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TURNOVER AND OUTPUT MEASUREMENT

FOR THE COMPUTER SERVICES INDUSTRY

IN THE NETHERLANDS

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1. Definition of service being collected

The ISIC (International Standard Industrial Classification of all economic activities) is used in many countries. Within the European Union all countries work with the NACE classification (NACE = Nomenclature statistique des activités économiques dans la Communauté Européenne). NACE and ISIC have the two first digits of the classification in common; the third and fourth digit may differ, but for the computer service industry no major differences occur, as is shown in table 1.
The computer service industry (NACE 72) includes all kinds of computer services: hardware and software consultancy, data processing, database activities, maintenance and repair of machinery and the like.

Table 1. Computer services and related activities according to the **current** NACE and ISIC classification

NACE Rev. 1.1	Description	ISIC Rev. 3.1
72	Computer and related activities	
72.1	Hardware consultancy	721
72.10	Hardware consultancy	7210
72.2	Software consultancy and supply	722
72.21	Publishing of software	7221
72.22	Other software consultancy and supply	7229
72.3	Data processing	723
72.30	Data processing	7230
72.4	Database activities	724
72.40	Database activities	7240
72.5	Maintenance and repair of office, accounting and computing machinery	725
72.50	Maintenance and repair of office, accounting and computing machinery	7250
72.6	Other computer related activities	729
72.60	Other computer related activities	7290

In the next few years, the NACE will be renewed. Services industries will be given far more attention, and become visible in more detail in the statistics, because of their growing significance for the national economies.
For the computer service industry, the new classification distinguishes in the first two digits between *information technology* and *information service* activities: NACE 62 and NACE 63. Then a further breakdown is made in the 3rd and 4th digit (table 2).

Table 2. Computer services and related activities according to the **future** NACE and ISIC classification

NACE Rev. 2	Description	ISIC Rev. 4
62	Information technology service activities	62
62.0	Information technology service activities	620
62.01	Computer programming activities	6201
62.02	Information technology consultancy activities	6202
62.03	Computer facilities management activities	6202
62.09	Other information technology service activities	6209
63	Information service activities	63
63.1	Data processing, hosting and related activities; web portals	631
63.11	Data processing, hosting and related activities	6311
63.12	Web portals	6312
63.2	Other information service activities	632
63.21	News agency activities	6321
63.29	Other information service activities n.e.c.	6329

Of course, the new classification will suit the information needs much better than the current one. But the transition from the current to the future classification will be awkward for analysis over time, since most categories will split up into two or more new ones, and will then be combined with parts of other former categories, as is shown in table 3.

Table 3. Future NACE categories built up from current NACE categories

NACE Rev. 2	Description	NACE Rev. 1.1	Description
62.01	Computer programming activities	Part of 7222	Other software consultancy and supply
62.02	Information technology consultancy activities	7210 + Part of 7222	Hardware consultancy Other software consultancy and supply
62.03	Computer facilities management activities	Part of 7230	Data processing
62.09	Other information technology service activities	7260 + Part of 7222	Other computer-related activities Other software consultancy and supply
63.11	Data processing, hosting and related activities	Part of 7230 + Part of 7240	Data processing Database activities
63.12	Web portals	Part of 7240	Database activities
63.21	News agency activities	Part of 9240	News agency activities
63.29	Other information service activities n.e.c.	Part of 7487	Other business activities n.e.c.

The statistical information on computer services published in the Netherlands consists of:

a) **Structural business statistics**
These are annual statistics on business demography, employment, turnover, costs and a breakdown of turnover by kind of service. Currently, we have these statistics for the total of NACE 72, the two digit category. In the future, we will switch to the new NACE and provide these statistics for NACE 62 and 63, broken down into the four-digit level.

b) **Short-term statistics**
These are quarterly statistics on turnover, number of persons employed, vacancies and output prices. For turnover and number of persons employed we compile these statistics for the total of NACE 72, the two digit category. In the future we expect to publish NACE 62 and 63 separately. Since there are European regulations on both Structural business statistics and Short-term statistics, comparable statistics are available in all countries of the European Union, and coordinated statistical information on the website and in the publications of Eurostat.

c) **Business tendency survey**
This is a survey in which entrepreneurs are asked to give their opinions on orders and economic climate and indications on recent developments and expectations, with respect to orders, turnover, prices and personnel. Currently, we publish statistics on a quarterly basis, but we have moved to a monthly survey, so monthly publications will become available in the future.
From analysis, we learned that these opinions and indications can predict developments in turnover very well.

d) **Survey of the working population**
In an annual survey, persons are asked to give information on personal characteristics, work characteristics (and working ambitions if they are unemployed at the time) and educational level for NACE 72.

e) National Accounts

The National Accounts provide information on production, intermediate consumption and value added for NACE 72 on an annual basis.

For the National Accounts many countries all over the world use the SNA (System of National Accounts, developed by EC, Eurostat, IMF, OECD and UN, under the auspices of the inter-secretariat working group on National Accounts). In the European Union the ESA (European system of national and regional accounts) is used. It is broadly consistent with SNA, but it incorporates some differences, particularly in its presentation.

2. Unit of measure to be collected

Turnover is measured as net turnover: proceeds from sales, exclusive of VAT (value-added tax), after deduction of discounts, premiums, deposits and freight charges. For NACE 72 we use direct data collection, by means of electronic and (a decreasing amount of) paper questionnaires. In the near future for small enterprises information from the tax administration will be used in stead of questionnaires; we have positive experience with the use of tax data in other NACE categories since a few years.

3. Market conditions and constraints

In 2006, a total number of 21 000 enterprises were active in the computer services industry. From these enterprises 67% employed only one person and 1% employed more than 50 persons. However, the enterprises that employ more than 50 persons represent a generous 60% share of total turnover. From the total population of 746 365 enterprises in the Netherlands 2.8% were in the computer services industry in 2006. The number of enterprises has rapidly increased since the beginning of 1990's (graph 1) and turnover per person employed increased as well. In 2003 and 2004, the number of persons employed declined, but increased again in 2005 (table 4).

Table 4. Computer services in the Netherlands, results from the structural business statistics, 1993 - 2005

	Enterprises (number)	Turnover (mln euro)	Persons employed (*1000)	Costs of labour per employee (euro)	Turnover per person employed (euro)
1993	8 700	4 120	52.8	NA	78 030
1994	9 400	4 258	54.9	NA	77 559
1995	9 600	4 853	62.3	NA	77 897
1996	7 680	5 931	76.8	NA	77 227
1997	8 965	7 659	88.6	NA	86 445
1998	10 180	9 556	106.0	NA	90 151
1999	11 835	11 165	117.7	NA	94 860
2000	14 020	NA	NA	NA	NA
2001	16 770	14 385	139.2	43 610	103 341
2002	17 560	13 232	123.0	49 943	107 577
2003	17 790	13 074	116.1	53 430	112 610
2004	18 495	13 551	109.9	54 927	123 303
2005	17 630	15 348	123.8	55 048	123 974

NA: Not available

Graph 1. Number of enterprises Computer services in the Netherlands, 1983 - 2006
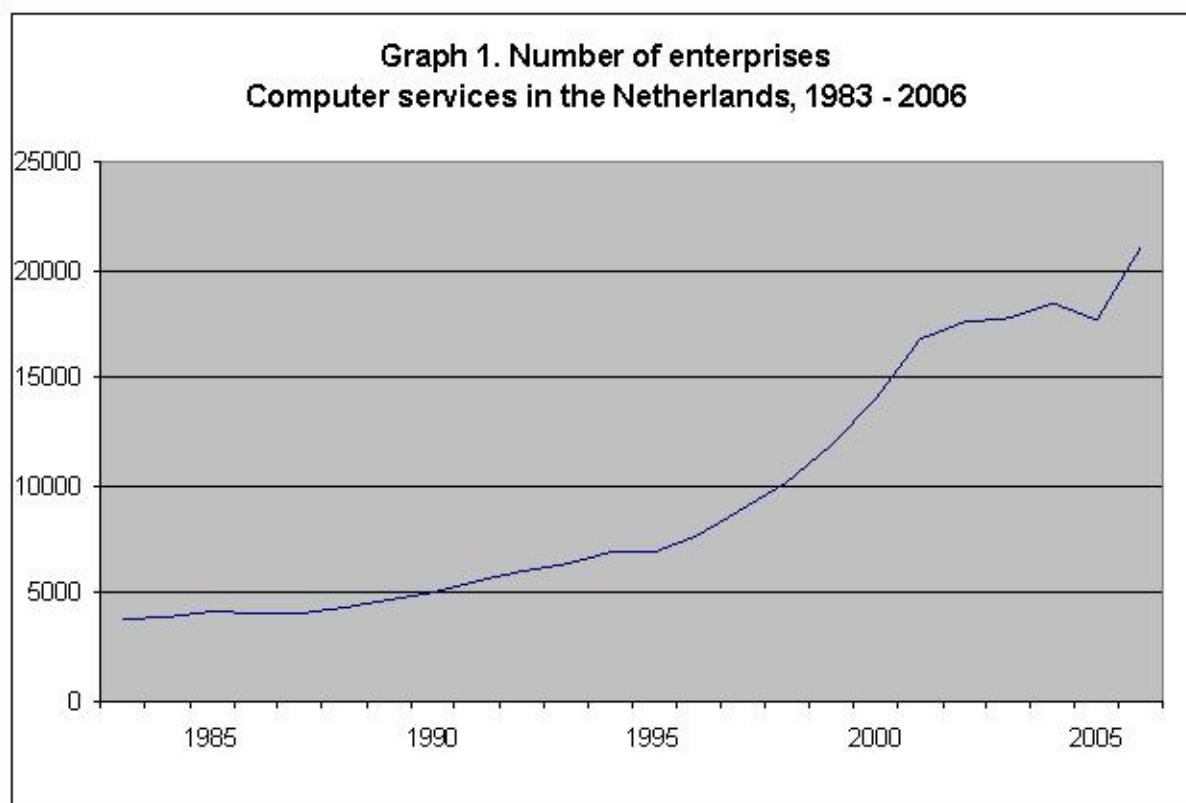
Whereas for the total of the Dutch economy the share of female employed persons is continuously increasing, in the computer service industry the share of females is very modest and even decreasing over time. Part-time work is very popular in the Netherlands, especially for women, but within NACE 72 less than average, as shown in table 5. These statistics are based on the annual survey of the working population.

Table 5. Employed persons; share of females and part-timers in the computer service industry compared to averages, results from the survey of the working population, 1996 - 2006

	NACE 72 Share of females %	NACE 72 Share of parttimers[1] %	NACE 72 Share of females working part-time %	Average Share of females %	Average Share of parttimers %	Average share of females working part-time %
1996	22	9	21	37	28	58
2000	18	10	22	40	32	62
2006	17	15	46	43	37	67

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[1] Parttimers: working less than 35 hours a week

**Graph 2. Number of persons employed
in the computer service industry in the Netherlands, 1996 - 2006**
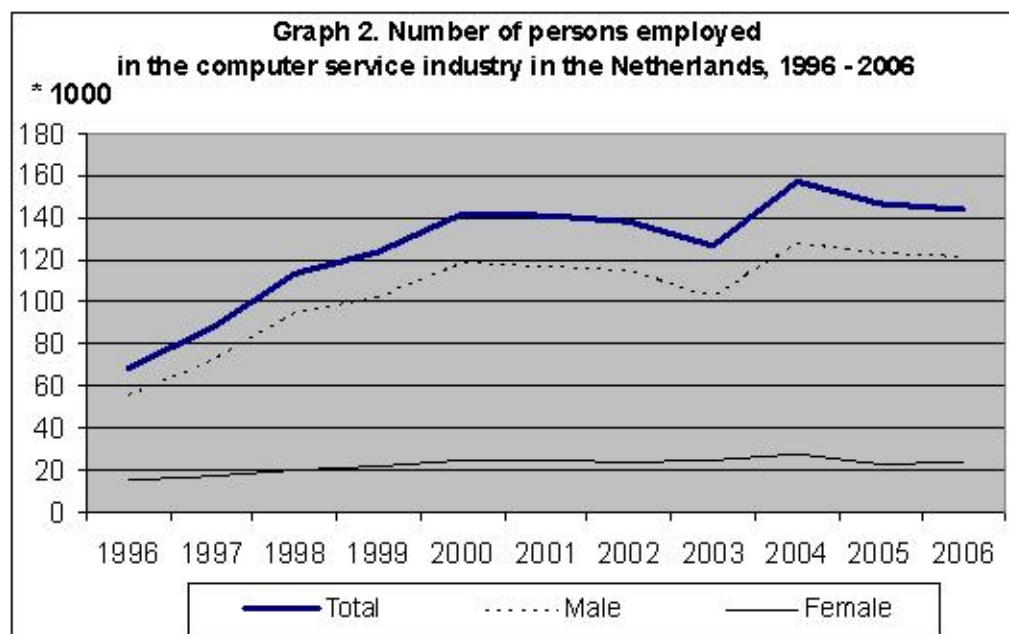
4. Standard classification structure and product details/levels

In the annual structural business statistics, turnover is broken down into 12 service categories, as shown in table 6. Secondment of personnel, management & exploitation of systems, development of information systems and maintenance & repair turn out to represent the largest shares of turnover. The share of data processing is relatively and surprisingly low. Education and training shows by far the lowest figure; that is less surprising since that does not belong to the core business of the computer services industry.

Table 6. Turnover broken down by kind of service provided, computer services in the Netherlands, results from the structural business statistics 2002 - 2005

	2002	2003	2004	2005
TOTAL TURNOVER	13 232	13 074	13 551	15 347
Advisement and auditing	1 515	1 304	745	874
Secondment of personnel	2 332	1 942	2 441	2 642
Development of information systems	1 857	1 956	2 357	2 346
Education and training	209	209	137	154
System integration	774	745	784	743
Assistance in developing information systems	732	547	397	733
Assistance in implementing information systems	486	654	641	568
Management and exploitation of systems	1 679	1 866	2 061	2 541
Database activities	300	376	741	711
Data processing	364	360	376	392
Repair and maintenance	961	1 000	1 097	1 505
Other activities	2 022	2 116	1 775	2 138

The short-term statistics reveal development figures of turnover on a quarterly basis (table 7). The goal of these figures is to give a quick insight in the direction in which a business branch is moving, and aims also at estimating the right size order of the move. Short-term statistics deliver essential basic information for the compilation of the first flash figures on economic growth. The structural business statistics give information not only on turnover *developments,* but also on turnover *levels* and specifications and details of turnover and costs. Since these are annual statistics, this information becomes available for publication at a much later stage.

Table 7. Development of turnover of the computer services industry, results from the short-term statistics 1995 - 2007

Year	Index of turnover	Development of turnover
	2000 = 100	%
1995	39	
1996	48	23,9
1997	63	31,5
1998	78	22,6
1999	90	15,7
2000	100	11,2
2001	110	9,9
2002	106	-3,1
2003	103	-2,9
2004	106	3,0
2005 Q1	108	4,7
2005 Q2	111	7,2
2005 Q3	108	8,8
2005 Q4	129	8,3
2006 Q1	122	12,4
2006 Q2	124	11,2
2006 Q3	120	10,8
2006 Q4	145	12,5
2007 Q1	137	12,7

Even more up-to-date information on turnover is derived from the business tendency survey. In this survey, we ask entrepreneurs to evaluate the amount of orders they receive, to evaluate the economic climate, to indicate whether orders, personnel and turnover are increasing, stable or decreasing, and to give their expectations for the coming few months.
It is very clear from the outcomes of this survey that the computer branch suffered a relatively hard time in the years 2003 – 2005 in the evaluation scores. Especially the evaluation of the economic climate has shown a large number of negative responses. From 2006 onwards, we see a recovery (table 8).
This is more or less in line with the results of the structural business statistics and the short-term statistics presented earlier: they show a decline in turnover in 2002 and 2003, and subsequently, when turnover recovers from 2004 onwards, there is still a decrease in the number of persons employed in 2004. The recovery of orders starts in 2005, producers' opinions are also recovering at the time, but it takes until 2006 before optimists outnumber pessimists regarding the economic climate.

Table 8. Results from the business tendency survey, 2003 – 2007, for the computer services industry in the Netherlands

Year and quarter	Evaluation of		Development of			Expectations for		
	Orders	Economic climate	Orders	Personnel	Turnover	Orders	Personnel	Turnover
	% of optimistic entrepreneurs minus % of pessimistic entrepreneurs		% of entrepreneurs indicating an increase			% of entrepreneurs indicating an increase		
2003 Q1	-32	-63	14	8	28	23	11	30
2003 Q2	-47	-74	7	5	16	23	12	17
2003 Q3	-36	-56	10	4	10	21	9	17
2003 Q4	-37	-63	22	5	23	42	4	45
2004 Q1	-10	-43	60	6	61	49	7	51
2004 Q2	-9	-43	28	8	28	37	14	35
2004 Q3	-15	-44	33	8	19	32	28	33
2004 Q4	-9	-36	31	10	26	69	35	67
2005 Q1	2	-26	58	23	66	42	22	31
2005 Q2	0	-20	38	27	32	49	54	48
2005 Q3	0	-29	38	25	40	45	29	39
2005 Q4	7	-11	44	21	31	62	54	71
2006 Q1	13	5	56	25	60	45	42	55
2006 Q2	7	6	47	31	50	50	39	54
2006 Q3	17	18	27	41	39	44	29	35
2006 Q4	18	19	46	45	46	64	52	71
2007 Q1	-4	13	45	20	60	50	34	52
2007 Q2	27	49	24	16	20	58	64	48

5. Evaluation of standard vs. definition and market conditions

In the Netherlands, over 80% of the enterprises in the computer services industry are engaged in the software consultancy and supply: NACE 72.2. The other 3-digit categories of NACE represent limited numbers of enterprises, especially for the bigger companies (table 9).

Table 9. Number of enterprises by 3-digit NACE and firm size, 2006

NACE	Description	Number of persons employed				
		1	2-4	5-49	50-99	100 or more
721	Hardware consultancy	495	115	35	0	0
722	Software consultancy and supply	11 465	3 815	2 000	110	80
723	Data processing	450	155	55	0	0
724	Database activities	545	185	65	10	0
725	Maintenance and repair	505	95	35	0	5
726	Other computer related activities	515	165	70	5	5

6. National accounts concepts and measurement issues for computer services related to GDP measurement

The National Accounts provide statistical information on production, intermediate consumption and value added for the computer services industry (table 10). A time series from 1987 onwards is currently available.

Macro figures presented by the National Accounts are compiled from several source statistics. The concepts used in these source statistics sometimes differ from concepts used by National Accounts. To balance the National Accounts, some items not covered by source statistics are estimated (e.g. illegal activities) and the data are adjusted so that everything fits.

Therefore, figures published based on source statistics are not always exactly the same as the National Accounts figures. To enlighten the differences, process tables are made. These process tables give step-by-step insight into the construction of the National Accounts. An example of an extract of a process table is given in table 11; the real process table is far too extensive to present here.

Table 10. Production, intermediate consumption and value added, results from the National Accounts, 1987 – 2006

	Production *mln euro*	Intermediate consumption *mln euro*	Gross value added (market prices) *mln euro*	Gross value added (basic prices 2000) *mln euro*
1987	1 936	856	1 080	1 114
1988	2 191	980	1 211	1 271
1989	2 458	1 073	1 385	1 510
1990	2 852	1 194	1 658	1 805
1991	3 133	1 341	1 792	1 923
1992	3 287	1 402	1 885	2 109
1993	3 524	1 529	1 995	2 226
1994	3 780	1 653	2 127	2 403
1995	4 316	1 828	2 488	2 843
1996	5 642	2 387	3 255	3 621
1997	7 644	3 279	4 365	4 812
1998	9 566	4 174	5 392	5 766
1999	11 478	4 932	6 546	6 705
2000	13 130	5 772	7 358	7 358
2001	14 745	6 532	8 213	7 919
2002	13 908	6 134	7 774	7 377
2003	13 593	5 815	7 778	7 285
2004	14 110	6 048	8 062	7 460
2005*	15 114	6 527	8 587	7 772
2006*	16 941	7 189	9 752	8 476

Table 11. Example of an extract of a process table for part of the services industry (NACE 70 – 74), 2001

	Primary data collection *mln euro*	Extrapolations and model estimates *mln euro*	Corrections and adjustments *mln euro*	Final estimate for National Accounts *mln euro*
Production	98 400	41 883	3 442	143 725
Intermediate consumption	49 562	13 935	-4 542	58 955
Value added	48 837	27 948	7 986	84 770

In the Netherlands, we have had some problems lately with different outcomes on turnover development, especially from short-term statistics and structural business statistics. For the national accountants who have to come up with a flash estimation for economic growth, this is reason for concern. In June 2007 in a meeting of the STS Working group (STS=short-term statistics) Eurostat presented the results of their own analysis of the services turnover data at the national level for the period 2000 - 2004. Discrepancies between structural business statistics and short-term statistics appeared for more countries. It was then concluded that the member states will review their services turnover data, so that after September Eurostat can start with formal publication.
Table 12 gives a comparison of the differences between the outcomes of the statistics for the period 2001 – 2005. The sign of the developments is the same, but the magnitude is not. Especially the results from the structural business statistics are deviating, because these results include population shifts. In 2005 for example a big Swedish company was added to the population of enterprises – it should have been there for years, but by mistake it was not – which gave the turnover development figure a real upswing. Short term statistics as well as National Accounts do not take these non-real population shifts into account.

Table 12. Comparison of turnover development from different source statistics for the computer services industry, 2002 - 2005

	Short term statistics	**Structural business statistics**	**National Accounts**[2]
2002	- 3%	- 8%	- 6%
2003	- 3%	- 1%	- 2%
2004	+ 3%	+ 4%	+ 4%
2005	+ 7%	+ 13%	+ 7%
2006	+ 12%	NA	+ 12%

7. Turnover/output data method(s) and criteria for choosing various output methods

For the computer services industry, only turnover is measured in the Netherlands, there is no direct or independent measurement of output. As far as price indices are available, it is possible to calculate the output volume in an indirect way, by deflation. Currently, only a price index for NACE 72.2 is calculated from the second quarter of 2005 onwards (table 13).

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[2] Refers to development of Production value from the National Acoounts

Table 13. Price index software consultancy, 2005 - 2007

Year and quarter	Price index (2005 Q2 =100)
2005 Q2	100
2005 Q3	100
2005 Q4	101
2006 Q1	102
2006 Q2	102
2006 Q3	103
2006 Q4	104
2007 Q1	105

To conclude, turnover is measured:

a) Very fast in the quarterly short-term statistics; this results in a first *development* figure of turnover; an improved figure is published together with the first figure of the next quarter;

b) More accurate (but later) in the annual structural business statistics; this results in a turnover *level* figure and an improved *development* figure, completed with details on turnover and costs;

c) Extra information on developments and expectations related to turnover can be obtained from the business tendency survey; this information is qualitative rather than quantitative, even faster than the short term statistics;

d) In the National Accounts the contribution of the computer services industry to the national economy compared with other (service) industries is presented, in terms of production and value added.

8. Comparability of turnover/output data with price index practices

Price indices are compiled only for NACE 72.2: software consultancy. Turnover data are available for the total of NACE 72, which encompasses also hardware consultancy, data processing, database activities, maintenance and repair.
This means that calculation of volume developments for the total of NACE 72 has to be done by using the price index for NACE 72.2 as a proxy for NACE 72, which seems a reasonable enough assumption, since over 80% of the enterprises in the computer services industry are active just there, and they represent also about 80% of total turnover.
The price indices are however only available from the second quarter of 2005 onwards.

9. Summary

Turnover of the computer services industry is measured in several ways in the Netherlands: developments on a quarterly basis, levels and details on an annual basis. Expectations for the development of turnover in the near future are measured in a business tendency survey on a monthly basis.[3]

In the recent past, the outcomes of short-term statistics and structural business statistics have shown some divergence with respect to turnover development: a phenomenon that occurs in more European countries. Although part of the differences can be explained by used methods and concepts, this is a challenge to deal with. It will probably never be possible to reach fully equalized outcomes, so we should focus on providing very clear explanations of concepts and methods used and on guiding users to just interpretations of the presented data.

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[3] In the annex the quarterly monitor of the computer branch for the first quarter of this year is quoted; this is an electronic publication, published on Statistics Netherlands'website www.cbs.nl , for the time being only in Dutch, but in the future also available in English.

Annex

**Monitor computer branch first quarter 2007**
(published on the website of Statistics Netherlands in June 2007)

The computer service industry ended the first quarter with an increase in turnover of almost 13 percent. Despite the increased activity, the demand for personnel showed a slight decrease compared to the first quarter of 2006. Providers of computer services are exceptionally positive, their expectations are very optimistic.

Again high increase of turnover

Turnover again showed a strong increase in the first quarter of 2007. As a result of economic growth, enterprises are investing in new information technology and carrying out maintenance programs which were postponed in an earlier stage. Turnover increased by 12.7 percent, the highest increase since 2001. This means that the computer services industry is doing better than business services as a whole.

Development of turnover compared to the corresponding period of the previous year
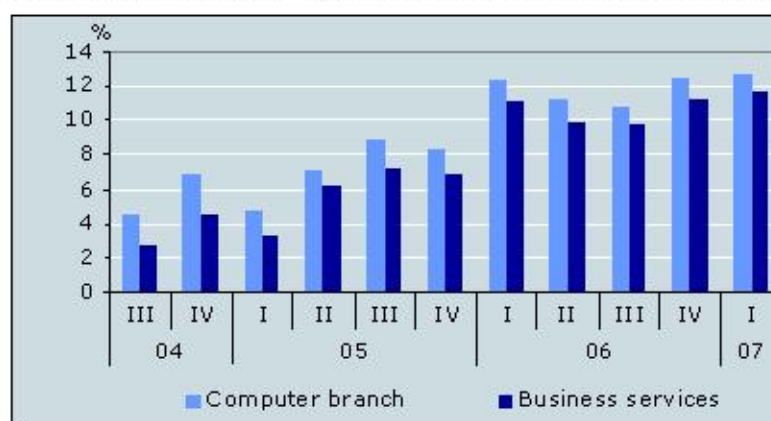
Demand for new personnel is stabilising
A number of 7,000 vacancies were recorded in the first quarter of 2007. This means that the demand for new personnel was stable in the last few quarters. Compared to the first quarter of last year the demand is 2,000 down. The number of vacant jobs has also decreased slightly compared to the last quarter of 2006. Nevertheless, the computer branch had almost 9,000 vacant jobs at the end of the first quarter.

Number of new and filled vacancies

Increase in orders received, slightly less positive evaluation

Results from the Business tendency survey show that entrepreneurs say they received more orders in the first quarter of 2007 than in the fourth quarter of 2006. They evaluate the number of orders received as positive. Prices for customers increased, as did the number of staff. Opinions on the economic climate have improved and are highly positive.

**Evaluation´ of orders received and economic climate**
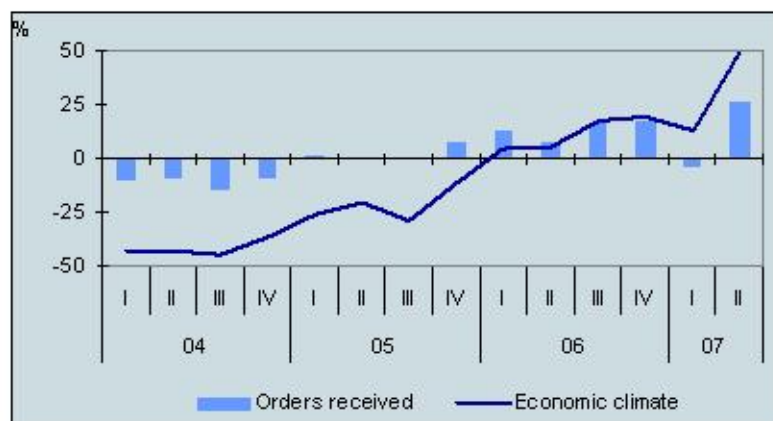
1) evaluation: balance of positive and negative opinions of entrepreneurs

Higher prices and turnover expected

Entrepreneurs have positive expectations for the second quarter. They anticipate increasing orders and prices, hence increasing turnover figures. A vast majority expect to hire more staff, but 42 percent think that a shortage of manpower will hamper production.

Expectations ² for the second quarter of 2007
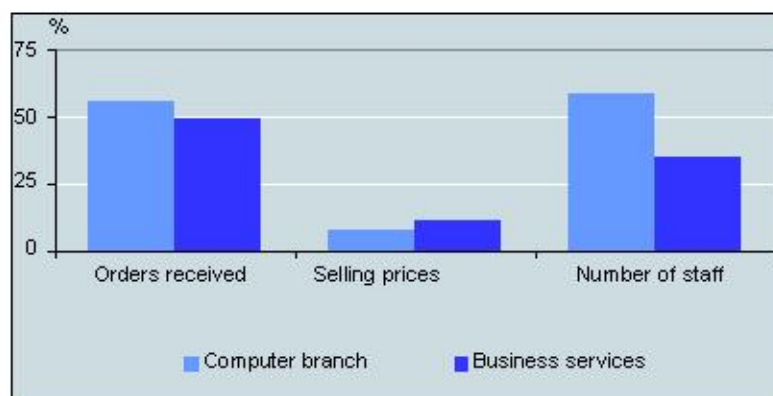
2) percentage of entrepreneurs expecting an increase minus percentage expecting a decrease