of the main aggregates are used for EU administrative purposes.

2. General information

2.1 Statistical Category

The national accounts are compiled using a wide range of statistical and administrative sources.

2.2 Area of Activity

Macro economic statistics

2.3 Organisational Unit Responsible, Person to Contact

National Accounts Divisions

Michael Connolly, Senior Statistician, Integration Division

E-Mail: Michael.Connolly@cso.ie

Pat Fanning, Senior Statistician, Income Division

E-Mail: Pat.Fanning@cso.ie

Mick Lucey, Senior Statistician, Government Accounts

E-Mail: Mick.Lucey@cso.ie

Paddy McDonald, Senior Statistician, Expenditure Division

E-Mail: Paddy.McDonald@cso.ie

National Accounts

E-mail: nat_acc@cso.ie

2.4 Objectives and Purpose; History

The national accounts form a comprehensive framework within which economic data is presented in a coherent, consistent manner in accordance with internationally comparable standards. Various aspects and developments of a national economy are described over a specific period of time. They are used nationally for economic policy formulation and for monitoring the impact of economic policy.

The accounts are produced within an integrated statistical framework that is based on the European system of National and Regional Accounts (ESA95). The statistical outputs required at EU level are specified in EU legislation and are integrated with those of other member states in producing accounts for the EU and the euro area. They are also used for EU administrative purposes. In particular, the level of Gross National Income (GNI) determines a major share of Ireland's contribution to the EU budget while the ratio of government debt and deficit to GDP are important criteria within the framework of the Stability and Growth Pact.

The series of official estimates of national income and expenditure was inaugurated in a White Paper on National Income and Expenditure, 1938-1944 and continued in a second White Paper with estimates for 1938 and 1944-1950. Annual estimates have been compiled since that date and have gradually been expanded and improved.

The results are now compiled in accordance with the European system of National and Regional Accounts (ESA95). This methodology was introduced in full for the annual results for 1998. However, two of the most important aspects (the treatment of royalty payments and of the profits of subsidiaries or branches of foreign companies) had already been introduced for the 1995 results.

Regional Accounts were first published in 1996 in respect of 1991. A further set was published in 1997 in respect of 1993 and these have been continued on an annual basis. County Income data was first published in 2000 and has been published together with the regional accounts since 2002.

Quarterly National Accounts estimates were published for the first time in 1999 and contained estimates from the first quarter of 1997. Annual Institutional Sector Accounts were introduced in 2007 and incorporate results from 2002 onwards. Input Output tables have been produced at irregular intervals while Supply and Use and Input-Output tables have been produced for 1998, 2000 and 2005 and Supply and Use tables for 2001 and 2002. Estimates of Output and Value Added by Activity were introduced in 2008.

2.5 Periodicity

National Accounts are compiled quarterly (summary) and annually (detailed). The Institutional Sector Accounts are currently compiled annually but quarterly accounts are planned. Supply and Use and Input-Output tables have been produced for 1998, 2000 and 2005 and Supply and Use tables for 2001 and 2002. It is planned to produce Supply and Use Tables annually and Input-Output tables at five year intervals once satisfactory timeliness has been achieved. Estimates of Output and Value Added by Activity are being produced annually.

2.6 Client

The core national accounts are a general national requirement. However, almost all of the detailed tables are required under Regulation (EU) No 2223/96

2.7 Users

National:

- Government Departments
- Economic and Social Research Institute
- Central Bank and Financial Services Authority of Ireland
- Economists and Researchers
- Media
- Business Consultants
- General Public

International:

- European Commission/Eurostat
- European Central Bank (ECB)
- IMF, OECD, UN
- Researchers and Consultants

2.8 Legal Basis

National Legal Basis:

Statistics Act, 1993

EU Regulations:

Basic Regulation

- Regulation (EU) No. 2223/96 of the Council also other regulations
- Regulation 1221/02 on Quarterly non financial accounts for general government
- 501/2004 on quarterly financial accounts for general government
- 1222/2004 on compilation of quarterly government debt
- 1161/2005 on the compilation of quarterly non financial institutional sector accounts

Amending Regulation

1392/2007 to 2223/96

Commission Regulations

264/2000 with respect to Short term public finance statistics

3. Statistical Concepts, Methods

3.1 Subject of the Statistics

Macro-economic statistics - the national accounts provide a systematic and detailed description of the total economy and its components. The principal tables in the annual accounts show the derivation of major aggregates such as Gross Domestic Product (GDP) (the total value added in the economy in a given time period) at current and constant prices

3.2 Units of Observation/Collection Units/Units of Presentation

The income approach to estimating GDP combines the operating surplus of incorporated enterprises, the value added of all dwelling services, and an estimate of the consumption of fixed capital (depreciation) for non-market sectors financed by General Government (estimated at aggregate level only). The analysis at industry level is, therefore, essentially on the basis of the smallest legal unit.

For the institutional sector accounts, institutional units are grouped into five institutional sectors while the supply and use tables are based on analysis of local kind of activity units. A kind of activity unit is a part of an enterprise or an entire enterprise, engaged in one activity for example manufacturing food products, , there can be a number of KAUs if an enterprise is engaged in differing productive activities.e.

The sectoral classification used for the Supply and Use tables and also for the Output and Value Added tables is the two-digit level of NACE Rev 1 referred to as the A60 coding of industrial activities. National summary groupings are used in the relevant tables of the annual and quarterly accounts.

The results in National Accounts publications are presented in constant and/or current price millions of euros.

3.3 Data Sources

The national accounts draw on a wide variety of data sources. These are outlined for the different elements of the accounts:

Income estimate – current prices

The income-based estimate of GNI is calculated by estimating and combining the separate components of income. These include Operating Surplus, Mixed Income and Compensation of Employees. Operating surplus and mixed incomes are initially valued at factor cost, and GDP at market prices is derived at the aggregate level by adding taxes linked to production less subsidies linked to production. Operating surplus is calculated in respect of (i) incorporated businesses operating in Ireland, (ii) housing services and (iii) non-market entities belonging to or financed by the Government sector.

The *operating surplus* of incorporated enterprises is calculated mainly using the information provided in the corporation tax returns that businesses submit to the Revenue Commissioners. In some instances, the tax returns are supplemented by information from other sources. For example, in the case of financial enterprises, the tax returns are used to estimate the operating surplus of only a subset of financial institutions. This includes banks (NACE Rev.1 6512) where the number of entities is small enough to permit the examination of the accounts of all companies individually every year. In the absence of alternative data sources, the tax returns are also used to calculate the operating surplus of some financial intermediaries and financial auxiliaries (mainly those serving domestic markets).

For the remaining financial intermediaries and financial auxiliaries the primary source is the surveys undertaken by CSO. The operating surplus of insurance enterprises is estimated using the information provided by the companies to the Financial Regulator in accordance with the EU directives on insurance. This information is supplemented by CSO surveys for reinsurance companies that are not covered in the returns of the Financial Regulator. Finally, some commercial State-owned public utility companies and a small number of other entities are by law exempted from corporation tax and their operating surplus is separately calculated using the information in their published accounts.

The *value added of all dwelling services*, including that attributable to unincorporated landlords, is by convention treated as operating surplus in the Irish Accounts. The value added is calculated as the difference between gross output and intermediate consumption. Gross output represents the value of actual and imputed rents and is estimated using benchmark information on actual rents paid, which was collected in the 2006 Census of Population. This is updated to take account of changes in the volume of the rented and owner-occupied housing stock and in rent levels. The estimates of Intermediate Consumption are derived from a number of sources. .

Operating surplus also includes an estimate of the consumption of fixed capital (depreciation) for non-market sectors financed by General Government. This is estimated at an aggregate level only.

Mixed Income is estimated by assigning an income to each person classified as self-employed in the Quarterly National Household Survey (QNHS). As in the case of incorporated enterprises (Para 1.4.1.1 above), the primary data source for the estimates of mixed income is the Revenue Commissioners' files of tax records and supporting accounts.

Compensation of employees is estimated by assigning an income to each person classified as an employee in the labour market statistics derived from the Quarterly National Household Survey (QNHS). The earnings information used in the calculations is largely derived from statistical surveys and administrative records. The statistical surveys include the Census of Industrial Production (CIP) and the Annual Services Inquiries (ASI). These are conducted to meet the requirements of the EU Structural Business Statistics Regulation. Information is collected on both earnings and numbers employed.

Other surveys also provide information on earnings. For instance, the census of building companies (NACE F) employing twenty or more persons provides annual estimates of earnings for large concerns. These results are extrapolated to smaller firms, using the employment controls in the QNHS after allowing for differences in the levels of wages paid by small and large companies. This latter information is derived from a monthly CSO survey of construction firms, with ten or more persons employed.

Some service branches that are not covered in the ASI are directly surveyed by National Accounts Section. These include private charities and certain non-market State-owned entities, as well as certain business and personal services branches not currently surveyed in the ASI. For public sector employees, including most teachers and health service workers, the remuneration estimates are taken from public accounts and from information provided by Government Departments.

Estimates of operating surplus and mixed incomes are measured inclusive of subsidies and exclusive of taxes on production (i.e. at factor cost). To derive the GDP at market prices, taxes on production must be added and subsidies on production deducted. The value of taxes on production is estimated each year using information provided in the published accounts of Government.

Expenditure estimate – current prices

For the expenditure estimate, the main components are 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 and net exports (exports less imports).

The main sources used in the compilation of *personal expenditure* include CSO's external trade and production data in the commodity flow approach, fiscal data from the Revenue Commissioners, Household Budget Surveys (HBS) and the Census of Population for the rent estimation. Other sources include administrative data and direct inquiries to some of the main public service providers.

Government final consumption expenditure is defined as gross expenditure on goods and services (including goods and services provided to households as social benefits in kind) less miscellaneous trading receipts, plus consumption of fixed capital (depreciation). Details of the revenue and expenditure of Government

Departments are extracted from the Finance and Appropriation accounts, which are issued each year by the Department of Finance. When the published information is not adequate to separately identify expenditure on goods and services, Government Departments supply additional information directly to the CSO. All Local Authorities are required to make annual audited returns of their income and expenditure to the Department of the Environment and Local Government. The information needed for the National Accounts is extracted from these accounts and supplemented, when necessary, by more detailed information provided directly by the Department. Other information is provided by relevant government departments.

The main sources used in the compilation of *gross fixed capital formation* are administrative and fiscal data, surveys, direct information and CSO's surveys of external trade and production in the commodity flow method.

Administrative data, direct inquiries and surveys are the main sources used in estimating changes in inventories.

Exports and imports of goods and services are based on the Balance of Payments (BOP statistics). Figures for merchandise trade are largely based on the External Trade statistics compiled jointly by the Office of the Revenue Commissioners and the Central Statistics Office. Statistics on imports and exports in services are also derived from the Balance of Payments statistics. These data are mostly compiled from information collected in an extensive suite of enterprise-based surveys undertaken by Balance of Payments Division. The Travel and Tourism sub-component of this item is based on surveys of passengers at air and seaports. These surveys are conducted by CSO.

Output estimate – constant prices

For this estimate, the value added estimates for the different sectors in each year are taken forward into the following year in a variety of ways. The principal methods used are:

- *Deflated turnover/output*
- *Outputs in physical values*
- *Inputs (usually labour inputs)*

The principal sources are CSO production surveys (e.g., Monthly Industrial Inquiry), other CSO surveys (Retail Sales Index) and administrative sources. CSO price indices are used as deflators.

Expenditure estimate – constant prices

The main components are 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 and net exports (exports less imports). The sources for these are described above for current prices. The additional items used are CSO price indices (as deflators) and direct output indicators from various sources.

Output estimate – current prices (not yet integrated in NIE estimate process)

Estimates are produced of output, intermediate consumption and value added by activity. These are mainly based on statistical surveys of businesses, in particular the Census of Industrial Production, Annual Services Inquiry, Balance of Payment Inquiries and Census of Building and Construction. Use is also made of administrative sources.

Institutional sector accounts

The institutional sector accounts draw on a wide range of sources, mainly those that are detailed above in the context of the compilation of the NIE. The allocation of all these data to the relevant institutional sector is what mainly differentiates these accounts from the NIE

Supply and Use tables

The main sources used for these tables are:

- CSO business surveys (Census of Industrial Production, Annual Services Inquiry, Prodcom)
- CSO External trade and BOP surveys
- Administrative data

3.4 Reporting Unit/Respondents

Not relevant as national accounts essentially use results of other statistical surveys

3.5 Type of Survey/Process

Compilation and aggregation of data from numerous sources.

3.6 Characteristics of the Sample/Process

N.R.

3.7 Survey Technique/Data Transfer

N.R.

3.8 Questionnaire (including explanations)

N.R.

3.9 Participation in the Survey

N.R.

3.10 Characteristics of the Survey/Process and its Results

Survey Process

The National Accounts form a comprehensive framework within which economic data can be presented in a coherent, consistent manner. In the process, therefore, numerous transformations are undertaken to ensure data conforms to national accounts definitions. The main definitions are set out in Annex 1. The information collected has been described earlier in Section 3.3 (Data Sources).

The principal adjustments include

- Adjusting tax returns to calculate operating surplus of incorporated businesses
- Estimating the value added of dwelling services (imputed rent)
- Using the commodity flow method (based on values of production, exports and imports of individual commodities) for elements of personal consumption and capital formation.

3.10.1 Income estimate – current prices

The income-based estimate of GNI is calculated by estimating and combining the separate components of income. These include Operating Surplus, Mixed Income and Compensation of Employees.

Operating surplus is calculated in respect of (i) incorporated businesses operating in Ireland, (ii) housing services and (iii) non-market entities belonging to or financed by the Government sector.

The operating surplus of incorporated enterprises is calculated mainly using the information provided in the corporation tax returns that businesses submit to the Revenue Commissioners. A business's income for tax purposes is calculated in accordance with specific tax rules. There are a number of differences between taxable profit and the national accounting concept of operating surplus or mixed income. The compilation approach is to calculate, for a sample of tax cases, the relationship (ratios, mean differences etc) between taxable profit and operating surplus or mixed income, drawing on the information in the individual tax files and supporting accounts. The relationships calculated from the sample are then applied to the population in the tax files. As in the case of operating surplus, estimates of the mixed income of unincorporated enterprises ("self-employed") are based, in the first instance, on income tax records.

The value added of dwellings services is also derived indirectly by estimating total rents (actual and imputed), using Census of Population data updated by volume and price indicators, and deducting estimates of intermediate consumption, derived from a variety of statistical and administrative sources.

An indirect estimation method is also used in the calculation of the gross operating surplus of non-market sectors financed by General Government. For these entities, operating surplus corresponds to the value of the consumption of fixed capital. This is estimated indirectly, at an aggregate level only, as a percentage of the capital stock of the different types of physical assets. The published accounts of Government make no allowance for depletion of capital goods.

Value added in Agriculture is derived, using the output-based approach, as the difference between gross output and intermediate consumption. The output levels of certain products are estimated from the demand side, using information such as milk intake by dairies, cattle slaughterings, exports, etc.. Significant components of intermediate consumption, such as fertilisers and animal feeds, are also determined from the supply side and not from information provided by farmers.

The estimates of *compensation of employees* are derived mainly by assigning earnings to all employees identified in the labour market statistics. For many activity branches, much of the earnings information is collected in statistical surveys. In many cases it conforms closely to ESA valuation principles. Adjustments are made as necessary to correct for cases where the concept reported differs from the ESA principles.

For public sector workers, the primary data are taken from public accounts or reported direct by the administrations concerned. Special measures are taken to include the appropriate estimates of imputed pension's contributions for these employees, whose pensions are in the main unfunded.

3.10.2 Expenditure estimate – current prices

For the expenditure estimate, the main components are 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 and net exports (exports less imports). Estimates of final expenditures are generally valued at market or purchasers prices. Most of the basic data sources are valued accordingly and do not require adjustment. When this is not the case, specific adjustments are made in order to convert to purchasers' prices.

Fiscal data on excise duty collected on items such as alcohol, tobacco and betting are used in the estimation of HFCE. This data is available from the Revenue Commissioners. Quantities are available of the supply of alcohol and tobacco and are combined with price data from the Consumer Price Index (CPI) to yield value

estimates. Data from the Revenue Vehicle Registration Tax (VRT) files are used in the estimation of expenditure on cars.

Personal Consumption

The HBS is used to benchmark items in the food category and also many of the service items. Other years are estimated using volume and price trends from relevant indicators. Estimates based on the *Household Budget Survey* are automatically valued at market prices, since the survey measures actual expenditures by households on goods and services.

For personal expenditure on consumer goods and services, the commodity flow method is used to estimate such items as clothing and footwear, some food items and household durables, textiles and other personal goods. In the *commodity flow* method, production data is combined with data from the trade statistics to give an estimate of the total supply of particular goods in the economy. Production data are valued at basic prices. Imports are recorded at cif (carriage, insurance, freight) value, which includes all costs incurred up to the point of entry to the State. For exports the free-on-board (fob) value is used. This includes all costs incurred up to the point of exit from the State. Trade margins and net taxes on products are added to production and import values to convert them to market prices.

Expenditure on products such as alcohol and cigarettes are based on fiscal data. The quantities released from clearing warehouses for retail sale are obtained from the tax office and are multiplied by national average retail or market prices, derived as part of the compilation of the monthly Consumer Price Index (CPI) calculations.

Cigars and some other minor tobacco estimates are derived from import data and converted to market prices by adding excise duty, trade margins and VAT.

The *imputed rental values* assigned to owner occupied accommodation are the rents payable for similar types of privately rented accommodation. A benchmark value is obtained using the Census of Population and is extrapolated using a volume index of the increase in the stock of houses and a price index of private rents. The resulting estimates are therefore at market prices.

Food and fuel produced and consumed in farm households without process of sale are valued at farm-gate prices. This is consistent with the basic prices valuation required in the ESA95.

Final Consumption Expenditure of General Government

All *non-market output* (and the related Final Consumption Expenditure of General Government) is valued as the sum of the costs of production. This includes the cost of the goods and services purchased and the remuneration of workers plus capital consumption. The value of Final Consumption Expenditure is reduced by the value of any incidental sales.

In determining the *output of Government*, all goods and services bought are valued at purchasers' prices, as in the source material. Remuneration is valued to include all declared bonuses and benefits in kind. Remuneration also includes an estimate of the costs to employers of providing the unfunded pension schemes they operate for their employees.

Gross Fixed Capital Formation

The valuation system used for the various components of Gross Fixed Capital Formation (GFCF) is as follows:

GFCF in *software* is based on two CSO inquiries. Both these inquiries ask respondents to value purchased software at the prices paid exclusive of deductible VAT i.e. market prices. Respondents are advised to value

software produced on own account at the cost of production, given the difficulty of assigning a market price to specifically designed software. The valuation used for *mineral exploration* is the cost of production. This is the valuation available to companies and is recommended in company accounting standards for such intangible assets. The value of *new literary and musical works* is based on the expected stream of income in the future from such works.

The *commodity flow method* is used to derive GFCF in machinery and equipment. The production and trade values are adjusted for trade and transport margins and net taxes to convert the raw values to purchasers' prices. The value of *investment in cars* and commercial vehicles is derived from the Vehicle Tax Registration (VRT) administration system. Tax is payable on the market prices of vehicles so the system automatically provides an estimate of the value of new registrations at purchasers' prices. *Direct inquiries* are used to obtain information on the capital investments of certain large State-owned commercial companies. The companies are instructed to record their acquisitions of capital assets at purchasers' prices.

Information on the output of *new dwellings* is based on house numbers multiplied by annual average new house sales prices. These average prices include non-deductible VAT and are adjusted to exclude estimated site acquisition costs. *Major residential repair and maintenance* expenditure is based directly on a survey of households. Respondents are asked to report their actual expenditure and this will be at market prices. *Other construction* in the non-residential, productive, agricultural and social sectors is also valued at purchasers' prices and includes non-deductible VAT. All *transfer costs* incurred in the purchase and sale of property are included as part of capital formation.

Changes in stocks

Changes in inventories (P52) are measured by the value of the entries into inventories less the value of withdrawals and the value of any recurrent losses of goods held in inventories. (ESA95 3.117)

The valuation of changes in inventories is specifically explained in ESA95 (3.122) and can be at basic or purchasers' prices depending on the particular type of inventory.

In the case of industrial stocks, the quarterly survey provides beginning and ending stock values at basic prices (i.e. exclusive of VAT and excise duties) except for stocks of goods purchased for resale which are valued at purchasers' prices.

Retail and wholesale inventories are valued at purchasers' prices as requested on the annual and quarterly services survey questionnaires. The figures are exclusive of deductible VAT and inclusive of excise duties. All stocks at beginning and end of year are revalued to mid-year prices using appropriate price indices in order to remove any holding gains or losses as required by ESA95.

Exports and Imports

For merchandise exports, the *fob* (free on board) value is used. This is the cost to the purchaser abroad, including packing, transport in the State, loading charges, insurance and all other charges accruing up to the point where the goods are put on board the exporting vessel or aircraft or are conveyed to the land frontier. Imports are initially recorded in the Trade Statistics using the *cif* value (inclusive of cost, insurance and freight to the point of entry to the State). For Balance of Payments (and National Accounts) purposes, imports are subsequently converted to a *fob* (free on board) valuation.

3.10.3 Expenditure estimate – constant prices

The expenditure estimates at constant prices are calculated by deflating current prices by price indices. The price indices used in the calculation of the accounts are generally Laspeyres indices with fixed base period weights. The annual Trade indices are Fisher and use a combination of weights of previous and current years. Both the Consumer Price Index and Wholesale Price Index are calculated using the fixed weight Laspeyres index formula.

Ireland introduced chain-linking to the national accounts system both annual and quarterly, in 2004. The reference year used is the year previous to the latest reporting year, so in the 2005 accounts, 2004 was the reference year, and in the 2006 accounts, the reference year was 2005

The methods used can be described in terms of five categories:

(a) CPI sub component

Deflate the current expenditure estimates using a matching sub component of the Consumer Price Index (CPI) (e.g. *CPI for Bread* in the table means that the estimate of current expenditure on bread is deflated using a special sub index for bread taken from the Consumer Price Index)

(b) Base Year Price

Apply the price in the base year (1995) to the quantities consumed in the current year (e.g. *Average price for LPG in 1995* in the table means that the average price per litre of LPG in 1995 is applied to the volume of LPG consumed in the current year.

(c) All items CPI

Deflate the current expenditure estimates using the CPI for all items. This is used in a small number of cases where it is considered more reliable than using a special sub index because the item concerned would have a very small weight in the CPI.

(d) Index for earnings for a particular category

Deflate the current price estimate using the index of earnings for a particular sector. This is used largely for service items with a small weight in the CPI, where the expenditure incurred is mainly in return for labour supplied e.g. Veterinary Services

(e) Special Private rent Index from the QNHS (Quarterly National Household Survey)

This is an index of the price of rents in the private sector. It is compiled from data collected in the QNHS. A weighted average price of private rents is compiled on a quarterly basis and used to derive a rent price index.

Final Consumption Expenditure of General Government

A variety of input based methods are used to calculate the constant price value of net public authority expenditure. Different components of the remuneration of Government employees are first deflated in considerable detail. Remaining expenditures, largely comprised of goods and services, are then deflated in aggregate using a combination of the Consumer and Wholesale Price Indices.

Gross Fixed Capital Formation

The sub components are calculated individually and the methods used are described below:

Capital Goods sub component price Index

This method involves deflating the current price value of the goods by a price index for a sub component of the capital goods price index.

Capital Goods sub component price index for home produced goods combined with an Import Unit Value Index for section 7 of SITC for imported capital goods.

This method is similar to above except that the use of the capital Goods Index is confined to the home produced capital goods. It is considered that the imported goods might not be strongly enough represented in the capital goods price index for the sectors using this method and the Import Unit Value index for Machinery and Transport Equipment is used for the imported capital goods.

Overall index of Transportable capital goods for use in Other Sectors

The above index has been used for major transport equipment such as Ships, locomotives, aircraft because of the lack of a specific index for these sectors

Output of Building Prices indices from the Department of the Environment

The above indices which are described in Appendix 2 of the annual publications “Construction Industry Review and Outlook” of the Department of the Environment are used to deflate the Capital Investment in dwellings and buildings

Miscellaneous category

A variety of other price and earnings indices are used for other specific items.

Stocks

Stocks of finished goods and goods for resale are goods which are ready to leave the manufacturing enterprise, the bulk of which will have been manufactured on the premises and a small proportion of which may have been bought in for resale. The method used here is to deflate the current value of these stocks by the Producer price index for the relevant industry. In many cases this is done at the two digit level of Nace Rev1 i.e. the current value of the stocks in the industries with a particular 2 digit Nace code are deflated by the output price index for that 2 digit Nace code.

Raw materials and work in progress stocks are deflated by a combination of producer price indices and the Import Unit Value index for *basic raw materials*. The combination of producer price indices used for each industry group and the weights used to combine them and the import unit value index are derived from the Input Output table.

Stocks of the retail sector are obtained in constant values by deflating the current values of these stocks by the special price index used for deflating the Retail Sales Index. The General Wholesale Price index as published in the Wholesale Price Index release is used to deflate the current values of stocks in the Wholesale sector. The values of stocks are obtained in current terms annually from the Annual Services Inquiry.

Intervention stocks are estimated in constant prices by using the average prices in the previous year and multiplying by the volumes in storage in the current year. Estimates are made in this manner for each of the categories bone-in beef, boneless beef, skimmed milk powder, butter and cereals.

The changes in agricultural stocks in constant terms are obtained from the economic accounts for agriculture and they use the volumes in the current year multiplied by the average price in the previous year to derive the results.

Exports and Imports

Exports of goods are deflated using a deflator calculated by taking the average of the Unit Value index and the wholesale price index for exports of goods as set out below.

$$\text{Deflator}_{yt-1} = \left(\frac{\sum (\text{Export Unit Value Index}_{yt} + \text{WPI Index for Exports}_{yt})}{\sum (\text{Export Unit Value Index}_{yt-1} + \text{WPI Index for Exports}_{yt-1})} \right)$$

Where yt = current year.

The Balance of Payments section calculates data for exports of merchandise. This figure is adjusted by National Accounts to exclude the value of certain exports that have been considered to represent re-valuations rather than actual volumes of exports. This adjusted figure is deflated to constant prices by the formula described above.

Exports of services

The Balance of Payments section calculates data for exports of services. The figures used are those appearing in the Balance of Payments accounts under the following headings: Transport, Tourism and Travel, Communications, Insurance, Financial Services, Computer Services, Business Services, Government Services, Personal, recreational and cultural services. Additionally exports of FISIM are included in the data used for calculating exports of services for National Accounts purposes.

These sectors are individually deflated using the following deflators.

Transport

Sea Transport *CPI Boat Fares*

Air Transport *CPI Fares*

Tourism and Travel, *CPI Transport*

Communications, *CPI Telephone charges*

Insurance

Life and Pensions *Index of Earnings of Employees in Financial Services*

Other Direct Insurance *CPI Motor Insurance*

Financial Services, *Index of Earnings of Employees in Financial Services*

Computer Services, *Index of Earnings of Employees in Computer Services*

<i>Business Services,</i>	<i>Index of Earnings of Employees in Business Services</i>
<i>Government Services</i>	<i>CPI Other Services</i>
<i>Personal, recreational and cultural services.</i>	<i>CPI Other Entertainment</i>
<i>FISIM</i>	<i>CPI Other Services</i>

The GVA of exports of goods, services and royalties at previous year prices are then calculated separately, and summed to derive the total GVA at previous year prices. The year on year volume changes are calculated, and subsequently the chain-linked GVA at reference year 2006 for total exports of goods and services are arrived at.

Imports of goods and services

Imports of goods

The figures for imports of goods are taken from the Balance of Payments accounts. The adjusted figure is deflated by the unit value index for imports.

The values are broken down into the following categories of goods: Food, drink, tobacco, Other basic materials, Fuels, Other goods.

Imports of services

The Balance of Payments section calculates data for exports of services. The figures used are those appearing in the credit column in Table 2a of the Balance of Payments accounts under the following headings: Transport, Tourism and Travel, Communications, Construction, Insurance, Financial Services, Computer Services, Business Services, Government Services, Personal, recreational and cultural services. Additionally imports of FISIM are included in the data used for calculating imports of services for National Accounts purposes.

These sectors are individually deflated to a base year and then chain linked using deflators such as HICP Sea Transport for Transport, and HICP Insurance for Insurance services etc.

Exports and Imports of Royalties

The figures for both royalty imports and royalty exports are obtained from Balance of Payments estimates, and are both deflated to a base year and chain linked to previous years prices by the same figure. The deflator is derived by using the credit items in the Balance of Payments release used to calculate the sum of goods and service exports, as described above. This total is divided by the total constant price figure for the exports of goods and services to give the index for deflation of royalties. This figure is used to deflate both exports and imports of royalties.

The royalty exports (or imports) figure is added to the figure for exports (or imports) of goods and services to give the final figures for exports and imports at constant prices which appear in Table 6 of the final annual National Accounts.

The GVA of imports of goods, services and royalties at previous year prices are then calculated separately, and summed to derive the total GVA at previous year prices. The year on year volume changes are calculated, and subsequently the chain-linked GVA at reference year 2006 for total imports of goods and services are arrived at.

3.10.4 Output estimate – constant prices

The output based estimate is primarily calculated using base year value added totals which are projected forward using Laspeyres type volume indices. These volume indices are calculated by utilising indicators appropriate to the estimation of volume change in a particular sector.

Agriculture, Forestry and Fishing

Estimates of value added in Agriculture are compiled in accordance with the EEA guidelines and Value Added at constant prices is calculated using double deflation. Methods used for the calculation of Gross outputs and Intermediate Consumption include:

- Current year quantities multiplied by actual prices from the relevant base year
- Current year values deflated using price indices
- Other methods

The data used to calculate the GVA for forestry is collected from Coillte, the state-sponsored forestry company, and the Department of Communications, Marine and Natural Resources which supplies the data for Private Forestry. Separate GVA's for state owned and private forestry are calculated in the base year, based upon profits made and wages and salaries paid. Total GVA at constant prices is derived by applying these base year value added weights to volume indices calculated for the two areas.

Gross value added of the fishing industry is calculated by multiplying the gross value added in the previous year by a volume index based on the constant price value of the total catch.

Industry

Constant price value added for branches of Manufacturing Industry are calculated by projecting forward value added amounts by annual volume indices derived from the monthly Industrial Production Index series compiled by CSO.

<http://www.cso.ie/px/pxeirestat/database/eirestat/Industrial%20Production%20Volume%20and%20Turnover%20Indices/Industrial%20Production%20Volume%20and%20Turnover%20Indices.asp>

Separate constant price value added estimates are published for five sub-divisions of Industry, namely

- Reproduction of recorded media
- Chemicals (incl. man-made fibres)
- Computers and Instrument engineering
- Electrical machinery and equipment
- Remainder of Industry

The first four branches are dominated by large foreign owned enterprises with very high productivity rates. The method used to calculate the value added of these branches is essentially to extrapolate the base year GVA by the appropriate output volume index from the Monthly Production series.

In the initial extrapolation phase, the value added estimates for the base year are first adjusted by adding back the net royalty payments of the companies in each of the branches. These royalties are then separately deflated by an implicit price index for exports of goods and services and the deflated amounts are deducted from the GVA estimates derived in the volume index extrapolation. This methodology was adapted to introduce an element of double deflation in respect of a variable subject to considerable fluctuations.

As already explained above the data on royalty payments are collected on a quarterly basis by the Balance of Payments division. The deflator is calculated by dividing the current price value for exports of goods and services (excluding royalties) by the constant price value for exports of goods and services (excluding royalties).

The total manufacturing industry GVA is added to the GVA's separately calculated for Utilities and Construction work to produce the GVA which appears in the National Accounts as Industry (including building).

Constant price estimates for the Building and Construction branch are calculated by projecting forward the base year value added of different types of construction activities by volume indices measuring the trend in the gross output of each activity. The volume index used for New Construction is based on the constant price value of the Building and Construction component of Gross Fixed Capital Formation. This covers the value of new dwellings, roads and new building and construction.

Public Administration and defence services

Value added in this category consists of the remuneration of certain employees in Central and Local Government. Estimates at constant prices are supplied by Government Accounts Section and are derived as part of the calculation of the deflation of the expenditure aggregate 'Net Public Authority Current Expenditure'. This latter aggregate includes the remuneration of all employees of General Government (apart from construction workers engaged in own account capital formation), but only a part of this is relevant to this branch.

Distribution, Transport and Communications

Distribution

Constant price GVAs are calculated for three separate activities namely (1) the Motor trade, (2) Rest of the retail sector and (3) the Wholesale branch. The method used is to project forward base year GVAs by volume indices. In this case the volume indices are derived initially from the monthly Retail Sales Inquiry (RSI). However, these initial annual results, based on the retail sales inquiry, are corrected the following year to take on board information on turnover trends from the Annual Services Inquiry, when it becomes available.

As with Industry, royalties are initially included in the constant price GVAs calculated for the Distribution sector. These are separately deflated by the implied price index for exports of goods and services and are then deducted from the initial GVA estimates. However, royalty receipts and payments in the distribution sector are extremely small. The final GVA for Distribution is added to those separately calculated for Communications and Transport, and appears in the final National Accounts as an overall figure for the three sectors.

Transport, storage and communication

In the Irish National Accounts this category includes passenger and freight air, sea and rail and road transport, in addition to the management of the airports, ports and other services ancillary to transport. The method used is again to project forward base year GVAs by appropriate volume indicators. Individual calculations are made for the State owned companies (where relevant) In the Irish National Accounts, this category includes companies engaged in the transport of passengers, freight and livestock. The methodology used is to separately calculate volume indices based on physical indicators of activity. These indices are used to project forward the base year GVAs estimated for each of the activities.

Data is collected on the annual numbers of passenger kilometres, so a combination of passenger numbers and vehicle kilometres is used to derive a volume index. An average of the passenger numbers index and of the vehicle kilometre index is taken, giving equal weight to both measures.

Communications

Post and courier activities

Postal services are primarily provided by An Post, the national postal service company. This company provides the CSO with information on the numbers of letters delivered each year and the number of items handled by SDS (Special Delivery Services), which are generally parcels and urgent or valuable deliveries. No distinction is made for the weights of packages or the cost of postage. There is no system of 1st or 2nd class postage in Ireland, which means that the large majority of letters cost the same to post. Again, no distinction is made for any discounts businesses might receive, or the use of registered postal services. The weights used are the amounts of revenue generated by each activity in the base year 1995.

Telecommunications

This methodology uses information from the Telecommunication regulator. The Telecommunications Regulator (COMREG) collects comprehensive information on the turnover of telecommunications companies, distinguishing between business and residential fixed line business in the case of all companies methodology for calculating the output of the Telecommunications branch. Overall fixed line business revenues is separately deflated using the specific price index provided by Telecom for business customers. Fixed line revenues from residential customers and revenues from mobile phone services is separately deflated using the appropriate components of the Consumer Price Index (CPI). The deflated revenues will then be combined to give a measure of total output at constant prices which will be used to project forward the base year GVA for the Telecommunications branch. However, as already described for Industry, the value added is first adjusted for the net royalty payments of telecommunications companies and these royalty amounts are separately deflated by the implied price index for total exports of goods and services. It should be noted that royalty receipts and payments in the telecommunications sector are extremely small.

The final constant price estimate of the GVA for Communications is added to those calculated for the Distribution and Transport branches and is published in Table 4 of the National Income and Expenditure report as an overall figure for the three sectors.

Other Services

Financial Intermediation

FISIM

This area is measured in the National Accounts as part of the 'Other Services' sector, and takes account of the activity of Banks, Building Societies, and the Post Office Savings Bank (P.O.S.B.). Value added at

constant prices is calculated by deducting the deflated value of Intermediate Consumption from Gross Output. Gross Output is defined to include the value of FISIM .

Gross output at current prices is divided between fee income and FISIM. In the absence of a more suitable deflator, revenue from fees is deflated by the Consumer Price Index (CPI) for bank charges. The FISIM element is deflated by the overall implied GDP price index. Intermediate consumption at base year prices is calculated by deflating the current value figure by the overall CPI, excluding Mortgage Interest. This is deducted from gross output, including FISIM, to derive the value added at constant prices.

Other financial services, excluding Insurance

In the Irish accounts, volume indicators are also separately estimated for Stockbrokers, Hire Purchase companies and financial services provided within the Irish Financial Services Centre (IFSC) in Dublin. Apart from these activities and banks and insurance companies, individual volume indicators are not available for the rest of the financial services area. The value added of remaining activities are combined with other service activities, not specifically included in the output volume calculations, and projected forward using a volume index based on average trends in covered activities.

An output volume index for stockbroking firms is calculated based upon the stamp duties paid to the revenue commissioners on the trade of stocks and shares. The total stamp duty receipts for each year are deflated by a price index based on the average of the monthly ISEQ (Irish Stock Exchange) price index of shares and the rate of change in the rates of stamp duty applied. The derived volume index is applied to the base year GVA to derive the constant price GVA in each year.

Information on the activities of Hire purchase companies was traditionally collected in CSO surveys. A volume indicator for the output of these companies is calculated as the total value of credit extended deflated by the overall CPI. This volume index is applied to the base year GVA.

A volume index for activities within the Irish Financial Services Centre is estimated based on the numbers of employees that work in the Centre. This number comprises only those employed in financial services work, and not those engaged in peripheral service activities. A productivity increase of 2% is added to the volume index for this sector. Once again, the volume index is applied to the base year GVA.

Insurance and pension funding, except compulsory social security services

This category covers Life Assurance, Fire insurance, Motor insurance and Accident, Employer's Liability and Other Insurance. The bulk of data used in the calculation of the output of the insurance industry comes from the annual report of the Insurance Regulator, the Department of Enterprise, Trade and Employment. The information published in this report is usually a year out of date and estimates for the most recent year are obtained directly from the Insurance Industry Insurance Federation of Ireland.

Separate volume indices are compiled for various categories of insurance business. These indices are then weighted together into an output volume index that is used to extrapolate forward the base year value added estimate for the total insurance industry.

The index for the end of the year insurance fund is calculated as the current value of the fund deflated by the overall Consumer Price Index.

Volume index for all insurance

The indices calculated for the insurance categories described above are weighted together to calculate an output volume index for the total insurance industry. The weights used are again the relative proportion of management expenses assigned to the two categories of insurance business in the base year 1995. This index is applied to the base year GVA, which is calculated from the wages and salaries paid and profits made in the insurance industry to give the constant price GVA in insurance.

Hotels and restaurants

The outputs of the Hotel and restaurant services in National Accounts are measured as part of the Other Services sector and again involves base year GVAs being extrapolated by volume indices. The measurement of the GVA for restaurants is a relatively crude measure, using the numbers employed in the sector as a volume indicator. The base year GVA, made up of the total of wages and salaries paid, and profits made in the sector in 1995, is multiplied by the volume index derived from the total numbers employed to arrive at a constant price GVA.

Real estate, renting and business activities

Real estate activities

The GVA of real estate services is calculated by extrapolating forward the base year GVA by a volume index. This index is calculated based on the stamp duties paid to the government in respect of purchases of land and property. Stamp duties are calculated at base year duty rates and are then deflated by a house price index, which is provided to the CSO by the Department of the Environment. Stamp duties are payable on property on a sliding scale, depending upon the price of the property purchased. People buying property for the first time do not pay duty, once the house size is less than 2,500 square feet (approx. 232 square metres).

Dwelling services of owner-occupiers

Constant price GVA is estimated separately for State owned (Local Authority) and private housing (including imputed rents). The current price GVA estimated for Local Authority rented accommodation is deflated directly by the Consumer Price Index for these rents. In the case of the private houses, the base year GVA total is projected forward using a volume index of the housing stock levels obtained from the Department of the Environment and Local Government (DoELG). This is adjusted for quality changes, using information on the level of major repair and construction work (extensions, etc.) to the existing stock of dwellings. The volume index is based on the historic capital stock series of private dwellings, increased each year by the value of capital formation in private housing and reduced by a 1.525% annual allowance for losses and depreciation, all expressed in constant prices.

Renting of machinery and equipment without operator and of personal and household goods

This area is not currently measured separately by the CSO. The base year value added of this activity is combined with the value added of other service activities not specifically covered in the output based GDP calculations. The combined value added of this residual group is then extrapolated forward using the trend in the service activities that are specifically measured.

Computer and related activities

This area is also not currently measured separately by the CSO and is instead covered in the residual GVA calculation for the services area. Under Commission Regulation 98/715, it has been agreed that Ireland must have an acceptable methodology in place by 2006.

Research and development

This area is again not currently measured separately by the CSO. The value of non-market research and development work is captured as part of the output of non-market government services but the amounts cannot be separately distinguished. Market research and development activities are not separately identified in the Irish National Accounts and the area is therefore covered indistinguishably in the residual calculation for the services area.

Under Commission Regulation 98/715, it has been agreed that Ireland must have an acceptable methodology in place by 2004 for the non-market element of this activity, and by 2006 for the market element.

Other business activities

Services included in this sector are professional services including legal, accountancy, architectural and engineering. GVA's for these services are included in the Irish National Accounts under the category "Professions", and comprises part of the Other Services sector. GVA at constant prices is estimated by extrapolating the base year values by volume indices.

Volume indices are based on the numbers employed in each profession. These are increased by an arbitrary 2% each year to allow for productivity increases. The volume index for each individual profession is applied to each base year GVA, and these are summed together to arrive at an overall GVA for professions.

Advertising

The methodology used for the advertising sector is the same as is used for the Professions. A volume index based on numbers employed is used to project forward base year value added.

Education

The methodology currently used is to extrapolate base value added by volume indices reflecting both the number of pupils in education and the number of teachers employed.

The CSO obtains information on the number of pupils and teachers from the Department of Education. The overall number of pupils for each year is calculated by taking the average number at the start of the two school years. For example, the number of students in the year 2000 is calculated as an average of the numbers enrolled in September 1999 and September 2000. Pupil and teacher numbers are provided for the three levels of education namely primary, secondary and third level. For each level, two volume indices are calculated representing (1) the number of pupils and (2) number of teachers. These are averaged to give an overall volume index for each of the three education levels. These volume indices are used to extrapolate forward the base year value added for each level and the results combined to give an overall value added for Education.

Health

The existing constant price measurements of healthcare in the Irish accounts are compiled using an input based methodology calculated at a very aggregate level. Value added at constant prices is calculated by projecting forward the base year value by volume indices based on numbers employed, adjusted upwards by an arbitrary 2% for productivity increases. These estimates cover both market and non-market health and the four subdivisions used are based on an old national classification used for employment statistics. The categories separately distinguished include

- Health Boards
- Other Medicine
- Dentistry
- Veterinary

Other community, social and personal activities

Activities classified in this NACE Rev 1 category are published in the final National Accounts as part of the category Other Services. However, some of the items are specifically captured only in part, or not at all. The methodologies for the areas for which separate estimates are made are detailed here.

Recreational, cultural and sporting activities, Libraries, Gambling and betting services and Sport facilities

These areas are included in the Other Services sector under one heading, called Entertainment and Sport. The base year value added is again projected forward using an output volume index based on the deflated value of Household Consumption of these services. This index includes expenditure on

- Betting
- Sports & Games
- Cinema
- Theatre
- Dancing
- Horse Racing
- Greyhound Racing
- Other Entertainment
- Records & Tapes

The betting data here excludes lotteries, which are captured separately. The volume index derived from the overall expenditure at constant prices is applied to the base year GVA to calculate a constant price GVA for each year.

Separate estimates are made for lotteries. Sales of tickets, less the prizes given out, gives the gross output for the sector at current prices. This is deflated to constant prices by the overall CPI. The volume index derived from this gross output figure is applied to the base year GVA to arrive at the GVA at 1995 prices for each year.

Radio and Television activities

These activities are included in the category 'Broadcasting', which is also published as part of the Other Services sector in Table 4 of the National Income and Expenditure report. Separate estimates are made for RTE, the national radio and television broadcaster, and for independent broadcasters. In both cases base year value added is extrapolated using volume indices based on the estimated value of gross output calculated at constant prices.

Revenue figures for RTE comprise television licence fees and other income, which is mainly advertising revenue. Revenue from licence fees is deflated by the CPI for TV licences. The overall CPI is used to deflate the remaining revenues. A volume index is calculated from the total deflated RTE revenues and applied to the base year GVA.

The Independent Radio and Television Commission supply information for independent broadcasters. Their revenues are primarily derived from advertising. The overall CPI is also used to deflate these revenues and a volume index created, which is also applied to the base year GVA.

The two deflated values are added together to give an overall GVA for the broadcasting sector.

Other service activities

Washing and dry-cleaning services and Hairdressing

These two categories are measured separately, and are also published as part of the Other Services sector in Table 4. The methodology for measuring the constant price value added of both areas is the same. Basically, the current price GVAs are directly deflated by the respective CPI's for Laundries and Hairdressing.

Welfare and Charitable Services

The category is also a separate component of the Other Services sector published in Table 4 of the National Income and Expenditure report. The base year GVA is again extrapolated by a volume index based on total numbers employed as measured by the Quarterly National Household Survey (QNHS).

Private households with employed persons

This activity is captured in the Other Services sector of National Accounts under the heading of Private Domestic Service. The value added is taken to be equal to the Household expenditure at constant prices since intermediate consumption is assumed to be zero.

Remaining elements of the 'Other Services' category not described above

Employment survey results have traditionally included a category 'Industry not stated'. This is used to classify employees when the nature of the business they work cannot be identified. The current price accounts include an estimate of the remuneration of these employees. This is calculated by multiplying the numbers employed by average remuneration rates. The constant price accounts also include an estimate derived by extrapolating the base year GVA by a volume index based on the numbers employed. This is included as part of the 'Other services' category in the national publication.

The measure is not ideal, as, by the nature of the categorisation, there is no evidence that all employees are engaged in the service industry. The method is also an input method, which is a C-method. However, there would not appear to be a viable alternative to this, as there is an obvious dearth of information regarding the nature of the activities carried out. The value added is a quite insignificant amount, and any changes would not greatly affect the overall GDP.

Government depreciation

This represents the Capital Consumption of Government owned assets. It is included as part of value added and is published as part of the 'Other Services' category in Table 4 of the national publication. The value of capital consumption at current prices is directly deflated using a price index calculated as a weighted average of the CPI for Services and the Producer Price Index component of the Wholesale Price Index. This price index is used in order to be consistent with the expenditure based GDP estimates because it is the price index used to deflate the non-wages element of Final Government Consumption, which includes capital consumption.

Remainder of Services

The descriptions provided above have not covered all activities. For several service type activities, explicit value added estimates cannot be made in the output based volume calculations because of a lack of suitable information. The CSO assumes that the constant price value added of these residual categories grows at the same average rate of the service activities, for which output based GVA estimates are explicitly made. The sum of all the 'Other Services' value added, as described above, excluding FISIM, Rent and Government Depreciation is converted to a volume index, with 1995 = 100, and this index is applied to the base year value added for the residual category. This is obviously a C method. The size of this residual category is significant (approximately 3.5% of total GDP in 2000).

Taxes and Subsidies

Taxes on production

A number of different methods are used to transform the current price value of taxes into their constant price equivalent. These methods include:

Multiplying the base year tax by a volume indicator

This method involves taking the tax in the base year and multiplying this by some volume measure for the current year. The quantity of the good chargeable to tax in the current year can be multiplied by the unit tax rate of the base year. Alternatively, actual tax receipts in the base year can be extrapolated forward by a volume index calculated as the ratio of the present year's quantity to that of the base year.

Deflating tax receipts by a price index

This method involves applying a deflator to the current year's tax receipts. Ideally, the price deflator should measure the increase in unit tax rates between the base and current year. Sometimes, this is not possible and a more general price index such as the Consumer Price Index (CPI) or the Index of Import Unit Value Index is used.

Subsidies on Production

Subsidies at constant price are calculated using the following three methods:

- The subsidy value in the base year is multiplied a volume index
- The value of the subsidy in the current year is deflated by a price index
- The base year value is assumed to apply for all years

3.10.5 Institutional Sector Accounts

The institutional sector accounts provide a systematic description of the various stages of the circular flow of income. The accounts describe successively production, generation of income, income distribution, final consumption and redistribution for the individual institutional sectors (non-financial and financial corporations, government, private households and non-profit private organisations, Rest of the World).

The methodology used to compile these accounts is similar to that used for the annual national accounts. The published figures, which are in current prices only, are consistent with the previously published annual national accounts estimates.

3.10.6 Supply and Use and Input -Output Tables

Supply and Use tables are matrices by industry and product describing the domestic production processes and transactions in products. A supply table shows the supply of goods and services by product and by industry, distinguishing output by domestic industry and imports. A use table shows the use of goods and services by product and by type of use (intermediate consumption, final consumption, capital formation or exports). Furthermore, the table shows the components of gross value added, i.e. compensation of employees, other taxes less subsidies on production, net mixed income, net operating surplus and consumption of fixed capital. Between the supply and use tables, two types of identities hold good (provided supplies and uses are valued consistently (a) the identity by industry: Output by industry = Input by industry which can also be expressed as Output = Intermediate consumption plus value added and (b) the identity by product: Total supply by product = Total use by product. This latter identity can be thought of as Output + Imports =

Intermediate consumption + Exports + Final consumption expenditure + Gross capital formation. These identities by industry and product can be used to check and subsequently improve the consistency and completeness of the estimates being used in the National Accounts.

Results

The main results are available in CSO publications available at www.cso.ie. The latest annual national accounts are published in National Income and Expenditure and quarterly results in the regular statistical release. They can be accessed at:

http://www.cso.ie/releasespublications/pr_natacc.htm.

At the same address the Institutional Sector Accounts and the Supply and Use tables can also be accessed which are published separately..

The main results are summarised below:

Year	2004	2005	2006	2007	2008
GDP at current prices €m	149,098	162,091	176,759	189,751	181,815
GNP at current prices €m	126,219	137,188	152,529	161,244	154,596
GDP at constant prices (referenced to 2007) €m	159,992	169,871	178,970	189,751	183,991
GNP at constant prices(referenced to 2007) €m	137,611	145,306	154,520	161,244	156,760

3.11 Classifications Used

A number of different classification systems are used at various stages of the national accounts calculations. The basic industry data is initially compiled using NACE Rev 1 but this is transformed for national publication purposes to broad national groups.

The commodity classification Prodcom together with the Trade classification SITC is used as the basis for commodity flow estimates.

3.12 Regional Breakdown of Results

Estimates of GVA at a regional level are published in an annual publication entitled County Incomes and Regional GDP

<http://www.cso.ie/px/pxeirestat/database/eirestat/County%20Incomes%20and%20Regional%20Accounts/County%20Incomes%20and%20Regional%20Accounts.asp>

These contain estimates of GVA (equivalent to GDP) at a NUTS2 and NUTS3 level. These results are based on and are consistent with the national accounts aggregates.

4. Production of the Statistics, Data Processing, Quality Assurance

4.1 Data Capture

Not relevant except for a small number of small surveys captured in Excel and data entry of corporation and income tax details for sampled cases.

4.2 Coding

Not relevant

4.3 Data Editing

Data editing as required for statistical surveys is not a feature of national accounting. The national accounts use the results of statistical surveys as an input to the accounts and the data used in these surveys will have already been edited. However, the compilation of the national accounts is based on checking the plausibility and consistency of all the statistical series used through ongoing analysis of the results, especially as regards the various balances and cross-checks that are an integral part of the system.

A particular feature of Ireland's national accounts is the use of a special Consistency Unit within National Accounts to examine, on an ongoing basis, the consistency of all statistical data for the largest corporations. The Consistency Unit brings together a wide range of data for the top 50 individual exporters, including monthly turnovers, annual turnovers, purchases, stocks, imports, exports, value added, service imports and exports and Balance of Payments profit variables. A limited number of variables are compared each quarter but the more detailed examinations are only possible on an annual basis since the detailed Census of Production results and tax accounts for each company are only available annually.

The majority of the large companies export all of their outputs and also import most of their raw materials. It is therefore possible to build up a coherent picture of each company, comparing turnover with exports, purchases with imports, research and development costs, royalties and other large service payments with Balance of Payments service imports. Ultimately value added from statistical sources can be compared with operating surplus based on tax returns.

Where the data appear to be inconsistent, the company is contacted and very often visited by CSO staff to identify reasons for possible problems. Varying reasons for inconsistencies in the data have been found, ranging from simple errors or timing effects to misinterpretation of statistical returns or, in the most detailed cases, to complex trading arrangements resulting in the data being recorded differently on different returns. Each issue is dealt with on a case by case basis and adjustments made accordingly to either the trade statistics or to the other statistical returns.

4.4 Imputation

The national accounts do not incorporate imputations for non-response as understood for statistical surveys. However, imputed values are assigned in a number of specific instances where a market price cannot be observed. Examples include:

- **Financial Intermediation Services Indirectly Measured:** This is part of the output of the Financial Services sector that is measured as the interest margin earned by taking deposits at one interest rate and making loans at a higher rate.
- **Imputed rent of owner occupied dwellings:** An imputed rent is assigned to owner occupiers in respect of their dwellings based on benchmark estimates of rent for various categories .
- **Social Insurance Contributions:** Where funded pension schemes do not exist, the value of pensions currently being paid to former employees is sometimes taken as an estimate of employers' voluntary social contributions in respect of current employees; in the case of public servants, an actuarial assessment is used.

4.5 Grossing and Weighting

Not relevant

4.6 Computation of Outputs, Estimation Methods Used

The national accounts use a wide variety of administrative and survey data in compiling the key aggregates such as GDP, GNP, GNI, etc. The main sources are outlined in Section 3.3 and the transformations made to meet national accounts definitions are described in Section 3.10.

4.7 Other Quality Assurance Techniques Used

The national accounts are compiled within a comprehensive framework and so an important element of quality checking is achieved in the process of balancing the accounts. The checks at a macro level include:

- The two approaches to estimating GDP at current prices should theoretically give the same answer but will always diverge to some extent due to different data sources, sampling error, timing effects, etc. The balancing of the accounts involves confrontation of the various components and elimination of any obvious differences
- Confrontation of the estimates at current and constant prices at a sectoral level provides a series of implied deflators that are examined for plausibility
- Individual components of the accounts are compared with related primary series (examples include comparison of personal consumption of goods with the retail sales index, output of industry with industrial output index etc.)

At a micro level, the main checking is that carried out by the Consistency Unit as described in Section 4.3 above.

In compiling Supply and Use tables, a series of checks are carried out at a detailed industry level involving detailed examination of the Structural Business surveys and the Prodcum data in conjunction with the External trade and Balance of payments data.

5. Quality

Compilation of the national accounts is a complex task involving many diverse data sources that may incorporate some inconsistent data. It is not possible, therefore, to provide a simple, repeatable measure of the quality of the estimates. Trade offs are often made as, for example, between timeliness and accuracy.

5.1 Relevance

The main national accounts tables are produced to meet the requirements of Regulation (EU) No. 2223/96 . The results are, therefore, compiled in accordance with the European system of National and Regional

Accounts (ESA95) and the regulation specifies a series of detailed tables that must be supplied. These include Supply and Use tables. A separate regulation 1161/2005 deals with the supply of quarterly institutional sector accounts.

There is a separate regulation (Council Directive 89/130/EEC of 13 February 1989 on the harmonisation of the compilation of gross national product at market prices) setting out procedures regarding the supply of annual estimates of Gross National Income (GNI) as part of the EU's administrative procedures while the calculation of Government Debt and Deficit required under the Stability and Growth Pact is determined by procedures set out in Regulation 1222/2004.

At national level, the accounts are widely used by policy makers, analysts and researchers to examine the performance of the economy. Because they are developed using international standards, they can be used to compare Ireland with other countries.

5.2 Accuracy and Reliability

5.2.1 Sampling Effect and representativity

Many of the data sources used to compile the national accounts are based on sample surveys, rather than complete collections. Sample surveys are subject to a particular type of error, known as *sample error*. These can provide an indication of the accuracy of the national accounts components to which they relate. However, because of the transformations of survey data that are made in order to compile the national accounts, it is generally not possible to calculate the exact impact that RSEs have on the various national accounting aggregates.

5.2.2 Non-sampling effects

The accuracy of the national accounts is influenced by a number of factors. In the Irish national accounts, the most likely source of data collection error has traditionally arisen where data providers make errors with regard to the timing and valuation of their transactions. Such errors can lead to inconsistencies, affecting the coherency of the accounts. Examples would include recording exports in a different quarter to the related turnover. This could cause errors to growth rates over a number of quarters. The work of the Consistency Unit described earlier aims to eliminate such errors as far as possible for the larger enterprises. This is a major issue for Ireland because of the importance in the economy of the major multi-national enterprises.

Errors would also result from the inability of data providers to report on the correct basis. The data requirements underlying the national accounts are complex and, although every effort is made to match survey data items with business accounting practices, it is inevitable that some data providers will include in their survey responses items that should not be included, and exclude items that should be included.

For many areas of economic activity accurate and detailed data are only available annually or less frequently. In these cases, annual or less-frequent benchmarks are established, with more frequent estimates derived using extrapolation and interpolation techniques. For the most part, indicator series are used for this purpose. The indicators vary in the closeness of their relationship to the concept being measured. For example, in compiling quarterly estimates at constant prices, annual benchmark estimates of value added are projected using short term indicators. The quarterly indicators are usually either output or input measures rather than value added itself. In the short term, output measures are likely to be reasonable indicators of changes in value added in volume terms provided certain conditions are met but input measures will not capture productivity changes.

In deriving estimates at constant prices, a range of price deflators are used. While the most appropriate available price index is used, the coverage of a particular price index may not match exactly the relevant sector or item.

5.3 Timeliness and Punctuality

5.3.1 Provisional results

The first published quarterly provisional results are usually made available about 90 days after the reference period but it is planned to reduce this to 70 days in the next year. *The detailed annual estimates* are released about seven months after the latest year end and are always described as *preliminary estimates for the latest year*. The most recent supply and use tables became available about 4.5 years after the reference period. It is planned to reduce this time lag to 3 years from next year onwards.

5.3.2 Final Results

Final annual national accounts estimates are published approximately 19 months after the reference year end. However, it should be understood that the entire national accounts data series are subject to revision at each annual publication, this also applies to the quarterly series.

5.4 Coherence

The national accounts provide a framework for measurement of the overall economy by integrating the results of statistical inquiries. In general, national accounts concepts and definitions are used in collecting and compiling these basic statistics but the application of national accounts concepts can make comparability with other statistics difficult. Given that national accounts are compiled using practically all the statistical outputs of a National Statistical Institute such as CSO and many more besides, it is difficult to obtain an indicator or statistic comparable to trends in GDP and similar aggregates. However, trends in employment are sometimes compared to trends in GDP but this relationship is not particularly robust and can give differing signals.

Among the items that need careful interpretation since the national accounts definitions may differ from other statistical surveys are

- Earnings: the definition of wages and salaries used in national accounts includes voluntary social contributions and also bonuses, etc.
- Profits: Trading profits are estimated after deductions of royalties and interest payments are treated as an allocation of profits. Correspondingly, interest received is excluded from profits.
- FISIM: Exports and imports of FISIM are included in the national accounts but not in the Balance of Payments.
- Personal consumption of goods and services: This item includes a number of services paid for by the state.

5.5 Comparability

Comparability over time is a major feature of national accounts. Comparable series of the major aggregates from 1970 to date are published with the only exception being that the 1970 to 1995 series excludes FISIM. The 1995 to date series includes FISIM so that a measure of the change is shown for 1995. A full time series of index numbers at constant prices is also published.

While the accounts are compiled using ESA95 definitions, the presentation in the national publication differs in some respects from ESA in order to facilitate national users. The items in the national publication are shown with the corresponding ESA item code. The institutional sector accounts are produced using the ESA presentation of accounts while the supply and use tables are presented using the NACE Rev. 1 A60 presentation of industries and are also in the format recommended in the ESA 95 system.

The examples given are illustrative only and are not comprehensive.

5.6 Accessibility and Clarity

5.6.1 Assistance to Users, Special Analyses

The CSO publications and releases are available on our website. Tables are also published in EXCEL form. The appendices to the NIE publication provide definitions of the items and also detail the main changes introduced over time.

Special analyses are produced on a regular basis.

5.6.2 Revisions

The annual national accounts are subject to revision at each publication. Revisions may occur because of new basic data, correction of errors or methodological improvements. Revisions are generally most significant for the second estimate for a particular year and usually also affect the third and fourth estimates. Any revisions to earlier years are likely to be minor unless as part of an overall methodological change such as the introduction of new international standards.

The quarterly national accounts are aligned with the related annual accounts following each national publication. Estimates for the most recent year, for which an annual detailed report has not yet been issued, are subject to revision at each quarterly publication stage.

An analysis of revisions to quarterly growth rates has been published by Patrick Quill, Statistician, CSO in the ESRI's Quarterly Economic Commentary (Autumn 2008)

http://www.esri.ie/publications/search_for_a_publication/search_results/view/index.xml?id=2613

5.6.3 Publications

- Quarterly National Accounts
- National Income and Expenditure
- Supply and Use Accounts
- Input Output Analysis
- County Incomes and Regional GDP
- Institutional Sector Accounts – Financial
- Institutional Sector Accounts - Non – Financial
- National Accounts Output and Value Added by Activity

All the above publications can be accessed at this link :

http://www.cso.ie/releasespublications/pr_natacc.htm.

5.6.4 Confidentiality

The confidentiality of all information provided to the CSO by individual respondents is guaranteed by law under the 1993 Statistics Acts. All CSO office and field personnel become "Officers of Statistics" on appointment and are liable to penalties under this Act if they divulge confidential information to any outside person or body.

6. Additional documentation and publications

The international standards for national accounts are available in:

- ESA95 1995 European System of Accounts. The Council Regulation No. 2223/96 of June 1996 defines the Program of National Accounts Delivery within the framework of ESA 95.

<http://circa.europa.eu/irc/dsis/nfaccount/info/data/ESA95/ESA95-new.htm>

- SNA93 United Nations System of National Accounts 1993 (1993 SNA)

<http://unstats.un.org/unsd/sna1993/introduction.asp>

also SNA 2008 almost finalised and to be implemented over the coming years

<http://unstats.un.org/unsd/sna1993/snarev1.asp>

- All National Accounts Statistics can be accessed through Statcentral at this address

<http://www.statcentral.ie/viewstats.asp?type=National%20Accounts>

Annex 1

Definitions

The main aggregates produced in the national accounts are:

Gross Domestic Product (GDP)

Gross Domestic Product at market prices represents total expenditure on the output of final goods and services produced in the country (final means not for further processing within the country) valued at the prices at which expenditure is incurred.

Gross National Income (GNI)

Gross national Income is equal to GDP 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.

http://www.oecdobserver.org/news/fullstory.php/aid/1507/GDP_and_GNI.html

A full set of definitions is available in the relevant publications ([links](#)).

<http://circa.europa.eu/irc/dsis/nfaccount/info/data/esa95/en/esa95en.htm>