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Entrepreneurship and innovation

Trends and patterns in the Netherlands

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1 Main results

This report provides an overview of recent facts and figures on start-ups in the Netherlands, techno start-ups in particular and the overall link between entrepreneurship and innovation.

Below, the main findings of this report are highlighted. The subsequent sections provide a more detailed background on the presented observations.

Start-ups

- The number of start-ups in the Netherlands has grown strongly in the last two decades: in comparison to 1987, in 2006 well over twice as many new firms were started¹.
- The number of subsidiaries established by existing firms increased even stronger in the same period.
- The increasing number of start-ups can largely be attributed to the growing number of self-employed ('ZZP-ers' in Dutch).
- The increase is clearly the strongest in construction and building services, with business services in second place.

Techno start-ups

- The increase of the number of techno start-ups clearly lags behind the increase of total start-ups, though the former number does increase as well
- The number of techno start-ups appears to react slower to the business cycle than does the total number of start-ups, considering the tendency in the registration of the total number of start-ups. Therefore, a stronger increase in the number of techno start-ups is expected in 2006-2007.
- Techno start-ups have better chances to survive than other start-ups. They are better educated, and are probably better prepared as a consequence. In addition, they usually have to trade a well-paid job as an employee for the hazards of starting their own business (higher opportunity costs).

Start-ups properties

- Over 30% of all start-ups are women; especially the number of part-time female entrepreneurship has increased. In particular in personal services like barbers and beauty shops and in retail trade large numbers of women entrepreneurs are active. In retail trade especially the number of women e-commerce entrepreneurs is increasing rapidly.
- The number of ethnic start-ups is increasing, but this mainly reflects their increasing share in the population / labour force. In the last few years the number of start-ups from Eastern Europe is increasing fast, especially in the construction industry.
- In particular in the construction industry the number of start-ups from the new Eastern European member states of the European Union has increased strongly from 2004 onwards.

¹ Start-ups are defined as new firms established by entrepreneurs. All other new firms are registered as *subsidiaries*, including an eventual second, third, etcetera firm established by the same start-up.

Entrepreneurship and innovation

- Based on indicators such as the tendency in the share of the labour force considering self-employment and the number of start-ups, the Netherlands are lagging behind the USA, but also behind European countries like Germany and the UK.
- Scores on “soft” innovation criteria have not improved recently, but more start-ups seem to engage in research and development now.

Young firms

- Controlled for size, young firms (established up to five years ago) are more innovative than SMEs that were established longer ago: they show more “outputs” like new products and services; more often they have an explicit innovation strategy; they have more external contacts; and, they collaborate more often with other firms or institutions for innovation.

2 Start-ups

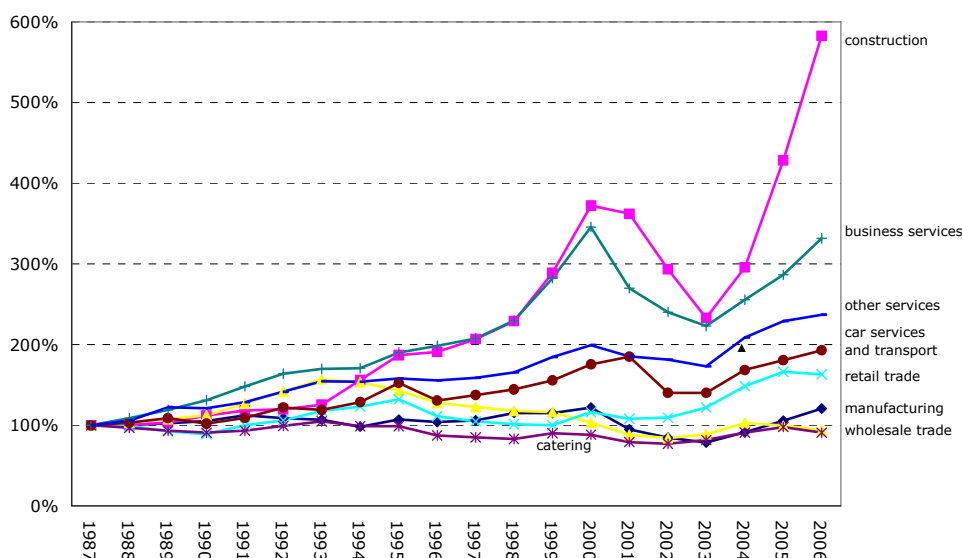
This section outlines trends in the number of start-ups, in new subsidiaries, in new firm survival and in new firm employment.

2.1 Trend in the number of start-ups

The index figures in Figure 1 show the trend in the annual number of start-ups by industry¹, with an exceptional increase of new firms in the construction industry and to a lesser degree in business services. More than 70 percent of the increase in start-ups can be traced back to the growth of the number of start-ups in the construction and business service industries. Manufacturing industry, catering and wholesale trade are lagging behind, with minimal or no growth of the number of firms. The number in personal and "other" services (a.o. banking and insurances, cleaning, rentals and estate brokers) has increased by well over 100%. Retail trade, transport industry and automotive (garages, etcetera) are show a substantial increase as well, be it by less than 100%.

The main background of the strong increase in the construction industry is the entry of a large number of "self-employed without employees"². The strong decrease since 2001, and an equally strong recent increase make clear that market trends have become more influential with respect to the trend in the number of start-ups.

Figure 1 Start-up trend by industry, 1987-2006 (index; 1987 = 100)



Source: EIM, based on data from the Dutch Chambers of Commerce KVK

¹ The annual number of start-ups in 2005 is twice as much as in 1987. As a consequence, a decreasing share in the figure only means that the branche of industry concerned is lagging behind this average, and its share is decreasing.

² Dutch: Zelfstandigen Zonder Personeel = ZZP'ers.

Table 1 shows that the total number of start-ups has more than doubled in the period studied: see the percentages at the bottom. This is toning down the index figures in Figure 1 a little bit: the number of start-ups in manufacturing industry in 2005 is even slightly higher than in 1987, for example (this is fully an increase of the metal and engineering industry¹).

As mentioned before, the increasing number of start-ups is mainly a result of a large inflow of self-employed, in particular in the construction industry. In addition the number of start-ups in business services has increased fast, especially IT services².

Table 1 Start-up trend by industry, absolute numbers 1987-2005

<i>industry</i>	1987	1990	1993	1996	1999	2002	2005	2006
food manufacturing	184	152	199	162	172	134	187	186
chemicals	60	61	51	57	61	62	42	51
metal engineering	1,135	1,249	1,301	1,358	1,663	1,287	1,644	1,969
other manufacturing	1,008	1,051	1,001	912	852	541	651	680
construction	2,482	2,776	3,114	4,743	7,167	7,280	10,633	14,463
car services	807	590	668	677	738	875	1,198	1,297
wholesale trade	4,793	5,380	7,527	6,131	5,569	4,030	4,771	4,491
retail trade	4,533	4,032	5,351	5,048	4,540	4,965	7,545	7,400
catering	2,321	2,108	2,433	2,027	2,095	1,790	2,271	2,108
transport	1,113	1,369	1,618	1,832	2,251	1,815	2,270	2,406
banking and insurances	512	619	872	702	861	527	521	392
real estate brokerage	412	437	318	455	421	383	652	591
cleaning	518	672	810	544	660	910	1,012	1,023
business services	5,170	6,770	8,782	10,268	14,595	12,419	14,802	17,151
legal and clerical services				1,080	1,061	859	1,194	1,372
architects and engineering				1,262	1,629	1,257	1,480	1,785
IT services				1,707	3,153	2,334	3,057	3,354
advertising				1,359	1,753	1,399	1,426	1,496
other business services				4,860	6,999	6,570	7,645	9,144
rental services	317	351	465	444	562	610	620	599
other services	2,319	2,858	3,836	4,198	5,016	4,970	6,537	7,058
total	27,684	30,475	38,346	39,558	47,223	42,598	55,356	61,865
total (% of total 1987)	100%	110%	139%	143%	171%	154%	200%	223%

Source: EIM, based on data from the Dutch Chambers of Commerce KVK

¹ Dutch: metal and electrotechnical industry, including machines, transport equipment and components.

² Comment: the number of IT start-ups peaked in the second half of the nineties, but after the crack of the IT-bubble numbers have increased again in the last few years.

2.2 Trend in new subsidiaries

There are two types of new firms: start-ups and new subsidiaries of established firms. Table 2 shows the trend. The summary figures at the bottom of the table show that the number of new subsidiaries has increased considerably more than the number of start-ups. As a result, their share in the total number of new companies has doubled since 1987. The number of subsidiaries has increased this strong in the last two decades both out of 'offensive' and 'defensive' motives. *Offensive* motives are fitting different business activities in separate profit centers, and (thus) stimulating 'intrapreneurship'. An important *defensive* motive is reducing risk for concerns by creating financially independent subsidiaries¹. Separate figures on the share of *foreign* investments are not available. The total number of foreign operations in the Netherlands is 5,380 in 2005, however, with 536,000 jobs. The USA are by far the largest investor (32% of the jobs), followed by the UK (16%) and Germany (13%)².

The growth in the number of new subsidiaries is again larger in the construction industry and the business services. Their number in 2005 is more than seven times the 1987 figure. This must be attributed to company strategies, aiming at separate profit centers for diverse business activities. Encouraging "intrapreneurship" by creating a number of profit centers is another motive for adopting this strategy.

¹ A low performing subsidiary may eventually go bankrupt without dragging along the concern as a whole.

² STEC/Ministry of Economic Affairs, *Operations of foreign companies in The Netherlands in 2005, The Hague, 2006*.

Table 2 Trend in new subsidiary establishments by sector, 1987-2005

<i>sector</i>	<i>1987</i>	<i>1990</i>	<i>1993</i>	<i>1996</i>	<i>1999</i>	<i>2002</i>	<i>2005</i>
food manufacturing	68	84	96	112	100	117	98
chemicals	32	45	58	64	59	58	69
metal engineering	234	327	423	594	638	571	663
other manufacturing	136	230	294	448	386	315	369
construction	323	533	791	1,505	1,624	1,949	2,440
car services	128	157	196	260	346	387	400
wholesale trade	907	1,555	2,473	3,232	2,879	2,560	2,988
retail trade	671	904	1,163	1,663	1,593	1,866	2,425
catering	349	471	601	952	912	1,014	1,217
transport	257	681	544	1,110	1,232	1,032	1,133
banking and insurances	336	494	714	746	914	763	880
real estate brokerage	151	362	294	334	464	438	531
cleaning	48	89	170	231	215	315	262
business services	964	1,605	2,319	4,303	5,763	5,946	6,915
legal and clerical services				589	662	628	798
architects and engineering				494	508	596	637
IT services				778	1,191	967	1,202
advertising				432	512	449	496
other business services				2,010	2,890	3,306	3,782
rental services	82	120	154	169	281	394	339
other services	206	322	542	1,037	1,042	1,254	1,432
total new subsidiaries	4,892	7,979	10,832	16,760	18,448	18,979	22,161
total (% of total 1987)	100%	163%	221%	343%	377%	388%	453%
new subsidiaries as a percentage of all new firms ¹	15%	21%	22%	30%	28%	31%	29%

¹ Sum of the total numbers in Table 1 en Table 2.

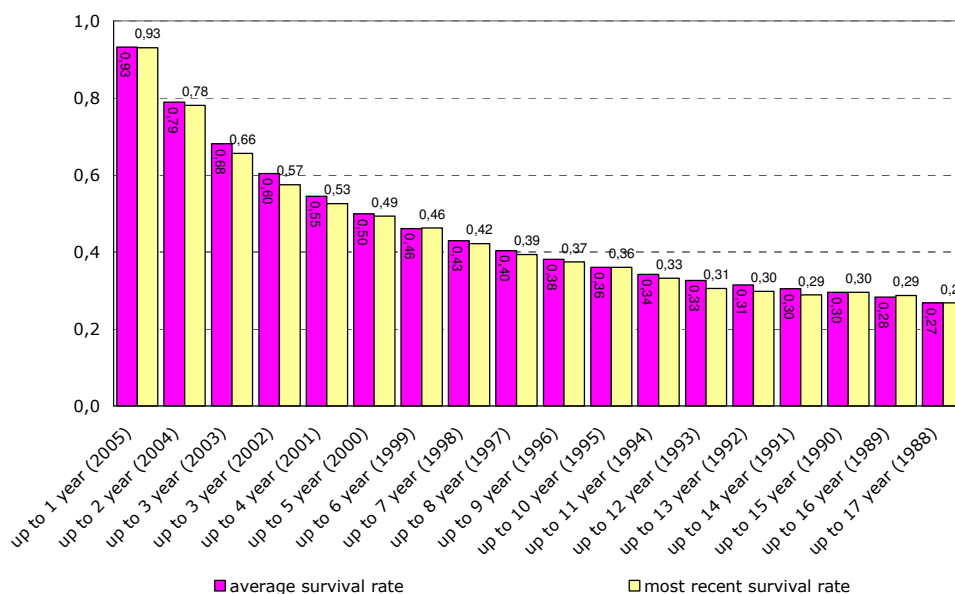
Source: EIM, based on data from the Dutch Chambers of Commerce KVK

2.3 New firm survival

Figure 2 shows the share of start-ups that are still in business after a given number of years, with the average survival rate over all years up to that year in the left column, and the most recent survival rate in the right column. The relevant year is listed between brackets. The survival rates show that about half of the start-ups is still in business after five years. The trend in firm survival is a slightly diminishing rate: recent survival rates are marginally below the *average* rates.

An obvious explanation is the strong increase of the total number of start-ups: if larger numbers are starting a business the number of less qualified and “fit” entrepreneurs will probably increase even stronger. In countries with high start-up rates like the US more firms are ended as well, and consequently, survival rates are lower¹.

Figure 2 Survival rates of start-ups 1988-2005



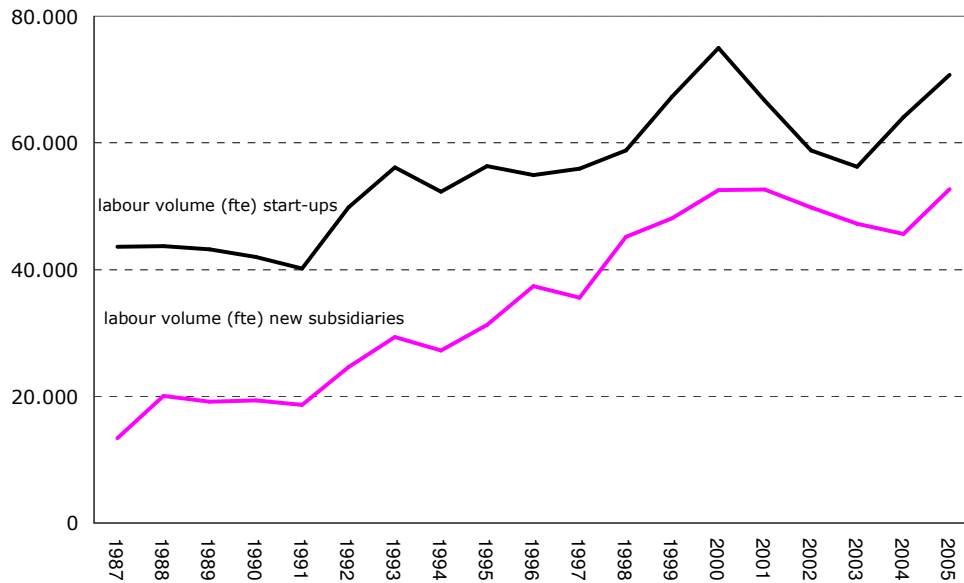
Source: EIM, based on data from the Dutch Chambers of Commerce KVK

2.4 Employment trend with new firms

Employment generated by start-ups is firstly and most importantly the entrepreneurs' own employment, especially in the first phase, considering the average start-up firm size of 1,3 (total, including employed, in 2005). As the total number of start-ups increased substantially, total employment volume reflects the positive trend shown in Figure 3. The trend in average firm size is shown in Figure 4: it is decreasing. The decreasing firm size and the expansion of the number of start-ups have a common denominator: increasing self-employment in firms with only the entrepreneur him-/herself working.

¹ Suddle, K. and J. Hessels, Global Entrepreneurship Monitor 2006 Nederland, EIM, Zoetermeer, 2007, in particular section 5.1: empirical studies on the link between start-ups and exits.

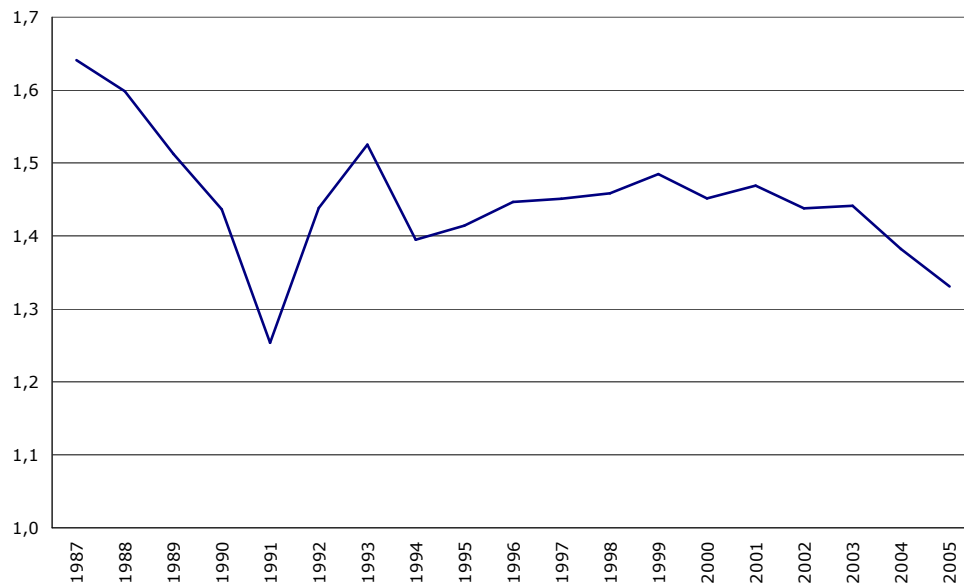
Figure 3 Labour volume trend with start-ups and new subsidiaries, 1987-2005



Source: EIM, based on data from the Dutch Chambers of Commerce KVK.

Employment created by new subsidiaries is included in the figure as well. It shows a stronger employment growth with these subsidiaries, and as a result their share in total new firm employment (start-ups plus subsidiaries) has increased. The increasing number of subsidiaries and share of

Figure 4 Trend in average firm size (total number of occupied persons), 1987-2005



Source: EIM, based on data from the Dutch Chambers of Commerce KVK.

Reliable figures on labour volume trends after start-up are not available. Participants of EIM's start-up panels have indeed supplied data, but these are not comparable because of substantial change in panel composition.

3 Techno start-ups

This section discusses trends in techno start-ups and the differences in these trends with regular start-ups.

3.1 Determining the number of techno start-ups

The number of techno start-ups in the Netherlands was estimated by identifying sectors where they are common. In these sectors the number of firms younger than five years. A large number of the firm owners were interviewed and asked for their R&D-activities, new products and services based on technical findings and discoveries of their own, or a new use of already existing techniques they commercialized. Based on the combination of these results, the number of techno start-ups was established. In annex 1, the procedure is detailed.

3.2 Trends in the number of techno start-ups

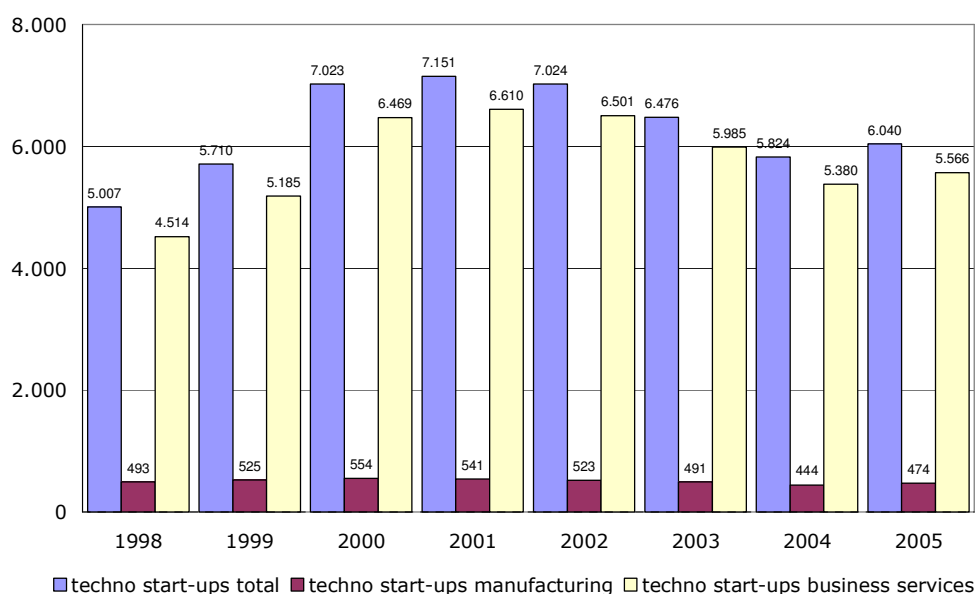
In 2005, The number of techno start-ups in the Netherlands was more than 5,500. The trend in the annual number is strongly related to the business cycle, as shown in Figure 5, with an increase up to 2000, a decrease in the years after that, and an upswing in 2005. As a result, the total number of techno start-ups increased slightly: by 2,5% per annum (=annual mutation, based on number in 2005 minus number in 1998).

The employment volume with techno start-ups increased stronger: by 6,5% per annum, using the same calculation method. The trend in employment is also negative in the period from 2001 to 2004. Techno start-ups are largely active in various service sectors, in particular due to the large number of IT, engineering and other technical consultancy firms.

3.3 Techno start-up employment volume

In 2005, employment at techno start-ups was almost 12,000 full-time equivalents (fte). Techno start-ups in the manufacturing industry are more than twice the size of their counterparts in services in terms of employment, but considering the numbers, i.e. 3,8 full-time equivalents with techno start-ups in manufacturing industry, and 1,8 in services, it is obvious that most of these firms are not fast growers (yet).

Figure 5 Trend in the number of techno start-ups, 1998-2005



Source: EIM, Monitor Ondernemerslandschap. Edition autumn 2006 (basic figures)

3.4 Techno start-ups vs. other start-ups: a “phase difference”

In Table 3 the trend in the number of techno start-ups is compared with the trend of the total number of start-ups in the same period (1998-2005). The number of start-ups appears to have grown stronger than the number of techno start-ups. But the table also shows a “phase difference” between the two groups: the total number of start-ups is decreasing in 2001 (Figure 3), but the number of *techno* start-ups is even slightly increasing then. Subsequently, the number of techno start-ups registered diminishes as well, reaching a low in 2004. In that year the total number of start-ups is already increasing substantially. In 2005 this trend continues, and now the number of techno start-ups is slightly going up again as well.

If a phase difference is the explanation, a stronger growth of the number of techno start-ups for 2006 and 2007 is plausible. A possible explanation of the phase difference is the less direct relation between techno start-ups’ decision to start a business and actual economic prospects: the nascent considering such a career in the construction industry can be expected to react immediately, or at least fast when the construction market is recovering, and also to decide negatively when prospects are getting worse. A techno start-up on the other hand, is usually more long-term oriented, needs more time to start (developing a new product, for example) and will be less triggered by the current state of the business cycle.

Table 3 Techno start-ups and total numbers of start-ups, 1998-2005

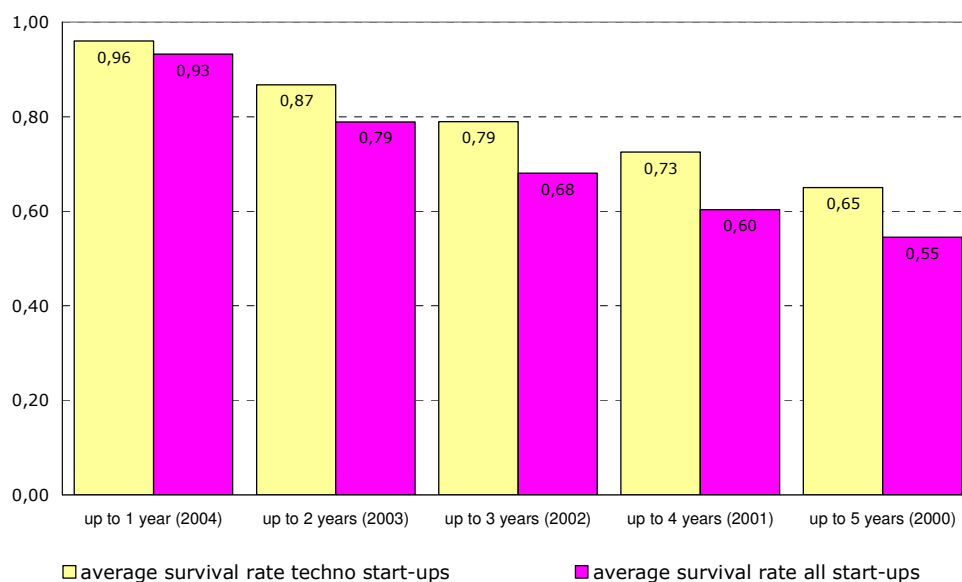
	1998	1999	2000	2001	2002	2003	2004	2005
total number of start-ups	42,005	47,223	53,793	47,282	42,598	40,633	48,284	55,356
number of techno start-ups	5,007	5,710	7,023	7,151	7,024	6,476	5,824	6,040
<i>development (%) with regard to previous year</i>								
total start-ups		12%	14%	-12%	-10%	-5%	19%	15%
techno start-ups		14%	23%	2%	-2%	-8%	-10%	4%
<i>development (%) 1998-2005</i>								
total start-ups								32%
techno start-ups								21%

Source: EIM, Monitor Ondernemerslandschap, Action programme Technopartner and Chambers of Commerce KVK (total start-ups).

3.5 Survival of techno start-ups

Figure 6 compares techno start-up with regular firm survival rates. The figure clearly shows better rates for techno start-ups, who have a better chance to survive the first few years. Higher "opportunity costs" of techno start-ups are an explanation: they are better educated and, as a result, have higher incomes than other start-ups. The investments by techno start-ups, like in research and development and testing, offer a further explanation. They think twice before taking the risk of starting their own business, and, they are usually better prepared when they do. The background of techno start-ups may be relevant as well: see the next paragraph on "tech-nascents".

Figure 6 survival rates of techno and all start-ups, 2000-2004



Source: EIM, VBTB-indicators Ondernemerschap 2004 (table 25), Chambers of Commerce KVK

3.6 Tech-nascents

In 1998 EIM investigated "nascents": people considering or actually preparing to start their own business¹. Subject to the survey were among others the plans in product development, patents and the judgment for the "high tech" character of the firm to be.

One out of three claimed or expected to perform technological research and development. In addition, 15% would possibly apply for a patent. This seems to be a high percentage, possibly overestimating the real share in the Dutch start-up population. On the one hand, a recent evaluation of the WBSO tax deduction of R&D wage costs estimates the total number of "R&D-companies" to be about 20,000 (in 2004), which is 7% of the 290,000 active firms counted by CBS in that year². On the other hand, small firms usually do a lot of their "R&D" in an informal way: in spare time, in their garage or backyard. This type of activity is not (tax) deductible, and therefore not WBSO-registered. A higher percentage than 7% is probable, but one out of three is not likely to be accurate.

A special analysis was devoted to "tech-nascents". A nascent in this analysis is a *tech-nascent* if he has a higher technical education and meets at least two of three criteria: 1. performing technical R&D or expecting to, 2. possibly applying for patents, and 3. considering his new firm "high-tech". Using only technical education as a criterion leaves 18% of the nascents, and of these one out of three is meeting two of the three criteria mentioned. As a result, 6% of all nascents can be considered *tech-nascents* by the criteria mentioned³.

Tech-nascents differ from other nascents in a few respects:

- their personal background is more often entrepreneurship or employment, and less often a study or unemployment;
- they are more often men, and somewhat older than other nascents. The relatively low number of women can be attributed to the equally low number of women with a higher technical education.

¹ Gelderen, M.W. van, *Ontluikend ondernemerschap. Een studie naar mensen die bezig zijn met het opzetten van een bedrijf (nascent entrepreneurs)*, EIM, Zoetermeer, 1999 [*Arising entrepreneurship. A study of persons engaged in setting up a business (nascent entrepreneurs)*]

² Firms with at least one employee.

³ In Table 3 the "techno start-ups share" is over 10% (6.000 techno start-ups out of 55,000 total). The 6% mentioned in the nascents research project is lower because of more selective criteria applied, such as considering patent application and describing the firm to be established as "high tech".

4 Start-up properties

This section outlines differences in start-up properties based on gender and ethnic background.

4.1 Women

Almost one out of three entrepreneurs (31 to 32%) in The Netherlands is a woman. There is some confusion as for the *trend* in women entrepreneurship: Chamber of Commerce figures indicate a steady increase from 25% in 2000 to 32% in 2005, but CBS-figures are 31% in both years, showing no progress¹. As the Chamber of Commerce uses a broader definition which includes part-timers that put in only a few hours, the number of women *part-time* entrepreneurs is growing while the share of women in fulltime entrepreneurship is stable. Over 25% of female start-ups in 2005 is establishing a firm in personal services such as hair, beauty and pedicure shops: 63% of all start-ups in personal services is a woman. In addition, women are strongly represented in retail trade, where the female share of start-ups is 43%. In retail trade the number of "virtual shops" started up by women entrepreneurs has been increasing substantially (e-commerce through internet)².

As for the *innovativeness* of women start-ups' firms, their preference for personal services and retail trade suggest less innovativeness, but the use of e-commerce could indicate more innovativeness³.

4.2 Entrepreneurs from ethnic origin

4.2.1 Non-western ethnic entrepreneurs

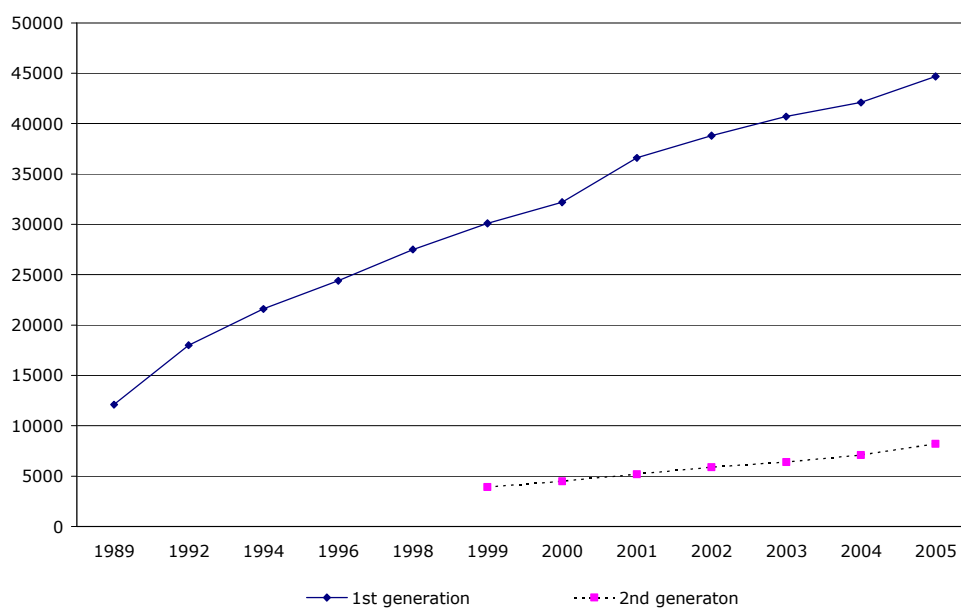
Figure 7 shows a strong increase from 1989 to 2003 of the number of entrepreneurs from non-western origin in the Netherlands: in 2003 it is more than three-fold the 1989 figure. Still the share of self-employed in the non-western ethnic labour force (4%) is substantially lagging behind the Dutch native figure (10%). Therefore the increase in Figure 7 mainly reflects the increasing population share of persons with non-western ethnic roots. "Western" foreigners' self-employed share (a.o. from Eastern Europe: see hereafter) is between these two, with 8%.

¹ Source: *Monitor Nieuw Ondernemerschap 2006*, EIM 2007, table 11.

² Source: Kamer van Koophandel Nederland, 2006.

³ Provided women start-ups do as well as male start-ups in this respect (figures not available). The flexible working conditions of internet entrepreneurship are often a motive to women, enabling them to combine work and domestic activities.

Figure 7 Trend in ethnic entrepreneurs with a non-western origin, 1989-2005



Source: 'Monitor etnisch ondernemerschap 2006', EIM

Industry

Table 4 shows that self-employed with non-western roots are more often active in catering, and in retail trade as well. With the second generation the share of catering is decreasing substantially, and a shift made towards (business and other) services.

Table 4 Sector of activity: native, 1st generation ethnic entrepreneurs and 2nd generation ethnic entrepreneurs with a non-western background, 2004 (percentages)

sector	native	ethnic non-western 1st generation	ethnic non-western 2nd generation
agriculture and fishing	15	2	1
manufacturing and energy	6	4	3
construction	11	5	7
trade and repair	21	26	23
catering	5	30	13
transport, warehousing and communication	4	5	7
business and financial services	3	1	2
other services	19	14	23
administration / politics, health care, social care, education	2	3	3

Source: EIM, based on the 'Monitor etnisch ondernemerschap 2006'

4.2.2 Eastern Europeans: strong increase, especially in construction industry

The number of start-ups by origin shows strongly increasing numbers of western ethnic entrepreneurs in the last few years, mainly Eastern European and especially Polish start-ups. As admission policies are further liberalized, a further increase can be anticipated, with a strong accent in the construction industry and building services. Comment with respect to the growth figures in Table 5: in 2004 Poland, Czech Republic, Slovakia and Hungary entered the European Union.

Table 5 Recent start-up trend by origin, 2002-2005

<i>origin</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
<i>numbers</i>				
native	47,973	47,471	57,147	65,734
ethnic western	4,175	3,940	5,617	7,242
ethnic non-western	6,853	6,747	7,174	7,693
<i>mutation to previous year</i>				
native		-1%	+20%	+15%
ethnic western		-6%	+43%	+29%
ethnic non-western		-1%	+6%	+7%

Source: EIM, based on the 'Monitor etnisch ondernemerschap 2006'

A vast majority of ethnic start-ups is active in 'traditional' industries such as construction, retail trade and catering. In addition, the share of self employment in total employment is lagging behind the Dutch average. The obvious conclusion is, that ethnic start-ups' score on *innovativeness* is below average. This will clearly be less pronounced for the 2nd generation. As Dutch technical universities attract relatively large numbers of ethnic students, this might produce 'spin-outs' as well, but no figures on this are available as yet.

5 Entrepreneurship and innovativeness

This section presents further investigations of indicators on entrepreneurship, innovativeness and motives for starting a business.

5.1 Entrepreneurship

5.1.1 Description of indicators used

- Index *entrepreneurship activity* refers to the share in the adult population (age 18-64) that started a business in the previous 3,5 years, or is engaged in starting a business at that moment.
- Index *nascents* refers to the share in the adult population engaged in starting a business.
- Index *new firms* refers to the share in the adult population that started a business in the previous 3,5 years.
- Index *opportunity entrepreneurship* refers to the share in the adult population that started a business in the previous 3,5 years, or is engaged in starting a business based on new business opportunities one sees.
- Index *growth potential entrepreneurship* refers to the share in the adult population that started a business with the ambition to grow.

5.1.2 Index scores

Table 6 shows the scores of five entrepreneurship indicators, based on the Dutch Global Entrepreneurship Monitor (GEM). GEM is an annual international survey of these (and other) indicators in 44 countries across all continents. For 1998 the result of an EIM-enquiry into nascents in The Netherlands was included.

The trend of the indicators from 2001 to 2005 is rather variable, with decreasing indicators on balance. The business cycle dip in the first half of the decade is influential however: the period observed covers a clear downswing of economic activity that certainly has influenced start-up rates and plans to start a business.

Table 6 Entrepreneurship indicators 2001-2005

<i>Index</i>	<i>1998</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
entrepreneurship activity total		6.4	4.6	3.6	5.1	4.4
nascents	3.2 ¹	2.6	2.6	1.7	3.0	2.5
new firms		3.8	2.1	1.9	2.2	1.9
opportunity entrepreneurship		5.4	4.0	3.0	4.3	3.9
growth potential entrepreneurship		n.b.	1.8	1.0	2.0	1.3

Source: EIM, based on Global Entrepreneurship Monitor (GEM) 2001-2005 and nascents-survey EIM 1998¹.

¹ In fact 2,5% "real" nascents (answering that they *intend* to start their own business), but 3,2% by a international definition of nascents, that includes *recently* started firms. This is the Global Entrepreneurship Monitor definition, therefore also used here.

In Table 7 the 2005 indicators in The Netherlands are compared with those in five other countries. The comparison makes clear that Dutch scores are low, as they are in countries like Belgium and Denmark as well. In Germany and the UK they are higher, and in the USA a lot higher. Total entrepreneurship activity in The Netherlands is both below OECD and below EU average. In addition, a relatively high percentage of entrepreneurs in young Dutch firms is working part-time, compared with OECD and EU averages²: both women combining (flexible) work with domestic activities and employees combining (part time) entrepreneurship with their job³.

These findings put the strongly increased number of start-ups (paragraph 2.1) into perspective: the number of self-employed has increased in recent years, not only in The Netherlands but also elsewhere. Provisional figures for 2006 on the other hand, show a significant increase of the total entrepreneurship indicator. In addition, the Chambers of Commerce report further growth of the number of start-ups as the economy is booming. As a result Dutch figures are improving with respect to the 2005 figures in Table 7. This seems to suggest that the business cycle explains the increase, rather than emerging entrepreneurship: better prospects attract new entrants, particularly in low-innovative industries such as the construction industry.

Table 7 Entrepreneurship indicators: The Netherlands compared with Belgium, Denmark, Germany, the United Kingdom and the United States of America, 2005

<i>Index</i>	<i>NL</i>	<i>B</i>	<i>DK</i>	<i>D</i>	<i>UK</i>	<i>VS</i>
entrepreneurship activity total	4.4	3.9	4.8	5.4	6.2	12.4
nascents	2.5	2.9	2.4	3.1	3.4	8.8
new firms	1.9	1.2	2.4	2.7	2.9	5.2
opportunity entrepreneurship	3.9	3.4	4.2	3.8	4.7	10.5
growth potential entrepreneurship	1.3	1.8	2.1	2.1	2.6	5.7

NL = The Netherlands B = Belgium DK = Denmark D = Duitsland
 UK = United Kingdom USA = United States of America

Source: EIM 2007, based on *Global Entrepreneurship Monitor (GEM), 2005*.

5.2 Innovativeness

5.2.1 Research and Development

In subsequent EIM start-up panel surveys all panel firms were asked whether they engaged in research and development activities for their firm. The share of affirmative answers is clearly increasing: see Table 8.

Start-ups from 1994 have answered the question on R&D again in 1998. The share with R&D activity turned out to have increased to 12,3% (comment: the

¹ Gelderen, M.W. van, *Ontluikend ondernemerschap. Een studie naar mensen die bezig zijn met het opzetten van een bedrijf (nascent entrepreneurs)*, EIM, Zoetermeer, 1999 [*Arising entrepreneurship. A study of persons engaged in setting up a business (nascent entrepreneurs)*].

² Suddle, K. and J. Hessels, *Global Entrepreneurship Monitor Nederland 2005*, EIM, 2006.

³ A relation with the increased number of self-employed / 'ZZP' cannot be established.

number of respondents in the second survey was substantially less than in 1994: 365, or about 20% of the 1994 panel).

Table 8 Share of start-ups with (own or outsourced) R&D¹

<i>start-ups of (year)</i>	<i>number of respondents</i>	<i>share with R&D (%)</i>
panel 1994	1,902	10.4
panel 1998	545	17.2
panel 2000	494	16.8
panel 2003	499	19.2

Source: EIM, *start-up panels*

In 1998 and 2000 the panel firms also answered questions on whether R&D was their own or outsourced, and for their own or for client firms. The result in both years was:

- 4% contracted out,
- 7% own R&D for own products or services,
- 6% own R&D for client firms.

5.2.2 WBSO

WBSO is a tax deduction facility for company R&D wage costs. Admission to WBSO can be considered a "hard" indicator for actually performing R&D. In 2004 the number of applicants is 10,200². The share by industry is shown in Table 9. The differences between the figures in the two columns of Table 9 show a clear accent on manufacturing industry, in particular machinery and equipment, and chemical and plastics processing industry: 4% of all firms, with 40% of WBSO-allowances in 2004³.

¹ Only available for total; cannot be broken down by (branche of) industry.

² Source: EIM, *Evaluatie WBSO 2001-2005. Effecten, doelgroepbereik en uitvoering [Evaluation WBSO 2001-2005. Effects, target group access and],* Zoetermeer, 2007, table 7, and CBS Stat-Line (Bedrijven naar activiteit (2-digit SBI 1993), grootte en rechtsvorm).

³ The R&D-intensity of manufacturing industry (number of firms involved, as well as –average– efforts per firm) is the main reason for this large share, but WBSO conditions are favorable to the sector as well, witnessing for example complaints expressed by ICT-firms.

Table 9 WBSO-users by industry, 2004

<i>sector</i>	<i>percentage of all WBSO-users</i>	<i>percentage of all firms</i>
Agriculture	7	13
Food and beverage industry	5	2
Chemicals, rubber- and plastics processing industry	11	1
Mechanical engineering industry ¹	29	3
Other manufacturing industry	22	12
Software and IT services	11	4
Other services ²	14	66
Total ³	100	100

Source: EIM, CBS, 2007

5.2.3 Innovation criteria with SMEs

Surveys in subsequent years (1999 to 2005) with EIM's SME Policy Panel of a stratified sample of between 1,300 to 2,000 SME firms⁴ show as a marked result a decreasing trend of most innovation criteria used: see Figure 8 (innovation policy) and Figure 9 (innovation outputs).

This suggests that investing in new products and processes depends –again– rather strongly on the phase of the business cycle: the period of 1999-2000 started on top of the business cycle, and from 2000 economic activity and profits went down.

This seems to be contradictory with one of the earlier results, as the number of (techno) start-ups with R&D is increasing (see paragraph 5.2.1).

A possible explanation may be a replacement effect of new innovative firms pushing laggards out of the market. Another reason might be that the new start-ups that are R&D intensive are actually in different areas of economic activity than the decreasingly innovative firms that turn up in a randomized stratification of the eight broad sectors that are used for EIM's SME policy panel. Furthermore, regrettably 'R&D' is subjective. Possibly more new startups state they are doing R&D while incumbents see similar activities as going concern.

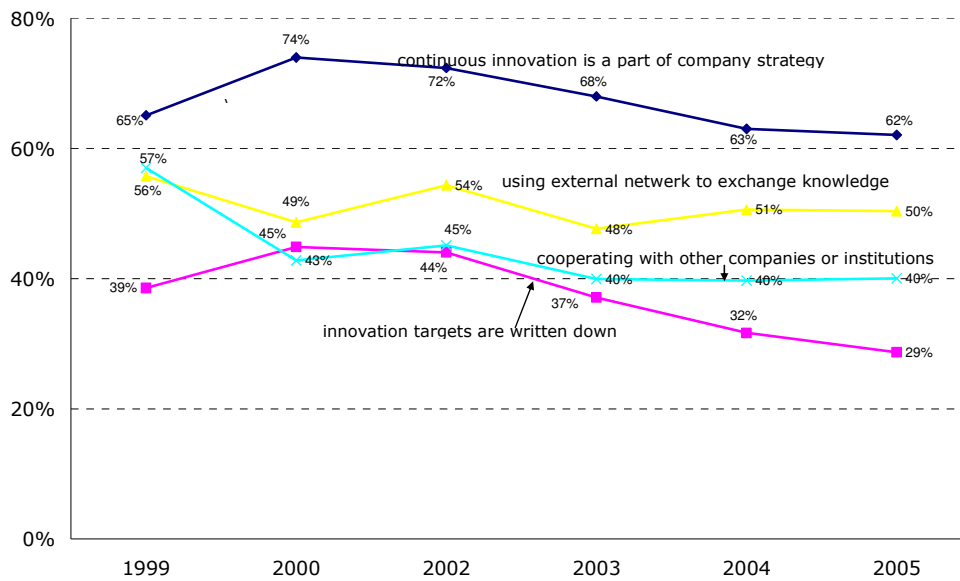
¹ Electr(on)ical industry included.

² Wholesale trade included.

³ Construction, catering, (retail) trade, garages etcetera, and personal services EXcluded

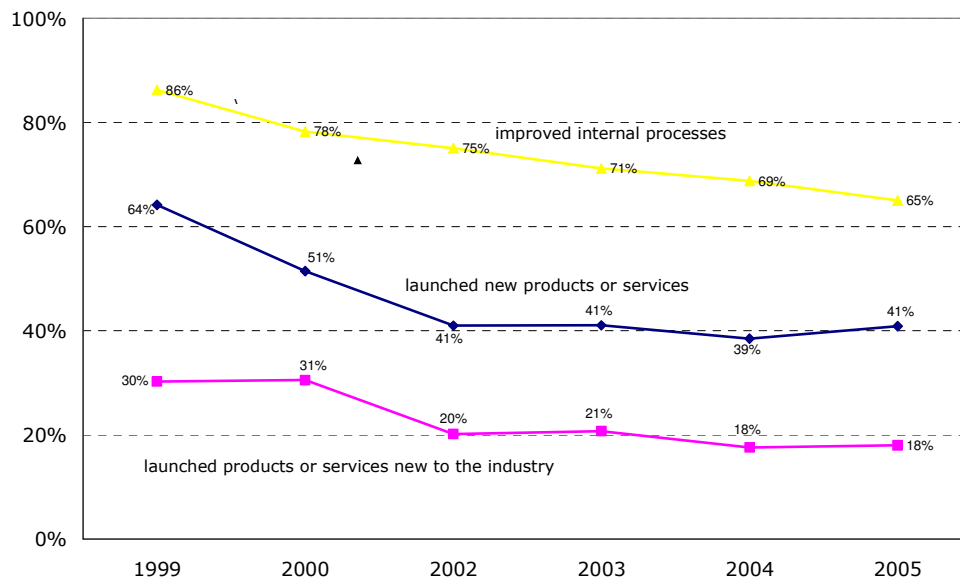
⁴ SME = up to 100 employed totally.

Figure 8 Innovation criteria SME total: policy, 1999-2005 [2001??]



Source: EIM, SME Policy Panel 1999-2005

Figure 9 Innovation criteria SME total: output, 1999-2005



Source: EIM, SME Policy Panel 1999-2005

5.2.4 Collaboration

Of the EIM panel firms 40 to 45% collaborates with other firms or knowledge institutions for innovation projects. It should be noted that a broad definition of collaboration is used, and it can be regarding any type of primary or secondary activities. The alliances concerned do not have to be formalized in any way. The latter is required in some other studies on collaboration.

Firms collaborating mostly do so with other firms, but about 20% claims to collaborate with knowledge institutions as well. A small minority is collaborating

with knowledge institutions *only*. Furthermore, the figures in Table 10 suggest that the trend is certainly not towards more cooperation.

Table 10 Collaboration for innovation

Jaar	cooperation	with other firms	with knowledge institutions	both with knowledge institutions AND other firms
1999	57%			
2000	43%			
2002	45%			
2003	45%			
2004	41%			
2005	43%	23%	4%	18%
2006	45%	19%	3%	16%

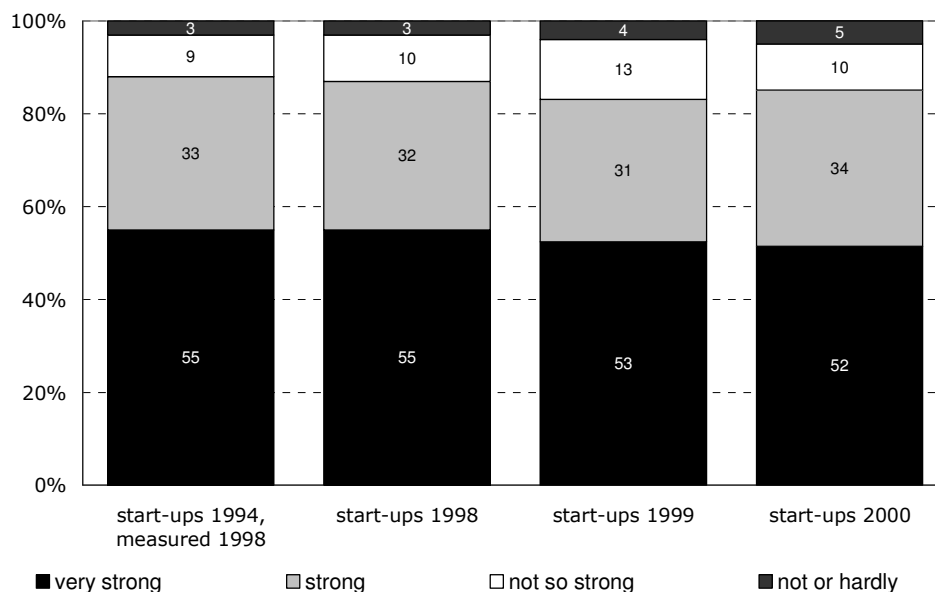
Source: EIM 2007, based on EIM's SME policy panel 1999-2006

5.2.5 Production factor "knowledge"

The EIM panel firms of 1998, 1999 and 2000 have indicated to what extent knowledge is an important production factor to their firm.

The answers are hardly different through these years; a majority indicates that knowledge is a very important factor. See Figure 10.

Figure 10 Start-ups considering "knowledge" an important production factor, 1998-2000 (percentages)



Source: EIM, SME-policy panel 1999-2005

5.3 Motives to start a business

Start-ups in 1994 en 1998 have been asked what made them decide to start their own business. Two of the motives proposed to them can be considered opportunity-driven: 1. seeing / finding a new business opportunity and 2. the opportunity to apply a technologically new product or process.

The second motive turns out to be playing only a minor part. More start-ups mention recognizing new business opportunities, but in 1998 less of them mention this motive than in 1994.

By far the most frequently mentioned are: the challenge (not specified), and wishing to be one's own boss. Being able to engage in specific activities, dissatisfaction with one's job as an employee and "family tradition" are mentioned more frequently than business opportunities as well.

Table 11 Motives to start a business

<i>motive</i>	<i>strong motive</i>	<i>somewhat a motive</i>
"business opportunities", panel 1994	17%	29%
"business opportunities", panel 1998	15%	26%
new product or process, panel 1994	6%	9%

Source: EIM, start-up panels

6 Young versus established firms

This final section shows some of the differences in innovativeness between young vs. established firms.

6.1 Definition

In order to compare young and established SME firms with respect to innovativeness data from the EIM SME policy panel were used. Young and established is defined as up to and over five years of age.

6.2 Results

Minor differences without correction for firm size

At first sight young and established firms seem to hardly differ with respect to launching new products and new distribution methods or methods to supply products and services to clients. Young firms even produce less process innovations and are less engaged in supplier-driven innovation projects.

But these findings turn out to be strongly influenced by young firms being substantially smaller on average: the smaller an SME firm, the lower innovation scores usually are.

Corrected for firm size, young firms are more innovative

After correction for the size difference young firms are certainly more innovative than longer established ones by a majority of the indicators used: new products, services and distribution methods, using external contacts to exchange knowledge, cooperation with other firms and institutions, and an explicit innovation policy.

As for the innovation "inputs" it shows that the differences between young and established with respect to the presence of employees with special innovation-related duties and with respect to applying for innovation subsidies and grants are minor or non-existent. Established firms show more "supplier-driven" innovation. See Table 12 for the detailed results.

Young firms' superior innovativeness seems to be an age-related property: often a firm starts with (a) new idea(s) for products, services and markets, gradually getting more "conservative" as it grows older. A higher exit-rate with innovative firms is not credible: paragraph 3.5 shows rather the opposite, namely a better survival rate for techno start-ups.

Table 12 Innovation indicators for young and established small vs. small medium-sized firms¹

<i>Innovation measure</i>	<i>Small (< 10 wp)</i>		<i>small medium-sized (10-20 wp)</i>	
	<i>young</i>	<i>established</i>	<i>young</i>	<i>established</i>
launched new products or services	41%	34%	53%	49%
these products/services were new to the industry	20%	15%	26%	23%
Improved internal company processes	58%	59%	87%	81%
new methods of distribution / supplying to clients	18%	14%	24%	19%
supplier-driven innovation	24%	33%	35%	37%
continuous innovation part of company strategy	59%	52%	76%	69%
innovation targets are written down	22%	18%	37%	35%
use of external network to exchange knowledge	49%	40%	52%	49%
collaborates with firms / institutions for innovation	39%	32%	48%	43%
employees present (part of) whose duties are innovation-related	51%	50%	73%	73%
has used innovation subsidies and / or grants	5%	5%	17%	16%

Source: EIM, based on EIM's SME policy panel, 1999-2006

¹ Only smaller medium-sized companies with less than 20 employees were included in a separate analysis: there are too few young firms with over 20 employees in the sample to make such an analysis reliable.

BIJLAGE I Procedure for techno start-ups data collection

Step 1: Demarcation of sectors

The starting point of the analysis concerns the selection of those sectors in which techno start-ups can be expected. Although theoretically techno-ups can occur in all sectors of the economy, it is plausible that they are concentrated in certain sectors. To determine the degree of innovativeness, an additional survey is performed. For the selection of sectors EIM uses the sector demarcation for the technology based firm (hightech and medium hightech companies in the industry and service), as these are used internationally¹, supplemented by the foodstuff sector, processing of plastics and rubber, construction of bridges and wholesale trade in capital goods (the so-called light high-tech firms). The supplement was determined in consultation with the Ministry of Economic Affairs and is based on the earlier findings of EIM on the basis of the analyses of the EIM start-up cohorts 1994 and 1998-2000). A number of companies from the foodstuff sector are life science firms. Life science firms are an explicit target group within government policy for techno start-ups.

The sectors are translated according to SBI-codes of Statistics Netherlands (CBS). We have selected the following techno sectors:

Hightech sectors

- Article I. Manufacturing and processing of pharmaceutical products (24.4)
- Article II. Manufacturing of office machines and computers (30)
- Article III. Manufacturing of audio, video and telecom equipment and components (32)
- Article IV. Manufacturing of instruments (33)
- Article V. Manufacturing of flies and spacecrafts (35.3)
- Article VI. Telecom (642)
- Article VII. Computer services and information technology (72)
- Article VIII. R&D (73)

Medium hightech, or technology-knowledge intensive sectors

- Article IX. Manufacturing and processing of basic chemicals (24.1)
- Article X. Manufacturing and processing of specialty chemicals (24.2-24.3; 24.5-24.7)
- Article XI. Manufacturing of machines and equipment (29)
- Article XII. Manufacturing of remaining electrical machines, equipment and components (31)
- Article XIII. Manufacturing of cars and semi-trailers (34)
- Article XIV. Manufacturing of rolling material (35.2)
- Article XV. Manufacturing of remaining means of transport (35.4-35.5)
- Article XVI. Architects, engineers and technical consultancy (74.2)

Light hightech

- Article XVII. Foodstuffs and spirits industry (15)
- Article XVIII. Manufacturing of products of rubber and plastic (25)
- Article XIX. Construction of bridges (45,212)
- Article XX. Wholesale of machines, equipment and components (51.8)

¹ E.g. T. Hatzichronoglou, Revision of the hightechnology sector and product classification, OECD working paper 1997/2, Parijs 2002, and also, Statistics in focus, Theme 4 15/2004, Eurostat, 2004. The OECD-classification is based on the R&D-ratio. In Belgium (HITO) all firms are selected with NACE codes: 24.4, 29, 30, 31, 32, 33, 34, 35.2, 35.3, 35.4, 35.5, 64, 72, 73. For the Netherlands light-tech is added.

Step 2: Determining the number of firms up to 5 years old

The next step is to determine the number of start-ups and their survival up to 5 years in the selected sectors. For these data EIM uses the mutation balance of the Dutch Chambers of Commerce. At least one person (the entrepreneur) must be working a minimum 15 hours per week in the respective firms. This is a registration of the annual modifications in the trade register. This way gives an upper bound to the number of techno start-ups. For the year 2003, for example, 11,766 companies were traced in this way.

Step 3: Restrictive conditions

To consider if the start-ups (up to 5 years old) satisfy to the definition, EIM have performed a stratified survey of 500 firms in the selected sectors to determine the intensity of R&D activities and the degree to which self-developed new products or services are commercialised. The outcomes are stratified to hightech, medium hightech and light hightech in manufacturing and services and start-up year. Reweighing of the survey results provides the number of techno start-ups (up to 5 years old). Within manufacturing, given the restrictive conditions, 22% of the population is classified as a techno start-up. Similarly, 32% of the service companies is classified as techno start-up. The average for all sectors is 26%. In total 21% of the light high-tech firms could be classified as techno start-ups. To determine the historical development, data from the trade register for previous years have been corrected with the correction factors for 2003 .

Step 4: Determining firm size and employment

The trade register shows the firm size by start-up year and sector. Employment is defined in terms of working persons.

In the survey firms were asked about their size. By comparing the reweighed data, we are able to compare techno start-ups and non-techno start-ups. The outcomes by sector and age are not conclusive. Techno start-ups are marginally larger than the other firms in the respective sectors, but compared to other start-ups they are somewhat smaller. This is partly caused by a large number of small companies without personnel in engineering and computer service. By multiplying the number of techno start-ups with the corrected company size, the absolute employment for 2003 is determined.

For the historical development, the average firm size for previous years is taken from the trade register, corrected with the correction factors for 2003.

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