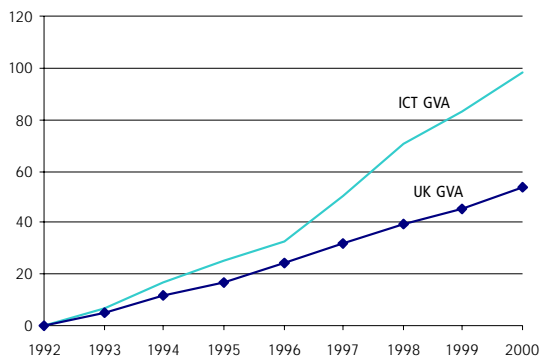


Information, communications and technology (ICT)

1.18

GVA: ICT growth relative to the UK economy

Per cent growth (Rebased to 1992)



Introduction

This section provides detailed information and statistics produced by the ONS covering the UK ICT sector based on the Input-Output Annual Supply and Use Tables. The availability of these statistics provides users with better information of the impact of ICT activity in the UK.

Throughout the 1990s, the rapid growth in both ICT production and investment have been important contributors to UK economic growth and productivity growth. In addition, ICT investment has added to the UK capital stock and capital services, which will affect the UK economy over the longer term.

There are two ways to assess the overall contribution of ICT to GDP growth that need to be considered:

- Direct effect on gross value added (GVA) at current basic prices of the ICT producing industries, and the
- Indirect effect of ICT investments on GVA at current basic prices of the ICT consuming industries.

In this section, we consider in detail the direct effect on GVA at current basic prices.

1.19

Definition of ICT sector

SIC (92) class	I-O group number	I-O group name
Manufacturing		
30.00	69	Office, accounting and computing machinery
31.30	71	Insulated wire and cable
32.10	73	Electronic valves and tubes and other electronic components
32.20	74	Television and radio transmitters and apparatus for line telephony and line telegraphy
32.30	75	Television and radio receivers, sound or video recording or reproducing apparatus, and associated goods
33.201	76 part	Instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process equipment
33.301	76 part	Industrial process equipment
Services		
51.43	90 part	Wholesale of electrical household appliances and radio and television goods
51.64	90 part	Wholesaling of machinery, equipment and supplies
64.20	99	Telecommunications
71.33	106 part	Renting of office machinery and equipment (including computers)
72.00	107	Computer and related activities

Source: OECD paper - Measuring the ICT Sector (2000)

ICT Definition and methodology

The definition of the ICT sector, as shown in **Table 1.19**, was agreed by the Working Party on Indicators for the Information Society (WPIIS) in April 1998, and by the OECD Committee for Information, Computer and Communications Policy (ICCP) in September 1998. This agreed definition was then reflected in a paper by the OECD Secretariat in the year 2000 on international comparisons, “*Measuring the ICT Sector*”.

This definition covers both goods such as office machinery and communication equipment and services such as telecommunication and computer services. The definition of the ICT sector was based on the following principles:

Products in the *manufacturing* industries:

- Must be intended to fulfil the function of information processing and communication including transmission and display.
- Must use electronic processing to detect, measure and/or record physical phenomena or to control a physical process.

Products in the *service* industries:

- Must be intended to enable the function of information processing and communication by electronic means.

The data for the analyses in this section have been derived from the 1992-2000 Input-Output Annual Supply and Use Tables published by the ONS in July 2002. In some cases, where parts of I-O groups are covered, proportions have been obtained from the ONS Annual Business Inquiry, a key input in producing the Input-Output Annual Supply and Use Tables.

Since the 2001 Edition of this publication, the links between the definition shown in **Table 1.19**, the I-O groups and the SIC (92) sub-classes have been reviewed in consultation with DTI. The changes to the definition used previously are as follows:

- Addition of SIC (92) class 51.43;
- Removal of SIC (92) class 33.10; and
- SIC (92) classes 33.201 and 33.301 were shown as 33.20 and 33.30 in last years publication. This change is only a presentational change and has not affected the estimates, as the data from the SIC (92) 5-digit category is the same as that derived from the 4-digit category last year.

Overview of UK ICT activity

In 2000, the contribution of ICT to UK GVA at current basic prices accounted for £59.9 billion out of a total of £838.1 billion (7.2 per cent of the total).

Chart 1.18 shows that GVA at current basic prices for the ICT sector grew by 98.4 per cent between 1992 and 2000, compared to the growth of GVA at current basic prices for the whole economy of 53.4 per cent over this period.

Chart 1.20 shows that the composition of the growth in GVA at current basic prices generated by the ICT sector has been largely led by the service industries rather than manufacturing industries. Between 1992 and 2000, the services component grew by 106.5 per cent (from £22.3 billion to £46.1 billion) whereas the manufacturing component grew by 75.3 per cent (from £7.9 billion to £13.8 billion).

Chart 1.21 shows the factor income composition of GVA at current basic prices generated by the ICT sector. As expected given the large services component, the ICT sector is highly labour intensive with compensation of employees contributing £37.5 billion in 2000 (growth of 90.7 per cent over 1992). Gross operating surplus (which includes gross operating profits and rental income) for the ICT sector in 2000 amounted to £21.6 billion (growth of 120.1 per cent over 1992). Taxes (less subsidies) on production in 2000 amounts to £0.8 billion growing by 14.5 per cent compared to 1992.

ICT Product Supply and Demand

Table 1.22 shows a summary ICT product Supply and Demand balance struck at purchasers' prices for the year 2000.

Since 1992, the overall supply of ICT products has grown by 131.9 per cent to £188.6 billion in 2000. The UK's domestic output of ICT products in 2000 amounted to £112.0 billion, and is increased by imports of goods and services, distributors' trading margins and taxes (less subsidies) on products. These help push the total UK ICT product supply up by a further 68.4 per cent. These additions are particularly significant in the supply of computers, where imports have exceeded UK production.

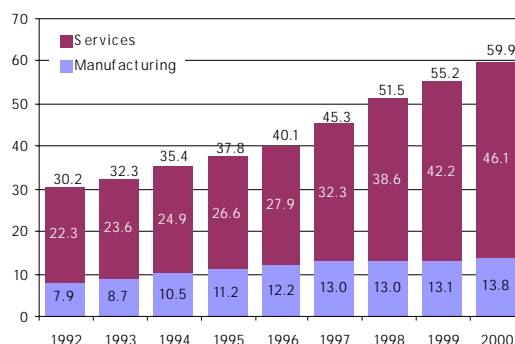
Of the supply of ICT products in 2000, around half is used as intermediate consumption by other UK industries (such as electrical equipment and printing and publishing); about a seventh is invested (gross capital formation) in UK industry, mainly within the service sector; about a quarter is exported; and the remainder is consumed by households.

Exports of ICT products grew from £15.9 billion in 1992 to £43.3 billion in 2000, contributing 16.3 per cent of total UK exports of goods and services, and 4.6 per cent of GDP at current market prices.

1.20

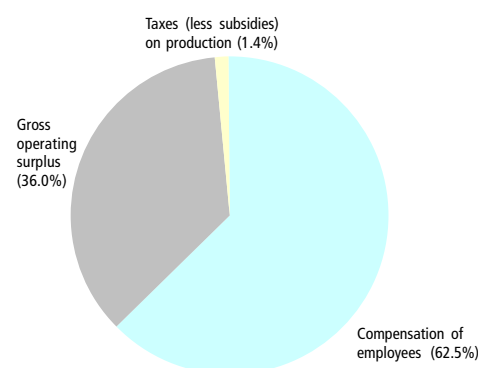
ICT GVA: Manufacturing and services sector contribution

£ billion



1.21

Factor incomes generated by ICT sector in 2000



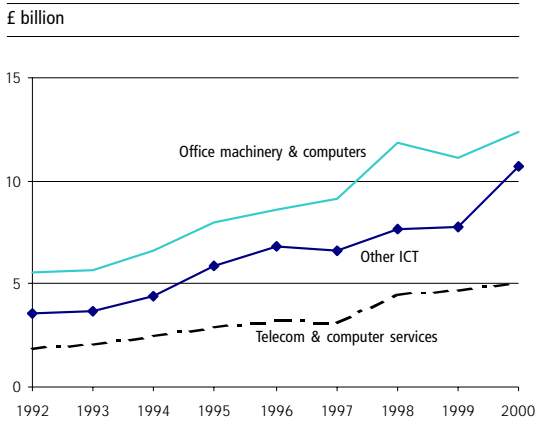
1.22

Supply and Demand balance of ICT products 2000

	£ billion	Growth since 1992 (per cent)
Supply		
Domestic output	112.0	123.6
Imports of goods	48.0	168.4
Imports of services	1.8	69.1
Distributors' trading margins	18.7	131.7
Taxes (less subsidies) on products	8.2	92.7
Total Supply	188.6	131.9
Demand		
Intermediate demand	94.1	127.1
HHFCe	23.1	77.6
GCF	28.2	157.1
Exports of goods	38.7	171.2
Exports of services	4.6	175.0
Total Demand	188.6	131.9

1.23

ICT investment spending



Charts 1.23 and 1.24 show the composition of ICT investment, and ICT investment in relation to total investment.

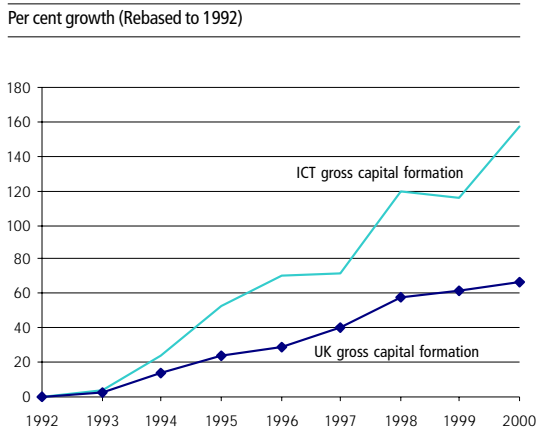
Gross capital formation on ICT products grew from £11.0 billion in 1992 to £28.2 billion in 2000. In 2000, this amounted to 17.1 per cent of total UK gross capital formation (compared to 11.1 per cent in 1992), and 3.0 per cent of GDP at current market prices (compared to 1.8 per cent in 1992). Although the ICT proportion of gross capital formation has increased to £28.2 billion in 2000, it is still much smaller than the level of investment in other assets such as buildings, offices and other structures as well as vehicles, which amounted to £136.4 billion in 2000 compared to £87.7 billion in 1992.

Household final consumption of ICT products has increased by 77.6 per cent to £23.1 billion between 1992 and 2000. Much of this consumption is concentrated on products such as home computers, satellite dishes, TV and video (including DVD) equipment, and telecommunication products like mobile phones.

The UK has been a net importer (imports *less* exports) of ICT products in every year between 1992 and 2000. In 2000, the trade deficit (exports *less* imports) in ICT products was £6.5 billion, the largest since 1992, and has doubled between 1999 and 2000. The key products were computers and television related equipment where the UK imports parts and completes the assembly of the final product for either export or domestic consumption.

1.24

Investment: ICT growth relative to the UK economy



ICT Industries contribution to GVA

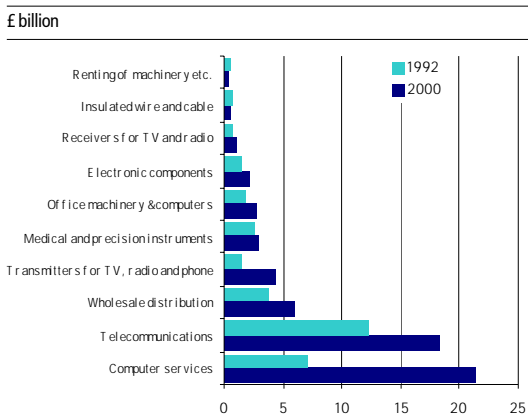
Chart 1.25 shows a breakdown of industries forming the ICT definition and their change in contribution to GVA at current basic prices between 1992 and 2000. Most of the industries have grown, with the largest growth in the computer services, transmitters, distribution and telecommunication industries.

ICT GVA contribution to manufacturing industry GVA

Between 1992 and 2000, total UK manufacturing output at current prices grew by 36.9 per cent in terms of output and 32.6 per cent in terms of GVA at current basic prices. The contribution of UK manufacturing industries GVA at current basic prices as a proportion of the whole economy has fallen to 18.3 per cent in 2000. The ICT manufacturing industries contribution to total manufacturing industry output and GVA at current basic prices, however, grew by 93.6 per cent and 75.3 per cent respectively.

1.25

GVA by rank in 2000



The ICT sector contribution to manufacturing industries growth at constant prices is much higher compared to current prices because of volume growth, productivity growth and the fall in prices in the high-technology sectors over this period.

When the contribution of ICT production has been stripped out of the manufacturing industry estimates at constant prices, it is clear that UK manufacturing growth in real terms during the 1990s was entirely due to the rapid growth in ICT activity. UK manufacturing growth in real terms between 1992 and 2000 was 13.4 per cent after allowing for growth in output prices of 19.7 per cent. The ICT production growth in constant prices would be much higher than in current prices because the deflation uses prices that have fallen rapidly. For example, the price index for computers and other data processing equipment has fallen from 140.5 in 1992 to 45.9 in 2000 (1995 = 100).

ICT Contribution to productivity

Alternatively, there are other ways of looking at the ICT investment contribution to future productivity potential – for example, the capital services yielded by ICT and other business assets, and the modernisation of the capital stock. The ONS is working to improve the measurement of capital stock. Also the ONS is working together with the Bank of England to develop a volume index of capital services (VICS).

Commentators have been concerned that UK productivity growth in the nineties has not been as strong as expected given the growth in ICT activity. Rapid investment is usually accompanied by strong growth in productivity.

It takes time for the implementation of new technology to realise its full potential. For example, old processes to make old products are re-engineered together with re-structuring the business before real gains are achieved. This is partly supported by the GVA at current basic prices to total output ratio for the manufacturing industry which stopped falling in 1996, and grew by 3.0 per cent between 1996 and 1999. However, the ratio fell by 2.7 per cent between 1999 and 2000 mainly due to the squeeze in prices, margins and thus, the large fall in profits. The time span needed to achieve productivity gains means that although these may not immediately be visible, the UK may achieve the expected productivity gains over the next few years.

International debate

Various economic and statistical commentators regularly review the impact of investment in ICT products on economic growth. Research is ongoing into developing links between ICT investment and productivity. It has been noted that high ICT investment expenditure in the USA has been accompanied by consistently high USA productivity growth. The analysis presented in this publication allows this aspect to be analysed further for the UK economy.

Chart 1.26 compares the ICT contribution to GVA in the UK with the USA. The USA data is derived from the Digital Economy 2002 (published in March 2002) produced by the US Department of Commerce (see www.esa.doc.gov/508/esa/DIGITALECONOMY2002.htm).

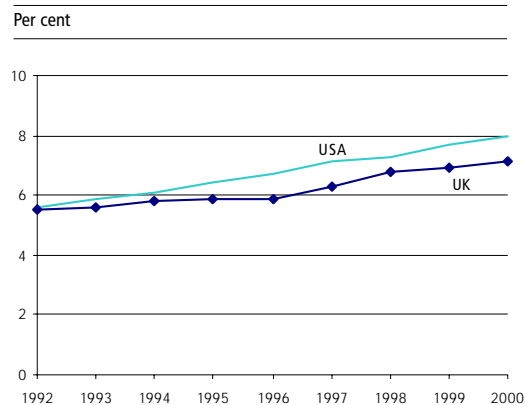
It is interesting to note, **Chart 1.26** shows that the ICT GVA contribution in the USA has been higher than in the UK in every year from 1992 to 2000. In 2000, the ICT GVA contribution in the USA was 8.0 per cent compared to 7.2 per cent in the UK.

The contribution of ICT to UK GVA at current basic prices was £59.9 billion in 2000 compared to £30.2 billion in 1992 (growth of 98.4 per cent). Whereas in the USA, the ICT GVA contribution was \$796.6 billion in 2000 compared to \$353.2 billion in 1992 (growth of 125.5 per cent).

In relation to Y2k activity in 1999 and 2000, it is worth noting the slowdown in the UK contribution to GVA at current basic prices of I-O industry group 69 (Office machinery). However, the rapid growth in the UK contribution of GVA at current basic prices of I-O product groups 74 (Transmitters), 99 (Telecommunications) and 107 (Computer services) in more recent periods may help to increase labour productivity growth in future years.

1.26

ICT GVA: Comparison between UK and USA



References:

- (1) *Economic Trends* No. 572 July 2001 (containing ICT Deflation and Growth: A Sensitivity Analysis by Prabhat Vaze). Published by TSO 2001 ISSN 0013 0400
- (2) A copy of the OECD “*Measuring the ICT Sector*”, 2000 report can be found on their web-site, www.oecd.org/dsti/sti/it/prod/index.htm

1.27 ICT statistics at a glance

	All estimates are in £ million or proportions as appropriate									Growth rates (%)	
	1992	1993	1994	1995	1996	1997	1998	1999	2000	1999-00	1992-00
ICT Supply and Demand product balance											
Supply of ICT products											
Domestic output of products at basic prices	50 077	54 652	61 267	68 317	76 113	83 570	94 154	102 775	111 975	9.0	123.6
Imports of goods and services	18 920	23 320	25 717	30 326	34 772	34 640	36 028	39 799	49 747	25.0	162.9
Distributors' trading margins	8 065	8 301	9 794	11 440	12 997	14 693	16 862	17 809	18 686	4.9	131.7
Taxes /less subsidies on products	4 262	4 587	4 983	5 365	5 788	6 108	6 833	7 513	8 211	9.3	92.7
Total supply of products at purchasers' prices	81 324	90 859	101 762	115 448	129 670	139 011	153 878	167 897	188 619	12.3	131.9
Demand for ICT products											
Total intermediate demand (including NPISHs and GG)	41 449	44 959	48 675	53 007	61 868	68 282	75 626	86 461	94 115	8.9	127.1
Households final consumption expenditure (HHFCE)	12 987	13 790	14 686	15 681	16 432	17 864	19 452	21 120	23 066	9.2	77.6
Gross capital formation	10 951	11 413	13 539	16 755	18 715	18 865	24 072	23 590	28 160	19.4	157.1
Exports of goods and services	15 937	20 697	24 861	30 006	32 655	34 000	34 728	36 725	43 278	17.8	171.6
Total demand for products at purchasers' prices	81 324	90 859	101 762	115 448	129 670	139 011	153 878	167 897	188 619	12.3	131.9
Contribution to GVA by ICT producing industries (I-O groups)											
69 Office machinery and computers	2 206	2 546	3 127	3 284	3 397	3 477	3 436	3 065	2 895	-5.5	31.2
71 Insulated wire and cable	615	647	747	741	692	669	635	601	625	4.0	1.6
73 Electronic components	1 340	1 472	1 852	2 172	2 004	2 407	2 086	2 002	2 126	6.2	58.7
74 Transmitters for TV, radio and phone	1 358	1 496	1 703	1 964	2 370	2 524	3 120	3 787	4 373	15.5	222.0
75 Receivers for TV and radio	656	716	815	928	1 006	1 172	999	971	1 083	11.5	65.1
part of 76 Medical and precision instruments	1 690	1 775	2 240	2 113	2 755	2 737	2 701	2 637	2 688	1.9	59.1
part of 90 Wholesale distribution	3 560	3 773	3 906	4 071	4 337	5 778	6 310	5 869	6 006	2.3	68.7
99 Telecommunications	12 059	12 366	12 849	12 743	12 729	13 558	15 595	16 866	18 369	8.9	52.3
part of 106 Renting of machinery etc	403	470	209	663	429	288	400	256	360	41.0	-10.5
107 Computer services	6 322	7 008	7 940	9 100	10 367	12 720	16 249	19 166	21 399	11.7	238.5
Total GVA at basic prices	30 208	32 269	35 388	37 778	40 086	45 330	51 531	55 220	59 925	8.5	98.4
Contribution to output by ICT producing industries (I-O groups)											
69 Office machinery and computers	8 818	9 554	10 883	11 783	12 877	13 798	13 318	13 288	13 459	1.3	52.6
71 Insulated wire and cable	1 534	1 617	1 846	1 972	1 914	1 919	1 875	1 735	1 711	-1.4	11.5
73 Electronic components	2 688	3 110	3 774	4 397	4 544	5 629	4 789	4 937	5 042	2.1	87.6
74 Transmitters for TV, radio and phone	3 125	3 602	4 506	5 419	5 977	6 541	7 935	9 314	13 020	39.8	316.6
75 Receivers for TV and radio	2 302	2 890	3 394	3 916	4 327	4 293	3 806	3 703	3 812	2.9	65.6
part of 76 Medical and precision instruments	3 628	3 834	4 750	4 623	6 119	5 873	5 733	5 617	5 730	2.0	58.0
part of 90 Wholesale distribution	7 001	7 520	7 953	8 513	9 386	12 819	14 206	13 322	13 711	2.9	95.8
99 Telecommunications	17 568	18 882	20 191	21 337	23 567	25 883	29 961	32 801	35 735	8.9	103.4
part of 106 Renting of machinery etc	667	784	364	1 209	783	505	705	449	621	38.4	-6.9
107 Computer services	11 589	12 660	14 281	16 165	18 800	22 705	29 763	35 588	38 720	8.8	234.1
Total output at basic prices	58 920	64 464	71 943	79 334	88 295	99 965	112 091	120 754	131 562	9.0	123.3
Contribution to ICT GVA by type of factor income											
Compensation of employees (CoE)											
Manufacturing	5 750	5 936	6 373	6 632	7 296	7 485	7 957	8 241	8 933	8.4	55.4
Services	13 907	14 444	15 059	16 190	16 372	18 992	22 753	25 263	28 548	13.0	105.3
Total	19 657	20 380	21 432	22 821	23 667	26 477	30 710	33 504	37 481	11.9	90.7
Gross operating surplus (GOS)											
Manufacturing	2 001	2 602	4 006	4 468	4 804	5 349	4 870	4 670	4 683	0.3	134.0
Services	7 815	8 556	9 322	9 810	10 918	12 745	15 147	16 267	16 920	4.0	116.5
Total	9 817	11 159	13 328	14 278	15 722	18 094	20 017	20 937	21 602	3.2	120.1
Taxes less subsidies on production											
Manufacturing	113	113	105	103	124	152	151	152	174	14.6	54.0
Services	622	616	523	577	572	608	654	627	668	6.5	7.3
Total	735	730	628	679	696	760	804	779	842	8.1	14.5
Total ICT GVA											
Manufacturing	7 865	8 652	10 484	11 202	12 224	12 986	12 977	13 063	13 790	5.6	75.3
Services	22 344	23 617	24 904	26 576	27 862	32 345	38 554	42 157	46 135	9.4	106.5
Total	30 208	32 269	35 388	37 778	40 086	45 330	51 531	55 220	59 925	8.5	98.4
Whole economy indicators											
GDP at current market prices	610 854	642 327	681 327	719 176	762 214	811 067	859 384	902 459	950 415	5.3	55.6
GVA at current basic prices	546 434	575 461	608 740	639 908	679 620	720 692	762 363	796 273	838 065	5.2	53.4
Households final consumption expenditure (HHFCE)	379 758	401 970	422 397	443 367	473 800	503 374	536 235	569 481	603 557	6.0	58.9
Gross capital formation	98 663	101 327	112 135	121 839	127 375	138 758	156 298	159 792	164 518	3.0	66.7
Exports of goods and services	144 091	163 640	180 508	203 509	223 091	231 622	228 801	236 609	265 135	12.1	84.0
Imports of goods and services	151 659	170 125	185 255	207 051	227 216	231 436	237 948	252 187	283 623	12.5	87.0
Index of manufacturing output at constant prices (1995 = 100)	92.8	94.1	98.5	100.0	100.7	102.0	102.8	103.1	105.2	2.0	13.4
Producer price index: Manufacturing output (1995 = 100)	90.2	93.8	96.1	100.0	102.6	103.5	104.1	105.3	108.0	2.6	19.7
USA ICT GVA as a proportion of USA whole economy GVA	5.6	5.9	6.1	6.4	6.7	7.1	7.3	7.7	8.0	3.9	42.9
ICT contribution related to whole economy variables											
ICT GVA as a proportion of whole economy GVA	5.5	5.6	5.8	5.9	5.9	6.3	6.8	6.9	7.2	3.1	29.3
ICT GVA as a proportion of ICT total output	51.3	50.1	49.2	47.6	45.4	45.3	46.0	45.7	45.5	-0.4	-11.2
ICT CoE as a proportion of ICT GVA	65.1	63.2	60.6	60.4	59.0	58.4	59.6	60.7	62.5	3.1	-3.9
ICT GOS as a proportion of ICT GVA	32.5	34.6	37.7	37.8	39.2	39.9	38.8	37.9	36.0	-4.9	10.9
ICT ToP as a proportion of ICT GVA	2.4	2.3	1.8	1.8	1.7	1.7	1.6	1.4	1.4	-0.4	-42.3
ICT GCF as a proportion of whole economy GCF	11.1	11.3	12.1	13.8	14.7	13.6	15.4	14.8	17.1	15.9	54.2
ICT GCF as a proportion of GDP at current market prices	1.8	1.8	2.0	2.3	2.5	2.3	2.8	2.6	3.0	13.3	65.3
ICT HHFCE as a proportion of total HHFCE	3.4	3.4	3.5	3.5	3.5	3.5	3.6	3.7	3.8	3.0	11.8
Manufacturing industries contribution of ICT GVA (%)	26.0	26.8	29.6	29.7	30.5	28.6	25.2	23.7	23.0	-2.7	-11.6
Service industries contribution of ICT GVA (%)	74.0	73.2	70.4	70.3	69.5	71.4	74.8	76.3	77.0	0.8	4.1
ICT imports as a proportion of total imports	12.5	13.7	13.9	14.6	15.3	15.0	15.1	15.8	17.5	11.1	40.6
ICT exports as a proportion of total exports	11.1	12.6	13.8	14.7	14.6	14.7	15.2	15.5	16.3	5.2	47.6
Net balance of ICT trade in goods and services (£m)	-2 983	-2 623	-856	-320	-2 117	-639	-1 300	-3 074	-6 469	n/a	n/a

GCF represents Gross Fixed Capital Formation plus changes in inventories plus valuables.
ToP represents taxes (less subsidies) on production.
GVA is recorded at current basic prices.

GG represents General Government Final Consumption Expenditure.
Balance of ICT trade is recorded as exports less imports.
Differences between totals and sums of components are due to rounding.