

Computer services

Strong employment growth and low labour productivity despite high labour costs and a highly-educated labour force

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This issue of 'Statistics in focus' presents for the first time harmonised data on a European level, which result from the implementation of the European Regulation on Structural Business Statistics. As a certain number of Member States are still in the phase of derogation, the results are still partial and sometimes relate to different reference years. Nevertheless they have been judged sufficiently innovative and relevant to qualify for publication.

This publication focuses on Computer and related activities (Division 72, NACE Rev. 1), which are referred to as computer services. Computer services comprise the following activities: hardware consultancy, software consultancy and supply, data processing, database activities, maintenance and repair of office, accounting and computing machinery and other computer-related activities.

Main features of computer services:

- Double-digit growth in the number of persons employed in reporting countries (see Figure 1).
- Relatively low labour productivity despite high labour costs and a highly-educated workforce.
- Relative dominance of small and medium-sized enterprises (SMEs).

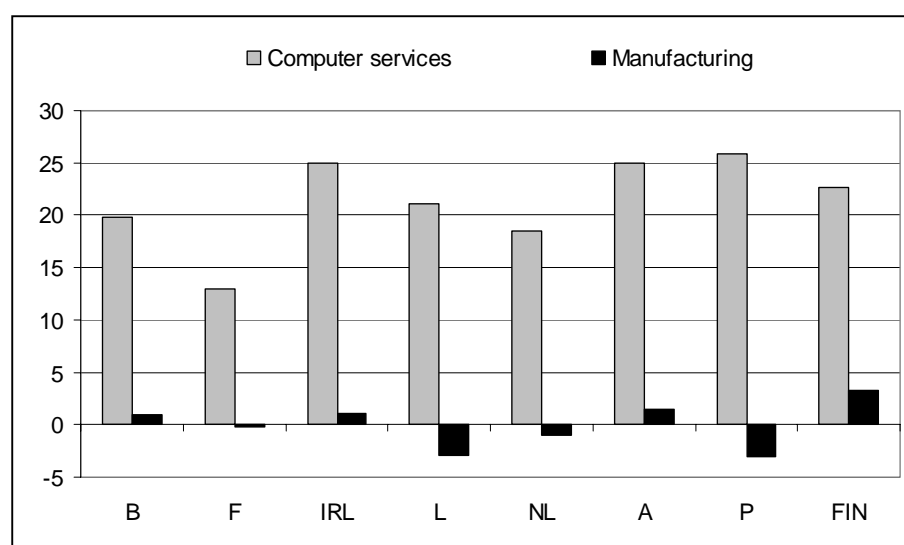


Figure 1 (based on Table 1, see footnotes): Employment growth rate in 1998 in computer services compared with manufacturing where data are available in both cases [%].

Source: Eurostat, SBS database

Statistics in focus

INDUSTRY, TRADE AND SERVICES

THEME 4 – 11/2001

SECTORIAL PROFILES

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More statistics on the complete business services sector (including computer services) can be found in "Business Services in Europe" (forth-coming).



Double-digit growth in the number of persons employed in reporting countries

Information about the growth in the number of persons employed in computer services in 1997/1998 was available for eight countries and all of these reported double-digit growth rates, ranging from 13% (in France) to 26% (in Portugal). For comparison, employment growth in manufacturing (in the same eight countries) ranged from -3% (in Portugal and Luxembourg) to 3% (in Finland). Employment growth in computer services also exceeded employment growth in business services in general (which includes computer services).

This phenomenon was not restricted to 1998, as similarly high employment growth rates were also observed in 1996 and 1997. Only in four instances (in Finland, Italy and Austria in 1996 and in France in 1997) did the growth rate in computer services fail to reach double digits during the period 1996-98.

The relative employment growth rates in computer services and manufacturing are in fact related, as manufacturing has experienced relative stagnation due partly to an increased tendency to outsource non-core activities such as facilities management, which is part of computer services. This has, on the other hand, increased the employment in computer services. Part of the strong growth in computer services is thus due only to the fact that enterprises are increasingly buying services from specialist firms instead of producing those services themselves.

	Year	Computer services	Business services	Manufacturing
EU-15	:	:	:	:
B	1998	20	10	1
DK	1998	:	:	-1
D	:	:	:	:
EL	:	:	:	:
E	1998	:	:	4
F	1998	13	9	0
IRL (1)	1997	25	10	1
I	1996	3	:	2
L (2)	1998	21	17	-3
NL (3)	1998	19	3	-1
A	1998	25	12	1
P (1)	1997	26	6	-3
FIN	1998	23	9	3
S	1997	:	:	11
UK	1997	:	:	1

(1) Manufacturing: 1998
(2) Manufacturing: 1997
(3) Manufacturing: 1996

Table 1: Employment growth rate in 1998 in computer services compared with business services (NACE Rev. 1 section K) and manufacturing [%].

Source: Eurostat, SBS database

	Computer services			Manufacturing		
	1996	1997	1998	1996	1997	1998
EU-15	:	:	:	:	:	:
B	:	10	20	-2	-3	1
DK	:	:	:	-2	0	-1
D	:	:	:	:	:	:
EL	:	:	:	:	:	:
E	:	:	:	3	2	4
F	:	6	13	27	-1	0
IRL	33	25	:	2	6	1
I	3	:	:	2	:	:
L	26	13	21	-4	-3	:
NL	23	17	19	-1	:	:
A	8	23	25	-3	-1	1
P	:	26	:	10	-2	-3
FIN	3	13	23	-1	5	3
S	:	:	:	1	11	:
UK	:	:	:	:	1	:

Table 2: Annual growth rates of employment in computer services compared with manufacturing [%].

Source: Eurostat, SBS database

The strong growth in computer management processes and the both hardware and software services is more than just the result rapid development of stronger and systems. of an outsourcing process, however. faster processors and new software Increasingly, computer solutions are is leading to a positive growth spiral implemented in the production and with almost continuous updating of

Relatively low labour productivity despite high labour costs and a highly-educated workforce

The persons employed in computer services are well educated in the sense that more than half of those employed in the sector have a high level of educational attainment, compared with only 16% in manufacturing (see Table 3). Naturally, labour costs in computer services are also higher than in manufacturing, as shown by the figures for 9 out of 11 countries. Consequently, labour productivity

	EU-15	B	DK	D	EL	E	F	IRL(1)	I	L	NL	A	P	FIN	S	UK
Computer services	54	71	44	52	:	64	71	74	27	57	53	35	42	51	62	58
Manufacturing	16	21	16	20	10	20	17	24	4	12	15	7	3	25	19	21

(1) Data: 1997

Table 3: Share of the persons in employment aged 25 to 59 years old that attained a level of higher education (ISCED 5-7) in computer services and manufacturing in 1999 [%].

Source: Eurostat, LFS 1992-1999 database

	Year	Unit labour cost [1000 ECU]		Apparent labour productivity [1000 ECU]		Gross operating rate [%]	
		Computer services	Manufacturing	Computer services	Manufacturing	Computer services	Manufacturing
EU-15	:	:	:	:	:	:	:
B	1998	52	40	61	60	13	9
DK	1998	:	32	:	46	:	12
D	:	:	:	:	:	:	:
EL	:	:	:	:	:	:	:
E	1998	30	20	30	40	12	10
F	1998	48	36	55	48	7	7
IRL (1)	1998	:	27	53	88	:	23
I	1996	30	30	40	40	16	11
L (2)	1998	46	38	40	62	-6	12
NL (3)	1998	49	36	53	56	9	11
A	1998	44	36	53	54	16	12
P (4)	1998	20	11	25	17	10	11
FIN	1998	42	33	57	59	16	14
S	1997	48	37	53	57	11	12
UK (5)	1998	28	29	:	49	31	13

(1) Apparent labour productivity for computer services: 1997

(2) Data for manufacturing: 1997

(3) Manufacturing: gross operating rate: 1997; unit labour cost and apparent labour productivity: 1996

(4) Data for computer services: 1997

(5) Unit labour cost and apparent labour productivity for manufacturing: 1997; Unit labour cost for computer services: 1997

Table 4: A comparison between computer services and manufacturing of labour costs [1000 ECU], apparent labour productivity [1000 ECU] and gross operating rate [%].

Source: Eurostat, SBS database

ought to be relatively high in computer services. This is not the case, however. On the contrary, in 8 of the 11 countries for which data were available, apparent labour productivity was higher in manufacturing than in computer services.

There are two possible explanations for this phenomenon. First, the strong employment growth may directly account for the relative low labour productivity at least initially, whilst new staff and procedures are being introduced into the production process. Secondly, the short supply of staff with information technology skills may have driven up salaries and thus labour costs in computer services without a consequent gain in labour productivity.

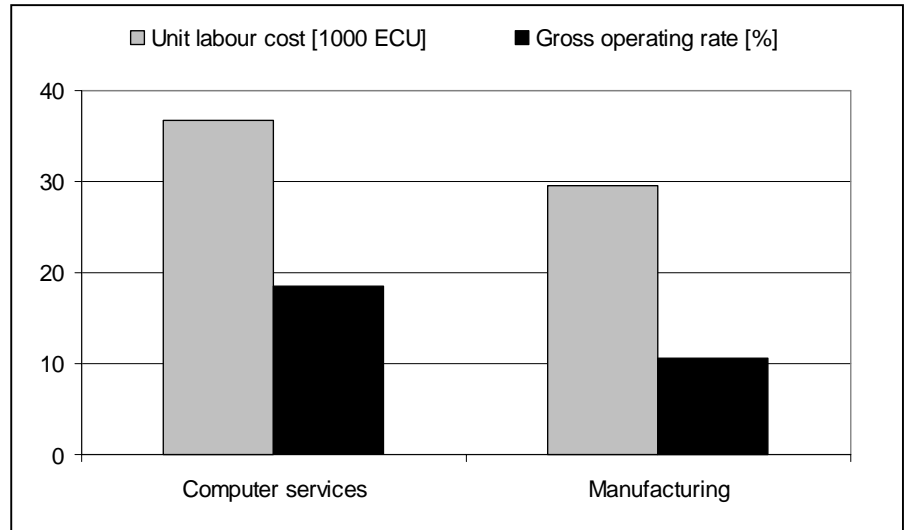


Figure 2: Unit labour cost [1000 ECU] and gross operating rate [%] in a comparison between computer services and manufacturing. The following Member States have been excluded: For computer services: DK, D, EL and IRL. For manufacturing: D and EL. Source: Eurostat, SBS database

High labour costs combined with low labour productivity ought in theory to result in a relatively low gross operating rate for computer services, but in fact it is higher for computer

services than for manufacturing. This apparent paradox could be explained by the fact that there are more self-employed persons in computer services than in manufacturing, where most workers are employees. Self-employed persons obviously contribute to value added, but not to personnel costs. This results in a relatively high gross operating rate for computer services.

Computer services dominated by small and medium-sized enterprises

	Number of enterprises by size-class															
	EU-15 1996	B 1997	DK 1996	D 1997	EL 1997	E 1997	F 1996	IRL 1996	I 1996	L 1996	NL 1996	A 1997	P 1996	FIN 1997	S 1996	UK 1997
Total	100	100	100	100	:	100	100	100	100	:	:	100	100	100	100	100
0 to 9 employees	93	95	91	84	:	94	85	:	94	:	:	94	94	92	91	98
10 to 249 employees	7	5	9	15	:	6	14	14	6	:	:	6	6	8	8	2
250 employees or more	0	0	0	0	:	0	1	0	0	:	:	0	0	0	0	0

	Number of persons employed by size-class															
	EU-15 1996	B 1997	DK 1996	D 1997	EL 1997	E 1997	F 1996	IRL 1996	I 1996	L 1997	NL 1996	A 1997	P 1995	FIN 1997	S 1996	UK 1997
Total	100	100	100	100	:	100	100	100	100	:	:	100	100	100	100	100
0 to 9 employees	34	34	21	20	:	35	22	:	48	:	:	39	59	27	26	53
10 to 249 employees	42	44	:	56	:	38	47	62	35	:	:	50	41	46	40	25
250 employees or more	24	22	:	24	:	27	30	13	17	:	:	11	0	26	34	22

Table 5: Size-class distribution in computer services [%]. Source: Eurostat, SME database

Computer services are an activity dominated by small and medium-sized enterprises (SMEs). In fact 93% of all computer service businesses are micro-enterprises (i.e. have fewer than 10 employees), compared with 81% in manufacturing. More importantly, 34% of those employed in computer services work in micro-enterprises, compared with only 15% in manufacturing. In addition, while only 24% of those employed in computer services work for large companies (with at least 250 employees), the figure is 45% in manufacturing.

The importance of micro-enterprises in computer services is apparent in all countries, but to a varying degree. In Portugal, UK and Italy respectively, 59%, 53% and 48% of persons employed in the sector work for micro-enterprises, compared with only approximately 20% in Denmark, Germany and France.

The dominance of small and medium-sized enterprises in computer services can also be illustrated by the number of persons employed per enterprise: on average fewer than 6 in computer services, compared with almost 13 in manufacturing. The variation between countries is very high, however, with figures for manufacturing ranging from 9 (in Italy) to 55 (in Ireland). In computer services the range is from 4 (in Italy) to 9 (in Ireland and the Netherlands).



Figure 3: Number of enterprises and number of persons employed by size-class in computer services [1996] and manufacturing [1997] [%].

Source: Eurostat, SME database

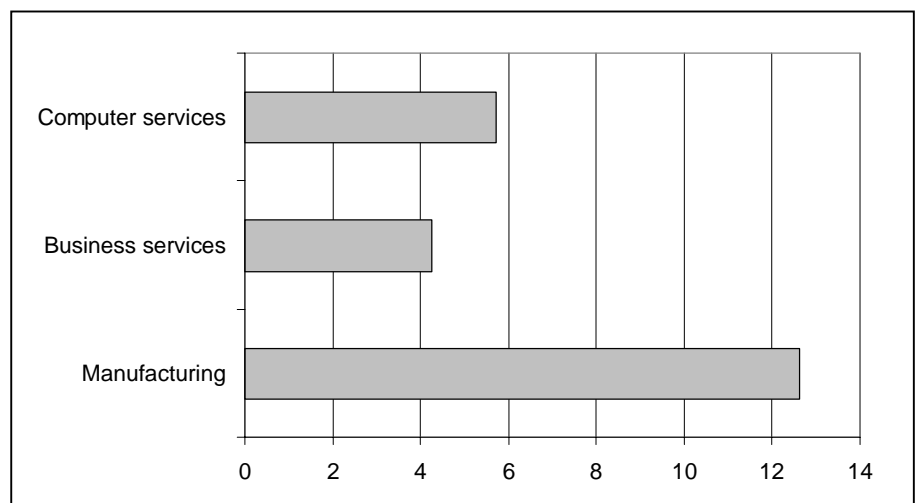


Figure 4: Number of persons employed per enterprise for computer services, business services and manufacturing in 1997.

The following Member States have been excluded: B, DK, D, EL and UK.

Source: Eurostat, SBS database

	Year	Number of persons employed per enterprise		
		Computer services	Business services	Manufacturing
EU-15	:	:	:	:
B	:	:	:	:
DK	1998	:	:	20
D	:	:	:	:
EL	:	:	:	:
E	1998	6	13	15
F	1998	8	5	16
IRL (1,2)	1998	9	6	55
I	1996	4	2	9
L (3)	1998	6	6	36
NL (1,4)	1998	9	11	20
A	1998	4	6	24
P (1,2)	1998	5	5	13
FIN	1998	6	4	16
S	1997	4	3	16
UK	1997	:	:	25

(1) Business services: 1997

(2) Computer services: 1997

(3) Manufacturing: 1997

(4) Manufacturing: 1996

Table 6: Number of persons employed per enterprise for computer services, business services and manufacturing.
Source: Eurostat, SBS database

➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

Databases used

This publication is based on the annual enterprise statistics (DFT file: enter) of the **SBS** (Structural Business Statistics, Theme 4) domain and **SME** (small and medium-sized enterprises, Theme 4). Because the SME data were collected on a voluntary basis, the methodologies are not completely harmonised. Data were also extracted from **LFS** (Labour Force Survey, Theme 3).

NACE Rev. 1

For purposes of comparison within this publication, the following NACE sectors have been referenced:

D Manufacturing

K Real estate, renting and business activities (referred as to Business services)

NACE Rev.1 72 Computer and related activities

This is a division of NACE Rev. 1 – the Statistical Classification of Economic Activities in the European Community and it is referred to as computer services in this publication. It includes the following activities:

hardware consultancy (group 72.1)

software consultancy and supply (72.2)

data processing (72.3)

database activities (72.4)

maintenance and repair of office, accounting and computing machinery (72.5)

other computer related activities (72.6).

Download NACE Rev.1 from the web: http://forum.europa.eu.int/Public/irc/dsis/bmethods/info/data/new/classifications/nace_en.pdf

Size classes

Size classes are broken down by number of employees and are defined as follows: Micro-enterprise: a micro-enterprise has fewer than 10 employees.

Small enterprise: a small enterprise has fewer than 50 employees and either an annual turnover of no more than ECU 7 million or a balance-sheet total of no more than ECU 5 million.

Medium-sized enterprise: a medium-sized enterprise has fewer than 250 employees and either an annual turnover of no more than ECU 40 million or a balance-sheet total of no more than ECU 27 million.

ISCED

According to the revised 1997 International Standard Classification of Education (ISCED-97), educational

programmes may be classified as follows:

-ISCED 0-2 = Education at or below the lower secondary level

-ISCED 3 = Education at the upper secondary level

-ISCED 4 = Post-secondary, non-tertiary level

-ISCED 5-7 = Programmes at the tertiary level

11 11 0 Number of enterprises

A count of the non-dormant number of enterprises registered to the population concerned in the business statistics register. This variable refers to all enterprises producing either a market or a non-market output.

12 15 0 Value added at factor cost

Value added at factor cost is calculated by adjusting value added at basic prices for operating subsidies linked to production and duties and taxes linked to production. Value added at factor cost is calculated as follows: Value added at basic prices + Operating subsidies linked to production - Duties and taxes linked to production.

12 17 0 Gross operating surplus

Gross operating surplus is the surplus generated by operating activities after the labour factor input has been recompensed. It can be calculated from value added at factor cost less personnel costs.

13 31 0 Personnel costs

Personnel costs are defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the reference period. Personnel costs also include taxes and employees' social-security contributions retained by the unit as well as the employer's compulsory and voluntary social contributions. Personnel costs can be calculated as follows: Wages and salaries + Social-security costs

16 10 0 Persons in employment

According to the LFS, persons in employment are those who during the reference week did any work for pay or profit, or were not working but had jobs from which they were temporarily absent. Family workers are included but not persons on lay-off.

91 29 0 Employment growth rate

The indicator shows the variation of persons in employment between year n and year (n-1). It is calculated as: (16 10

0 (year n) - 16 10 0 (year n-1)) / 16 10 0 (year n-1)

16 11 0 Number of persons employed

This covers all persons – both employed and self-employed.

92 10 0 Number of persons employed per enterprise

It is calculated as: "Number of persons employed" / "Number of enterprises"

16 13 0 Number of employees

This heading is defined as a count of the number of employees. Employees are defined as all persons who, by agreement, work for another resident institutional unit and receive remuneration.

Self-employed person

Self-employed persons are defined as persons who are the sole owners, or joint owners, of the unincorporated enterprise in which they work.

91 11 0 Apparent labour productivity

This is "Value added at factor cost" / "Number of persons employed".

91 21 0 Unit labour cost

This is labour costs per employee: "Personnel costs" / "Number of employees".

92 11 0 Gross operating rate [%]

It is calculated as: "Gross operating surplus" / "Turnover".

Please find more information on the web: http://forum.europa.eu.int/Public/irc/dsis/bmethods/info/data/new/coded/en/all_business.htm

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