National accounts

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1 . What are the national accounts and for what are they used?

The national accounts provide an integrated description of all economic activity within the economic territory of the UK, including activity involving both domestic units (for example, individuals and institutions resident in the UK) and external units (those resident in other countries). In addition to being comprehensive, the accounts are fully integrated and internally consistent.

The coverage of the core accounts is wide, encompassing:

- production

- consumption

- generation

- distribution

- redistribution of income

- capital investment

- the financing of the above

Additionally, accounts are produced for the regions, subregions and local areas of the UK, as are satellite accounts that cover activities linked to the economy but are separate from the core accounts, most notably the environmental accounts.

The majority of the core accounts deal with transactions between the various sectors of the economy, such as:

- corporations

- households

- government

as well as transactions with the rest of the world.

International standards

The national accounts are produced in line with international standards, most notably the European System of Accounts 2010 (ESA2010) that is enforced for all European Union (EU) member states through an EU regulation. ESA2010 is in turn consistent with the United Nations System of National Accounts 2008 (SNA08).

Data sources

The national accounts are drawn together using data from many, many different sources. These different sources not only help to ensure that the national accounts are comprehensive but also provide different perspectives on the economy, for example, sales by retailers and purchases by households. By comparing and contrasting these different sources, the national accounts produce a single picture of the economy that is consistent, coherent and fully integrated.

Headline economic statistics

Many of the most well-known economic statistics are produced within the national accounts, including gross domestic product (GDP), the household saving ratio, public sector net borrowing, the balance of trade and household consumption. These, along with other headline statistics from the national accounts, will be discussed in more detail in subsequent chapters.

National accounts uses

Domestically, the national accounts are heavily used by policy-makers and analysts. They feed into the discussions of the Monetary Policy Committee of the Bank of England when setting interest rates, and they are also used by the Office for Budgetary Responsibility in forecasting economic growth and public sector debt. Components of the national accounts are used by decision-makers and advisers across the whole of society, including corporations, private individuals and government. Furthermore, many of the national accounts statistics are provided to Eurostat (the statistical office of the European Union) and are used by institutions such as the European Central Bank. The largest proportion of the UK's contribution to the EU budget is determined by the level of gross national income, a headline statistic from the national accounts. Conversely, EU payments to "deprived" regions of the Union are determined by regional GDP per head of population.

More information is available from the article entitled UK national accounts – a short guide (136.8 Kb Pdf) .

2 . A guide to national accounts and gross domestic product (GDP)

The national accounts form a central framework for the presentation and measurement of the stocks and flows within the economy.

This framework provides many high profile economic statistics including gross domestic product (GDP) and gross national income (GNI) as well as information on, for example, household saving and disposable income.

The national accounts make sense of the complex activity in the economy using 2 main groupings:

- the participants of the economy (the "who")

- their transactions with one another (the "what")

Units are the individual households or legal entities, such as companies, that participate in the economy. These units are grouped into sectors, for example, the financial corporations sector, the government sector and the household sector. The economic transactions between these units are also defined and grouped within the accounts. Examples of transactions include:

- government expenditure

- interest payments

- capital expenditure

- a company issuing shares

The national accounts framework brings these units and transactions together to provide a simple and understandable description of production, income, consumption, accumulation and wealth. These accounts are constructed for the UK economy as a whole, as well as for the individual sectors in the sector accounts.

Estimates are published quarterly in the National Statistics publication "UK Economic Accounts" and "Quarterly national accounts". Annual figures are published in the UK national accounts ("The Blue Book").

Guide to GDP: measuring the UK's economic activity

GDP is an integral part of the UK national accounts and provides a measure of the total economic activity in a region.

GDP is often referred to as one of the main "summary indicators" of economic activity and references to "growth in the economy" are quoting the growth in GDP during the latest quarter.

In the UK, 3 different theoretical approaches are used in the estimation of the GDP estimate:

GDP from the output or production approach – GDP(O) measures the sum of the value added created through the production of goods and services within the economy (our production or output as an economy); this approach provides the first estimate of GDP and can be used to show how much different industries (for example, agriculture) contribute within the economy

GDP from the income approach – GDP(I) measures the total income generated by the production of goods and services within the economy; the figures provided break down this income into, for example, income earned by companies (corporations), employees and the self-employed

GDP from the expenditure approach – GDP(E) measures the total expenditures on all finished goods and services produced within the economy

The estimates are "gross" because the value of the capital assets actually worn away (the "capital consumption") during the productive process has not been subtracted.

Estimates for GDP cover calendar years and quarters, and the publication dates are available well in advance. Annual estimates are published in late summer as part of the UK national accounts. Quarterly estimates are published more frequently and are updated with more information as it becomes available each month.

For example, GDP estimates for the first quarter of the year – Quarter 1: January, February and March – will become available:

- First estimate: preliminary estimate of GDP – based on information on output – published 3.5 weeks after the end of the quarter; provides the first estimate of growth in GDP

- Second estimate: second estimate of GDP – based on information from all approaches – published 8 weeks after the end of the quarter; provides information on the level of GDP as well as the growth in GDP

- Third estimate: UK quarterly national accounts – the full national accounts – published 12 weeks after the end of the quarter

3 . A guide to the supply and use process

Gross domestic product (GDP) and the balancing of the annual accounts

GDP can be estimated using 3 approaches:

- the income approach

- the expenditure approach

- the production approach

In theory, the 3 different approaches should produce the same result. However, as they are based on different surveys and administrative data sources, they all produce results that, like all statistical estimates, are subject to errors and omissions. A definitive GDP estimate can only emerge after a process of balancing and adjustment. The Office for National Statistics (ONS) believes the most reliable estimate of the current price level of GDP is derived using the annual supply and use balancing framework. Accordingly, for the years when these estimates are available, GDP is set at the level derived from that year's balance. For periods subsequent to the latest supply and use estimates, the level of GDP is carried forward using movements in income, expenditure and production totals.

The supply and use framework

The UK supply and use tables show the:

- composition and value of goods and services entering into final demand

- outputs and incomes generated in the production process

- intermediate transactions that form inputs into these processes

The analyses are constructed to show a balanced and complete picture of the flows of products in the economy and illustrate the relationships between producers and consumers of goods and services. On an annual basis, supply and use tables are used to achieve consistency in the economic accounts' aggregates by linking the components of value added, inputs, outputs and final demand.

As the income, production and expenditure measures of GDP can all be calculated from the supply and use tables, a single estimate of GDP can be derived by balancing the supply and demand for goods and services and reconciling them with the corresponding value-added estimates.

Industrial analyses

The annual supply and use balancing process produces a first balance for a given year approximately 18 months after the year end. Both full and summary supply and use tables are published as a separate web-only publication at the same time as The Blue Book.

Supply and use tables

The supply and use tables are based on a framework incorporating estimates of:

- industry inputs

- outputs

- value added

The tables consist of 2 matrices:

- the supply table

- the use table

Both the supply table and the use table break down and balance 112 different industry groups at basic prices and 112 product groups at purchasers' prices. However, for publication purposes, some adjacent industry and product groups may be combined for quality purposes.

Supply table

At the very aggregate level, the supply table is represented in Table 1.

Table 1, supply table

	Output by industry	Imports of goods and services	Distributors' trading margins	Taxes less subsidies on products
Output by product				

The main part of the supply table shows estimates of domestic industries' output (total sales adjusted for changes in inventories of work in progress and finished goods) compiled at basic prices. Basic prices value the goods leaving the factory gate, but exclude any taxes on products and include subsidies on products. However, for the balancing process, the estimates of supply of products are required at purchasers' prices (those actually paid by the purchasers to take delivery of the goods, excluding any deductible value added tax (VAT)). Estimates of domestic output valued at basic prices can be converted to the total supply of products valued at purchasers' prices:

domestic output valued at basic prices
plus
the value of imports of goods and services
plus
distributors' trading margins
plus
taxes on products (for example, VAT)
less
subsidies on products (for example, agricultural and transport subsidies)
equals
total supply of products valued at purchasers' prices

Use table

The use table reveals:

- the input structure of each industry (in terms of combined domestic and imported goods and services)

- the product composition of final demand

- for each industry, the intermediate purchases adjusted for changes in inventories of materials and fuels

The intermediate and final demand for products is represented in the rows of the balance, while intermediate consumption by industries, their demand for primary inputs (compensation of employees plus gross operating surplus and mixed income) and their outputs are represented in the columns. At the very aggregate level, the use table can be considered in 3 parts.

Table 2, use table

	Industry consumption	**Final demand**
Products consumed	Shows intermediate consumption of products by each industry in the production of their own output	Shows final-demand categories (for example, households' expenditure, gross capital formation and exports) and the values of products going to these categories
Primary inputs	Shows the gross-value-added components of each industry, taxes less subsidies on production other than product-specific taxes and subsidies, compensation of employees and gross operating surplus	

The body of the matrix, which represents consumption of products, is at purchasers' prices and therefore already includes the product-specific taxes and subsidies separately in the supply table.

The supply-use balance is effectively achieved when:

For industries –

inputs (from the use table) equals outputs (from the supply table)

For products –

supply (from the supply table) equals demand (from the use table)

That is, it is effectively achieved when the data from the income, expenditure and production approaches used to fill the matrices all produce the same estimate of current price GDP at market prices. GDP at current market prices can be derived from the balances by taking the estimate of total gross value added at basic prices (from the use table) and adding taxes on products and deducting subsidies on products (from the supply table). It can also be derived by summing all the elements of final demand, plus exports (all from the use table) less imports (from the supply table).

The balancing process

If the supply and use framework is considered as a column (industry) and row (product) matrix, the process of balancing consists of a series of alternating row and column confrontations of the data.

Stage 1

The first stage is carried out by the compilers of the original data. It takes place before the supply and use framework is populated. It involves examining each of the individual rows and columns within the framework being reviewed for plausibility independently of each other. For example, estimates of household consumption expenditure by product are produced and analysed to ensure the overall picture of household spending and its breakdown by product presents a credible story. For components with an industry dimension, such as output, the initial stage scrutinises the data, ensuring the story for industries looks plausible.

Stage 2

The second stage is a confrontation within the framework of the rows (products) in the supply and use framework. The accounting relationship that supply is equal to demand is tested for each product and areas of inconsistency between the various sources are identified. Once investigated, the row data are then adjusted to achieve a balance. This adjustment process firstly involves reviewing the quality of the data used to populate the individual cells within a row. Then, adjustments are applied to the components, based on their relative strengths, to achieve coherence between product supply and demand. This phase is carried out by the Supply and Use branch with assistance from data compilers.

Stage 3

The third stage of the balancing process is to confront the columns (industries). While the second stage of balancing equalises supply and demand by product, it does not ensure that, for each industry, the inputs to the process of production – goods and services consumed during production, plus primary inputs – equals its outputs. This third stage of balancing has the objective of confirming that this column identity is satisfied. Again, the quality of the data feeding into each cell are assessed, and this information is used as the basis for consequent adjustments to bring each industry into balance. As for the second stage, this phase is carried out by the Supply and Use branch with assistance from data compilers.

Once each industry's inputs and outputs have been balanced, there is a strong probability that the product supply-and-demand identities set during the second stage of the process will have become unbalanced. The second and third stages are therefore repeated until both the row and column identities are simultaneously satisfied. This iterative approach converges on an overall solution by reducing the remaining imbalances in the supply-and-use framework in each complete cycle of row and column adjustment.

Stage 4

Since 2012, the balancing process has also made use of a "Raking and Scaling" (RaS) algorithm at the very last stage of balancing. The algorithm is used when final, credible economic pictures have been defined for all the economic components, but minor mathematical imbalances remain within the production matrix. The algorithm is superior to manual balancing at this stage as it quickly and proportionately distributes and removes these imbalances, without having any discernible impact on any one industry or product.

Quality assurance

Throughout each stage of the process, a significant amount of knowledge of the compilation methods and quality of the basic data is used, and balancers' and data compilers' area knowledge is supported by a broad and expanding range of secondary economic evidence. This evidence includes labour market and price statistics produced by the ONS, analyses from other government departments, data gathered by trade associations and observations by industry experts. During the process, the evolving balance is reviewed after each industry-product cycle to assess how the economic picture is developing and confirm that it is credible. The final balanced levels are only introduced into the national accounts once they have been agreed with each compiler area and signed off by a panel of senior ONS statisticians and economists.

4. Downloads

National Accounts and Balance of Payment Training programme