BIS Department for Business Innovation & Skills

SOURCES OF ECONOMIC GROWTH

Trade and Investment Analytical Papers
Topic 6 of 18

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Contents

Summary

- Economic growth is the continuous improvement in the capacity to satisfy the demand for goods and services, resulting from increased production scale, and improved productivity (innovations in products and processes).
- Factors improving productivity are particularly important sources of growth for developed economies with mature industries, but facing increasing global competition and rapid technological progress.
- Consumption has made a strong contribution to the growth of UK demand in recent decades, but the negative impact of the global financial crisis on consumer expenditure will persist for some time. Business investment is likely to become an increasingly important driver of growth. The UK's net trade position is expected to improve.
- Specialised and knowledge-intensive service and manufacturing sectors are likely to contribute strongly to future growth, building on the UK's relative specialisation in Finance, Business Services, Communications, and Computer and Information Services.

1. Types of Growth

There are different concepts of economic growth and ways of measuring it, but the core definition is in terms of growth in the long run productive capacity of the economy,[1][2] typically measured by real growth in Gross Domestic Product GDP.[3][4]

Broader concepts of growth such as sustainable or balanced growth, or growth in measures of wellbeing are closer to welfare objectives but more complicated and harder to measure.

[1] GDP Growth can be measured in terms of demand (total expenditure on goods and services), or supply (total goods and services produced). The growth in demand can outstrip supply for a while by borrowing, but is ultimately constrained by the income generated by supply.
[2] Total demand is composed of Consumption, Investment, Government expenditure and Net Exports. Total supply comprises the total sum of goods and services produced in Value Added terms (to avoid double counting).
[3] This concept can be generalised to other concepts of growth such as sustainable or balanced growth which bring in other dimensions of social welfare, balancing economic development, social development, and environmental protection.
[4] The emphasis on real growth measures is because changes due purely to changes in the price level do not improve welfare.

2. Sources of economic growth

2.1 Growth accounting

Policy tends to focus on growth in output per capita, because it is more closely related to social welfare objectives. Growth in output per capita can be broken down into growth in the employment rate and in output per worker (a measure of productivity).

2.2 Drivers of long run growth

There is a limit to how far the employment rate can be improved in the long term in developed countries, so long term growth is driven primarily by productivity. ("*Productivity isn't everything, but in the long run it is almost everything*." Paul Krugman). Over the longer term, growth will be determined primarily by the factors which determine productivity, and secondly those which improve labour participation.[5]

The drivers of productivity growth are factors which either improve the quality of outputs, or the efficiency with which inputs (such as capital, labour and materials) are transformed into outputs. The contribution of some of these factors to output growth can be captured by appropriate input measures, with everything else (eg unmeasured inputs and technological progress) allocated to a residual called Total Factor Productivity (TFP).

2.2.1 Direct inputs to production

The main production inputs are capital, labour, management services and materials.[6]

In the traditional Solow neoclassical growth model, a one-off increase in inputs to increase the scale of production only has an impact on per capita output growth in the short run, while technological progress (captured in TFP) makes a persistent contribution.[7] However, in later endogenous growth models, investment (particularly in innovation) drives technological progress, so has an impact on growth in the long as well as short term.

2.2.2 Ancillary firm activities

Firms allocate resources to a range of activities (such as innovation, marketing, and specialisation) which do not form direct inputs into the

[5] At a national level, the composition or balance of growth (eg across sectors and regions) can also affect trend growth, but here we assume that there are no barriers to the allocation of resources to their most productive uses.
[6] Material inputs are relevant to gross, but not net output measures such as Gross Value Added on which GDP is based.
[7] The former is a movement along, and the latter a shift outwards in the production function.

production process, but ultimately affect the quality of outputs or the efficiency of input use.

- Innovation by firms exploiting scientific advances creates the technological progress which is the main driver of growth in the long run.
- Specialisation in products and processes (often involving greater trade) is an important route to increased productivity.

2.2.3 The business environment

There are a range of factors in the business environment (such as infrastructure, the efficiency of markets, market incentives, taxation and regulation) which affect the productivity of firms and the efficiency of the economy as a whole. Investment in infrastructure affects the costs to firms of accessing resources and markets, and market conditions affect firm incentives to invest, be enterprising and innovate.

3. The context of the UK's historical record

3.1 Long term trends

The supply side of the UK economy has changed significantly over the last few decades, as a result of long term trends such as the latest wave of globalisation, and changes in global demand. Production has become increasingly organised on a global basis,[8] supported by more open economic policies, and rapid technical progress, particularly in ICT. Global incomes have increased, leading to more sophisticated and service-intensive demand.[9]

Rapid technological progress and specialisation have led to significant changes in the industrial composition of advanced economies away from manufacturing towards services, and the massive growth in cross-border trade (in both finished and more recently intermediate goods and services) and FDI.

There has also been increased specialisation in higher value-added activities (eg related services in manufacturing), increased trade specialisation,[10] and increased involvement in a range of broad innovation activities in all sectors.

These trends have created new opportunities for UK business,[11] via access to new markets and new technologies, but also increased the need to innovate and offer higher quality goods and services.

[8] BERR (2008b)
[9] including to some extent for environmentally-friendly goods and services.
[10] BIS (2009b)
[11] BIS (2009a)

3.2 The UK's growth record

The UK saw average annual GDP growth of 2.3% between 1990 and 2008 – placing it third in the G7, behind only the US and Canada. Further, according to the IMF, UK GDP per capita rose by 43% over the same period, faster than any other G7 economy. The UK also made significant progress in closing the productivity gap with Germany, and narrowing the gaps with both France and the US. This was particularly impressive given that the UK had a relatively low unemployment rate before the recession; the unemployment rate between 1990 and 2008 averaged 6.6% per annum – behind only the US and Japan.

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4. Historic Sources of UK growth

4.1 Demand side

Table 1: Average Annual Contributions to UK GDP Growth 1990-2008 in constant Prices

	Growth rate	Contribution to growth	Share of GDP %
Consumption	1.6%	69%	63%
Government	0.5%	21%	24%
Investment	0.3%	15%	14%
Net Trade	-0.1%	-5%	-1%
Total	**2.3%**	**100%**	**100%**

About 2/3 of the growth in demand was accounted for by consumption over the past two decades. UK consumption tends to also account for around 2/3 of GDP. The share of Government also increased notably over this period.

Business investment as a share of UK GDP rose over 1990 to 2008, but on average less than in our G7 peers. [12] This measure only gives a partial story because it takes no account of the quality of business investment (its contribution to growth), or of intangible investment which is now larger than physical investment. The services-based UK economy invests relatively more in intangibles than many of its peers.

The UK has tended to run a deficit in net trade since the late 1970s, and in recent decades net trade has made a slightly negative contribution to GDP. While a trade deficit reduces demand, it isn't necessarily bad for long term growth. Imports are a major channel for benefiting from productivity gains, and the relocation of investment abroad to more productive locations can lead to net gains through the capital account.

[12] In contrast, the value of business investment as a percentage of GDP fell, but was similar to competitors.

4.2 Supply side

4.2.1 Sectoral shares

In common with several other advanced economies (and some emerging economies) there has been a broad-based shift in the structure of the UK economy from manufacturing to (particularly knowledge-based) services, eg the share of Business, Financial and Professional Services in GDP rose from 15% in 1992 to 22% in 2008, while the share of manufacturing fell from 21% to 12%.[13] A similar pattern emerges if one looks at sectoral employment shares over the same period.

UK labour productivity has been lower than in leading economies such as the US, France and Germany at an aggregate level and across a wide range of sectors. Productivity performance improved over 1995-2004, particularly in some large service sectors and a range of small specialised manufacturing sectors.[14][15]

4.2.2. Regional balance

The broad picture is one of unbalanced growth, with London and its surrounding regions growing on average over half a percentage point quicker than the rest of England since 1989, a continuation of a forty year trend. Regional growth imbalances are, however, typical of most countries in the world.

4.2.3 Driver contributions

Growth accounting techniques attempt to break down growth into the contributions from the main drivers (increasing labour and capital inputs, and total factor productivity), which can be used to make international comparisons.[16]

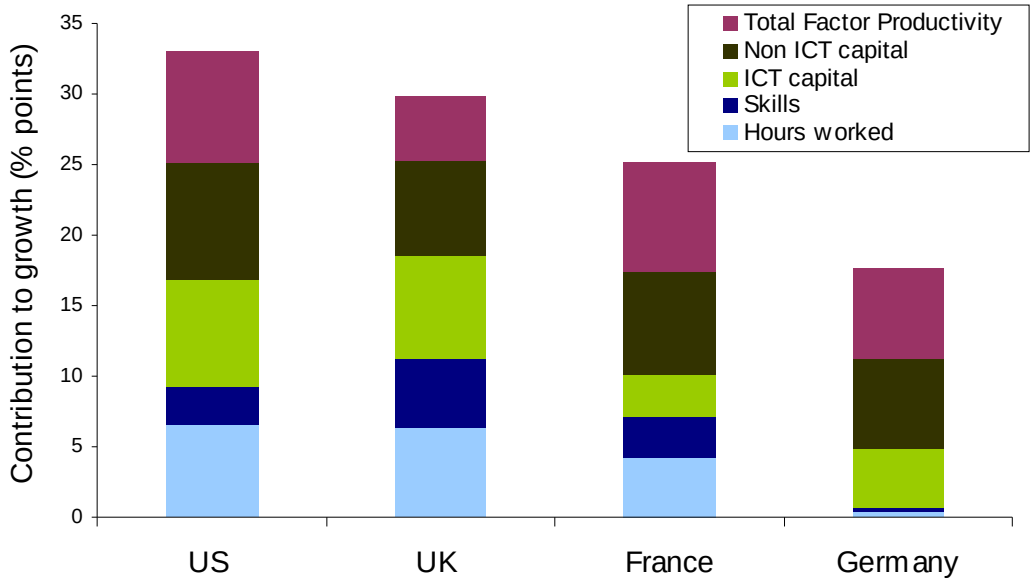
Growth accounting comparisons[17] for 1995-2004 found that the UK's productivity gap with France and Germany was due to lower investment in capital per worker, while the gap with the US was due to lower TFP. Growth accounting for 1997-2007 using a similar methodology (but separating ICT from non-ICT investment) showed significant changes in this growth composition.

Figure 1 shows that while the UK has seen strong increases in skills and ICT-capital in recent years, the contribution of non-ICT capital and total factor productivity appears less strong than for our international competitors. This

[13] GVA at Basic Prices, Blue Book
[14] BERR (2008a)
[15] Over 1990-2000, business services, finance, wholesaling, electronics and telecommunications accounted for half of all labour productivity growth, according to Oulton, N. and Srinivasan, S. (2004)
[16] This technique can only give approximate answers, because it is non-econometric and so cannot eg take account of the interrelations between complementary factors, dynamic effects etc.
[17] BERR (2008a)

implies that either there was lower or less effective government and business investments over this period.

Figure 1: Contribution to GVA growth (1997-2007)



Source: Gröningen Growth and Development Centre, EU KLEMS

However this was also a period when investment in intangible assets (related to knowledge creation, innovation and specialisation) by UK firms overtook investment in physical assets, with UK firms investing proportionately more in these areas. Recasting national accounts to treat these expenditures as asset formation rather than intermediate consumption shows a more positive picture.[18]

The relative decline in TFP is a concern, but more noteworthy is that the UK's relatively strong growth was related to a relatively strong investment and skills performance, traditional areas of UK weakness.

[18] OECD (2010)

5. Future sources of growth

5.1 Global crisis

The impact of the recession on the UK (and most other developed countries) is likely to persist for some time, although recovery has begun both at home and abroad.

Evidence from past sharp economic downturns linked to banking crises in developed countries shows permanent losses of potential output and slow recovery of growth.[19] This results from declines in the capital stock due to drastic and persistent falls in business investment, and in the stock of human capital due to the atrophy of skills resulting from lengthy unemployment. The recovery of investment tends to be slower than after 'normal' recessions because of stagnant credit growth.

In the longer term, productivity can be strengthened by recession as a result of the reallocation of resources towards more productive uses, the stimulation of innovation and enterprise across a broad range of activities, and improvements in human capital through increased flows into further education and training.

5.2 Macroeconomic forecasts

In the November 2010 *Economic and Fiscal Outlook,* the OBR projected the expenditure composition of growth to change over the next few years – driven by a 'rebalancing' of demand away from consumption and government and towards business investment and net exports (see Table 2, below).

Table 2: Contributions to Growth

	Percentage Points, Unless Otherwise Stated						
	Forecasts						
	2009	2010	2011	2012	2013	2014	2015
GDP Growth, per cent	-5	1.8	2.1	2.6	2.9	2.8	2.7
Main Contributions							
Private Consumption	-2.1	0.7	0.9	0.9	1.2	1.3	1.4
Business Investment	-2	0.1	0.8	0.8	1	1	0.9
Dwellings Investment (2)	-0.8	0.1	0.1	0.2	0.3	0.3	0.2
Government (3)	0.6	0.4	-0.5	-0.5	-0.5	-0.5	-0.3
Changes in Inventories	-1.1	1.3	0.1	0	0	0	0
Net Trade	0.7	-0.9	0.7	0.9	0.7	0.6	0.5

Components may not sum to total due to rounding, omission of transfer costs of land and existing buildings, and the statistical discrepancy
(1) The sum of public coporations and private sector investment in new dwellings and improvements to dwellings
(2) The sum of Government consumption and general Government Investment

[19] Reinhart and Rogoff (2009), OECD (2009)

Source: OBR Economic and Fiscal Outlook (November 2010)[20]

Private household consumption actually contracted in 2009, but is estimated to have grown by 1.1% in 2010. Due to relatively sluggish growth in real household incomes, the OBR forecasts household consumption to grow by 1.3% year-on-year in 2011. This rate of growth is forecast to pick up in each year to reach 2.2% by 2015 (the end of the forecast period), but is nevertheless expected to lag growth in GDP in each year until 2015. Private household consumption will continue to make a positive contribution to annual growth through to the end of the forecast period, although less than immediately prior to the 2008-09 recession.

Having grown in 2009 and 2010, general government consumption and investment are projected to contract annually over the next few years reflecting the government's fiscal consolidation plan. Growth in both measures will lag growth in total economy GDP each year through to 2015.

Business investment fell by almost 19% in 2009, but is estimated by the OBR to have grown by around 1.3% in 2010. The OBR forecasts business investment to grow by between 7 and 10% in each year over 2011-15, an average of 9%. Business investment is thus expected to grow much more strongly than annual GDP over this period. And having dragged down annual GDP growth in 2009, business investment is expected to make a considerable positive contribution to GDP growth in each and every year from 2011, for example contributing 1.0 percentage point to annual GDP growth of 2.9% in 2013.

Net trade contributed 0.7 percentage points to growth in 2009, when private domestic sources of growth were contracting. The OBR estimates net trade subtracted 0.9 percentage points from growth in 2010, but forecasts net trade to contribute positively to growth in 2011 and each year to the end of the forecast period as the recovery in world trade gathers momentum and the fall in the value of sterling continues to feed through.

5.3 Microeconomic forecasts

The UK's long term prospects need to be seen in the context of continuing changes in both global demand and global supply.

Central to developments in the global economy over the last few decades has been the acceleration in the pace of globalisation, involving technological change, increasing competition from emerging economies and the associated

[20] These projections suggest a gradual rebalancing of the UK economy. But as forecasts of the UK economy have often predicted rebalancing only for it not to materialise, the OBR recognises the risk that there may be less adjustment than expected. Accordingly one of its alternative scenarios is based around "delayed rebalancing".

development of global value chains.[21] The globalisation trend is widely expected to continue.[22]

5.3.1 The sectoral composition of economic growth

Future trends in the sectoral composition of the UK cannot be credibly forecast, but can be anticipated in broad terms.

It is highly unlikely that established trends such as the shift from manufacturing to services will be reversed since they are supported by continuing strong economic forces[23], although policies to improve the trade and investment climate can have a significant impact on the competitiveness of the manufacturing sector.[24]

The globalisation trend means that competitive pressures on UK firms in low to medium skill-based traded sectors will continue to increase, while constraints on developing countries' abilities to move up the value chain slowly relax.[25]

UK prospects will thus be stronger in more knowledge-intensive manufacturing and services. The UK's relative specialisation in Publishing, Finance, Business Services, Communications, and Computer and Information Services is likely to persist for some time, supported by the increasing exportability of services and increasing demand for services as global incomes continue to rise. However, these are likely to continue to become more specialised, with some lower value added activities outsourced or offshored.

Sectoral outcomes will also be shaped by trends in global demand such as rising per capital incomes, increased demand for environmental amenities, new technologies, an ageing population, and growth in Emerging Markets.

5.3.2 Drivers of growth

Increasing UK specialisation in innovative and knowledge-intensive services and advanced manufacturing in global markets will impact on several growth drivers.

Innovation will be increasingly important to competitiveness, but is likely to become more important across the whole value chain, not just in the development of new final products and services.

Increasing global competition will continue to put particular pressure on lower-wage, lower-skill activities.

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[21] BIS (2009b)
[22] World Bank (2007)
[23] Increased low-wage competition and technology-driven improvements in productivity have had a greater effect on manufacturing, leading to continuing decline in the global prices of manufactured goods relative to services, driving down their share of GDP (the Baumol effect), BIS (2010).
[24] BIS (2010)
[25] BIS (2009a)

Specialisation will increase the importance of (particularly specialised) skills. Investment in intangible investment is likely to continue to become increasingly important, and physical investment relatively less important, although investment abroad to take advantage of growth in emerging and developing markets is likely to increase.

Employment fell by less than output through the 2008-09 recession, reflecting real wage restraint, the flexibility of hours worked and employees willingness to take up part-time jobs. Unemployment rose by less than many leading forecasters expected. The OBR forecast that employment will rise to more than 30 million in 2015, with an increase in market sector employment more than offsetting a fall in general government employment.

References

BERR (2008a), “Cross-Country Productivity Performance at Sector Level: the UK Compared with the US, France and Germany”, NIESR, http://stats.berr.gov.uk/economics/sector/niesr200710.htm

BERR (2008b), “Globalisation and the changing UK economy”, http://www.berr.gov.uk/files/file44332.pdf

BIS (2009a), “China and India: Opportunities and Challenges for UK Business”, http://www.berr.gov.uk/files/file50349.pdf

BIS (2009b), “The Globalisation of Value Chains and Industrial Transformation in the UK”, http://www.berr.gov.uk/files/file50584.pdf

BIS (2010), “Economic growth, BIS Economics Paper no.9”, http://www.bis.gov.uk/assets/biscore/economics-and-statistics/docs/e/10-1213-economic-growth.pdf

Oulton, N. and Srinivasan, S. (2004), “Productivity growth in UK industries, 1970-2000: structural change and the role of ICT”, NIESR, http://www.niesr.ac.uk/research/epke/confppt/Oulton.pdf

OECD (2010) Innovation Strategy Report, May

OECD (2009) “The Effect of Financial Crises on Potential Output”, Economics Department Working Paper, No. 699

Reinhart, C., and Rogoff, K. (2009), “The Aftermath of Financial Crises, American Economic Review”, Vol. 99(2), pp. 466-72

World Bank (2007) Global Economic Prospects

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