

GROWTH ACCOUNTS FOR OECD COUNTRIES

Economic growth can be increased by increasing the amount and types of labour and capital used in production, and by attaining greater overall efficiency in how these factors of production are used together, i.e. higher multi-factor productivity. Growth accounting involves breaking down growth of GDP into the contribution of labour input, capital input and MFP.

Definition

The growth accounting approach is based on the micro-economic theory of production and directly related to the calculation of multi-factor productivity (MFP) growth. MFP growth is measured by deducting from output growth the growth of labour and capital inputs. Turned around, the same relation can be used to explain output growth by the rates of change of labour and capital inputs and by MFP growth.

In these calculations, the growth rate of labour and capital inputs is weighted with their share in total costs. Thus, the contribution of labour to GDP growth is measured as the speed with which labour input grows, multiplied by the relative importance of labour captured by its share in total costs. The growth contributions of capital or of certain types of capital are measured in a similar way so that the growth contribution always reflects two effects, the growth rate of the input and its relative importance in production.

Comparability

The role of information and communication technologies (ICT) for growth in GDP and MFP is analyzed thanks to the differentiation between ICT and non-ICT capital. ICT related capital include hardware, communication and software. Non-ICT capital include transport equipment and non residential construction, products of agriculture, metal products and machinery other than hardware and communication equipment, and other products of non-residential gross fixed capital formation.

The appropriate measure for capital input with the growth accounting framework is the flow of productive services that can be drawn from the cumulative stock of past investments in capital assets. These services are estimated

Long-term trends

From 1985 to 2006, GDP growth in most OECD countries was for a large part driven by growth in capital and MFP. In many countries, growth in capital accounted for around one third of GDP growth from 1985 to 2006. Over the same period, ICT capital services represented between 0.2 and 0.6 percentage points of growth in GDP. The United Kingdom, Australia and Sweden received the largest boost from ICT capital; its contribution was more modest in Italy and France and even smaller in Austria and Ireland. In contrast, growth in labour input was important for a few countries over 1985-2006, notably Ireland, Spain, Canada, Australia and the United States. From 1985 to 2006, MFP growth was a significant source of growth of GDP in Ireland, Finland, Japan, France and Belgium, but its contribution was very small in Spain, New Zealand, Canada and Italy.

by the OECD using the rate of change of the “productive capital stock”. This measure takes into account wear and tear and retirements, i.e., reductions in the productive capacity of the fixed assets. The price of capital services for each type of asset is measured as their rental price. In principle, the latter could be directly observed if markets existed for capital services. In practice, however, rental prices have to be imputed for most assets, using the implicit rent that capital goods owners “pay” themselves (or “user costs of capital”).

The measure of total hours worked is an incomplete measure of labour input because it does not account for changes in the skill composition of workers over time, such as educational attainment, and work experience. Adjustment for such attributes would provide a more accurate indication of the contribution of labour to production. In the absence of these adjustments, as is the case in the series shown here, more rapid output growth due to a rise in skills of the labour force are captured by the MFP residual, and not attributed to labour. This should be kept in mind when interpreting rates of MFP growth.

In the charts, data for Belgium refer to 1985-2004, data for Australia, Denmark, Finland, Netherlands, and the United Kingdom refer to 1985-2005, data for Spain refer to 1990-2006, data for Germany refer to 1991-2006, data for Austria and Portugal refer to 1995-2005, and data for Switzerland refer to 1995-2006.

Source

- OECD Productivity Database.

Further information

Analytical publications

- OECD (2007), *OECD Science, Technology and Industry Scoreboard 2007*, OECD, Paris.
- OECD (2004), *Understanding Economic Growth A Macro-level, Industry-level, and Firm-level Perspective*, OECD, Paris.
- OECD (2003), *The Sources of Economic Growth in OECD Countries*, OECD, Paris.

Methodological publications

- OECD (2001), *Measuring Productivity – OECD Manual Measurement of Aggregate and Industry-level Productivity Growth*, OECD, Paris.
- Schreyer, P. (2004), “Capital Stocks, Capital Services and Multi-factor Productivity Measures”, *OECD Economic Studies No. 37, 2003/2*, OECD, Paris, pp. 163-184.
- Schreyer, P., P.-E. Bignon and J. Dupont (2003), *OECD Capital Services Estimates*, OECD Statistics Working Papers, No. 2003/6, OECD, Paris.


Websites

- OECD Compendium of Productivity Indicators, www.oecd.org/statistics/productivity/compendium.
- OECD work on productivity, www.oecd.org/statistics/productivity/.

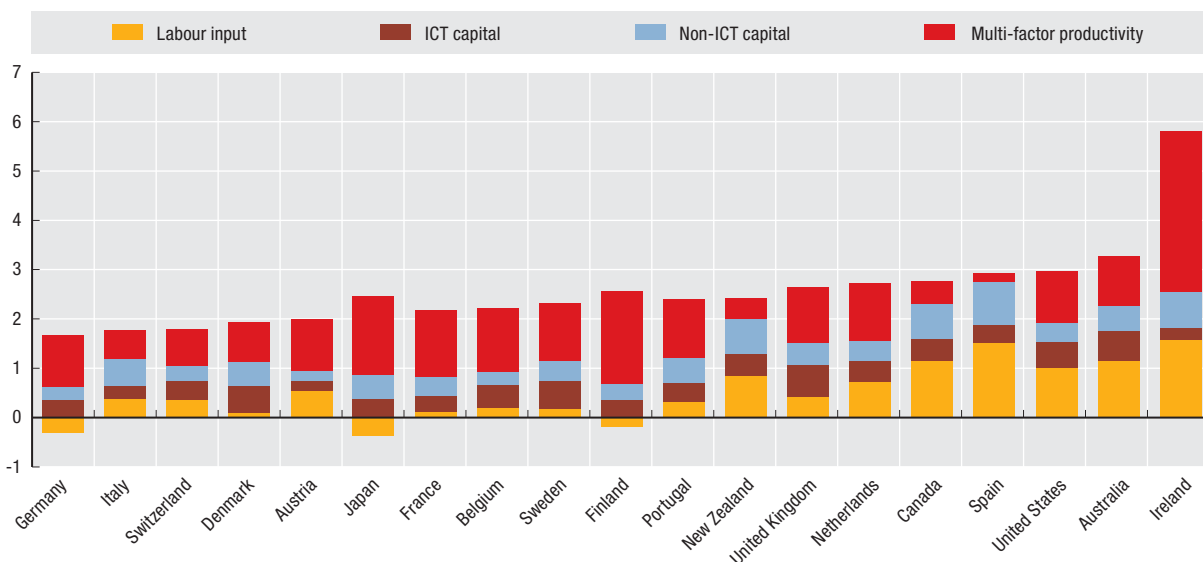

Contributions to GDP growth

Average annual growth in percentage, 1985-2006 (or closest comparable period)

| | Labour input | ICT capital | Non-ICT capital | Multi-factor productivity | GDP growth |
|----------------|--------------|-------------|-----------------|---------------------------|------------|
| Australia | 1.15 | 0.60 | 0.50 | 1.00 | 3.23 |
| Austria | 0.54 | 0.21 | 0.19 | 1.05 | 1.98 |
| Belgium | 0.20 | 0.47 | 0.26 | 1.30 | 2.21 |
| Canada | 1.15 | 0.44 | 0.70 | 0.46 | 2.73 |
| Denmark | 0.10 | 0.54 | 0.48 | 0.80 | 1.91 |
| Finland | -0.20 | 0.37 | 0.32 | 1.88 | 2.34 |
| France | 0.11 | 0.32 | 0.40 | 1.34 | 2.16 |
| Germany | -0.31 | 0.35 | 0.28 | 1.03 | 1.35 |
| Ireland | 1.58 | 0.24 | 0.75 | 3.25 | 5.71 |
| Italy | 0.39 | 0.25 | 0.55 | 0.57 | 1.75 |
| Japan | -0.37 | 0.38 | 0.49 | 1.59 | 2.09 |
| Netherlands | 0.72 | 0.42 | 0.39 | 1.18 | 2.70 |
| New Zealand | 0.84 | 0.45 | 0.72 | 0.41 | 2.41 |
| Portugal | 0.31 | 0.38 | 0.52 | 1.19 | 2.39 |
| Spain | 1.53 | 0.34 | 0.89 | 0.17 | 2.91 |
| Sweden | 0.17 | 0.58 | 0.39 | 1.18 | 2.30 |
| Switzerland | 0.36 | 0.39 | 0.30 | 0.73 | 1.78 |
| United Kingdom | 0.43 | 0.63 | 0.47 | 1.12 | 2.62 |
| United States | 1.01 | 0.53 | 0.38 | 1.04 | 2.93 |

 StatLink  <http://dx.doi.org/10.1787/541113478810>
Contributions to GDP growth

Average annual growth in percentage, 1985-2006 (or closest comparable period)


 StatLink  <http://dx.doi.org/10.1787/535111434826>



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