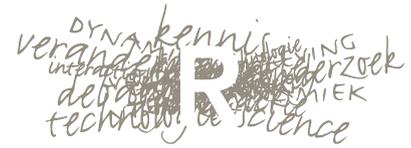


Facts & Figures

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Academic Careers in the Netherlands

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In this publication we provide actual information on the careers of academics at Dutch universities. A lack of such information has given rise to many preconceptions about academic careers.

1. Introduction

The Dutch university sector is not considered a dynamic environment as senior positions at universities are often 'tenured', and thus there is little opportunity for young scientists to have a career in science. There is also a preconception that it is a closed career path, once you're outside of academia, you can forget about an academic career.

With a new analysis of the information available, this Facts & Figures provides further insights into the mobility and dynamics of the Dutch academic job market. The most significant conclusions in this publication are:

- The Dutch academic job market is an open system. Large numbers of PhD students (PhDs), other academic staff (OAS), assistant professors, associate professors and professors (PROF) are leaving universities, but conversely many scientists are also finding their way into Dutch universities.
- The Dutch academic system is becoming increasingly international. More and more academics come from abroad and more and more academics that worked at Dutch universities, now work abroad. The proportion of foreign academics in the Netherlands is growing.
- In the Dutch academic system, women are promoted proportionately to senior positions: no better, but no worse, than men. Numerically, there are still large differences between the number of men and the number of women in high positions. If the current trend continues, in 30 to 40 years, the male-female ratios will be one-to-one.

Contents

Introduction	1
Characterisation of Dutch academic careers	2
The beginning of an academic career: obtaining a PhD	4
Mobility within the academic ranking structure	8
Career policy at universities	14
Women in science	17

The Rathenau Institute promotes the formation of political and public opinion on science and technology. To this end, the Institute studies the organization and development of science systems, publishes about social impact of new technologies, and organizes debates on issues and dilemmas in science and technology.

2 Academic Careers in the Netherlands

Approach¹

In order to get a clear picture of the mobility in the job market for academic staff at Dutch universities, we used three data sources:

- WOPI, Wetenschappelijk Onderwijs Personeelsinformatie (University Staff Information System). The VSNU (Association of Universities in the Netherlands) gave us access to the micro data for all WOPI information of 2003-2011.
- CBS (Statistics Netherlands) data from the research 'Mobility of University Personnel' (MUP), which studied job market mobility for university personnel spanning the period 2003-2008.
- PhD student data VSNU. The VSNU publishes information on the intake of new PhD students, PhD duration, and the success rate of employed PhD students.

Based on these datasets, this Facts & Figures assesses the 'average' mobility that takes place from, to, and between Dutch universities. This offers more insight into how academic careers are made, and what the academic job market looks like.

2. Characteristics of academic careers

Dutch Universities categorise their personnel according to the Universitair Functie Ordenen (UFO: University Job Classification) system, based on the collective labour agreement of universities. The table below displays the various (academic) positions at universities and the corresponding number of employees. The different positions are professor, associate professor, assistant professor, other academic staff (teachers and researchers) and the appointed PhD students. Table 1 is an accurate representation as per 31 December, 2011. The position of postdoctoral researcher does not fit in the UFO system and it is therefore not a separately registered category in the WOPI figures. However, a postdoc position is often seen as the first step in an academic career after a PhD is obtained. It is not only important for the individual career, but also for career policy. The job profile researcher (level 3 or 4) corresponds best to what used to be called 'postdoc'. For determining the figures relating to postdocs, therefore, use was made of the following approach: in WOPI databases, the UFO job profile 'researcher' (levels 3 and 4, temporary contract) was selected. This approach ignores postdocs with a different type of appointment.

¹ For an extensive methodological account, see the Appendix on the website (www.rathenau.nl/loopbanen).

Table 1 Academic Staff (AS) in 2011 in the Netherlands, per type of contract and type of task

	persons			FTE			task	
	total	permanent	temporary	total	permanent	temporary	education	research
Academic staff total, of which:	28,252	11,348	16,903	24,595	9,652	14,937		
Professor*	3,153	2,769	384	2,584	2,425	159	x	x
Associate professor	2,437	2,319	118	2,187	2,118	69	x	x
Assistant professor	5,422	3,847	1,575	4,707	3,334	1,373	x	x
Other Academic Staff, of which	8,230	2,411	5,819	6,410	1,774	4,636		
Teacher	3,405	1,669	1,736	2,202	1,155	1,046	x	
Postdoc	3,564	-	3,564	3,155	-	3,155		x
Researcher	875	683	192	701	567	134		x
Other	386	59	327	353	52	301		
PhD student**	9,009	2	9,007	8,706	1	8,705		x

Source: VSNU/Wetenschappelijk Onderwijs Personeelsinformatie (WOPI)

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* This does not include the category of endowed professors. The registration of this group of professors is not yet univocal.

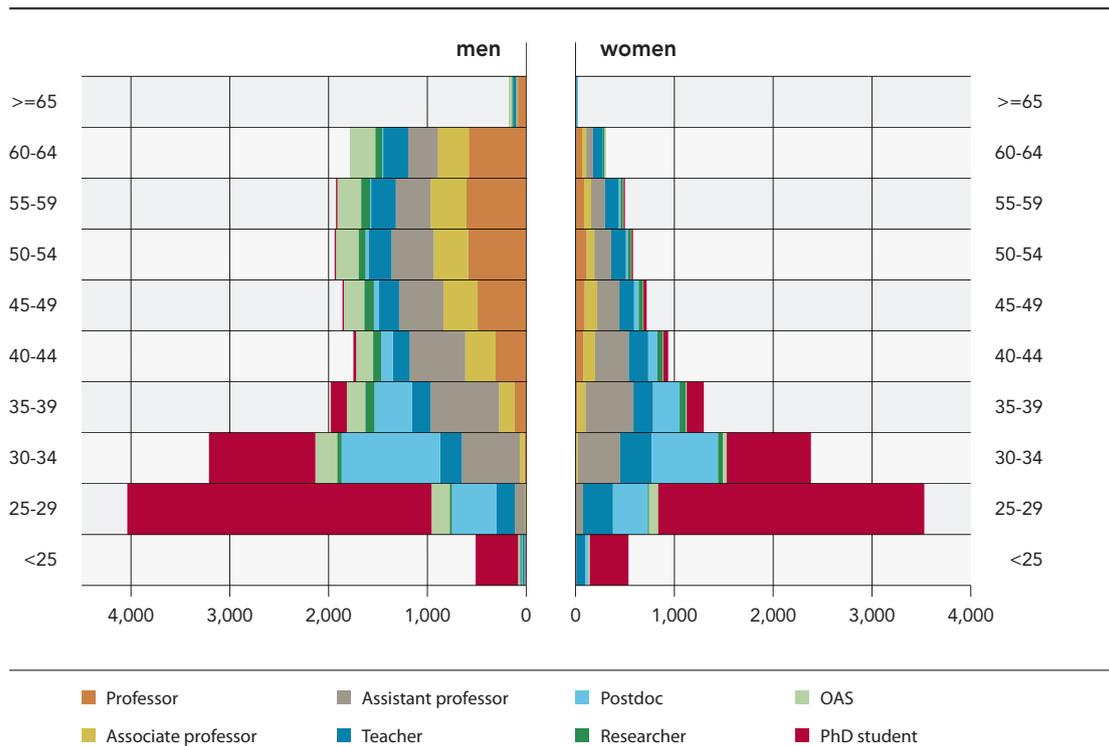
** Next to PhD students with an appointment as student employee at a university, there are also PhD students that work on a thesis without such an appointment (for example, from a job at the government or in business). They form a substantial part of the number of PhDs obtained, but they are not registered univocally.

In the Netherlands, over 28,000 individuals are employed at universities in academic positions. At the top we see over 3,100 professors and at the bottom over 9,000 PhD students. Within the ranks of associate professor and professor, almost all the appointments are on a permanent basis, while PhD students and postdocs have temporary positions.

Figure 1 on the following page describes today's situation in academia for men (on the left) and women (on the right). At the bottom we see a large group of young employees, usually employed as PhD students or postdocs, and above we see a small structure where the various older age groups are more or less equally divided over the various positions.

In principle, the positions of PhD student and postdoc have relatively short appointment durations. The positions of assistant professor, associate professor and professor are tenured: appointments that can be held until retirement and which can be final positions.

Figure 1 Academic ranking structure in the Netherlands according to age, function and sex



Source: VSNU/Wetenschappelijk Onderwijs Personeelsinformatie (WOPI)

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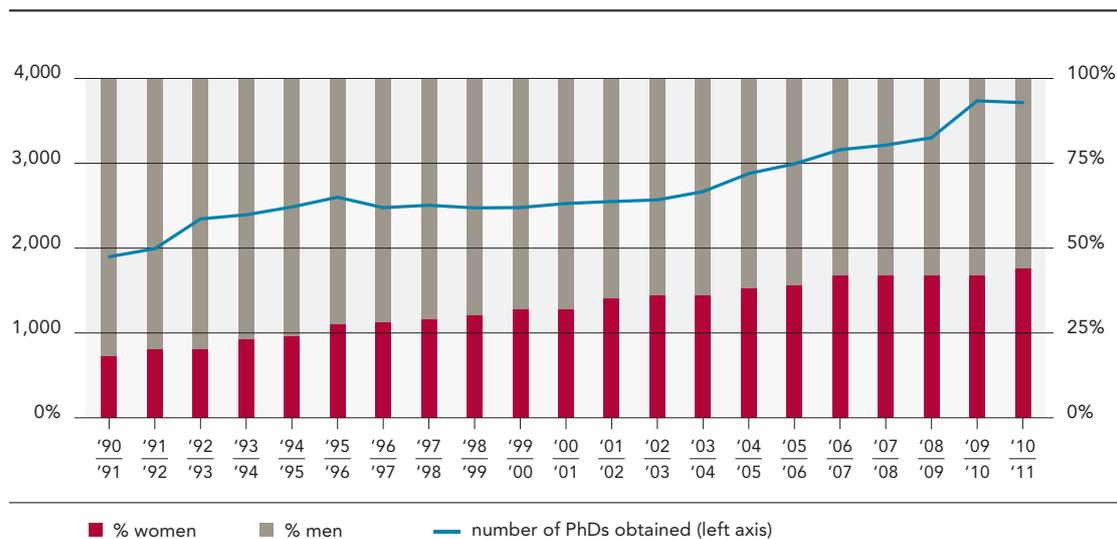
3. The beginning of an academic career: obtaining a PhD

Since the 1980s both the government and the universities are increasingly interested in PhD students. The knowledge economy not only needs more university graduates in general, it also needs the knowledge and skills of PhD graduates. Obtaining a PhD has become a process that student employees, scholarship students and others, employed by universities or otherwise, must complete within a given timeframe. In this section we look at various aspects pertaining to PhDs and PhD students, the first step in an academic career.

PhDs obtained

Figure 2 shows that in the past twenty years, the number of PhDs obtained per year has almost doubled: from around 1,900 at the beginning of the 1990s to over 3,700 in the past years. In the same period, the number of female PhD graduates has risen from almost 20 per cent of the total number of PhD graduates to over 40 per cent.

Figure 2 Developments of number of PhDs obtained according to sex in the Netherlands (percentage of total)



Source: CBS, StatLine

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Incoming students

Universities make a distinction between various types of PhD students: whether a PhD student works at a university or elsewhere, and whether or not this person's main task concerns the PhD. Only PhD students employed by universities whose main task is to obtain a PhD (so-called PhD student employees) are administrated univocally. Therefore, data below concern this type of PhD student only.

Table 2 Incoming standard PhD students in the Netherlands, per HOOP field and year of admittance

	2004	2005	2006	2007	2008	2009	2010	2011
Total, of which:	1,776	1,896	1,868	1,910	2,416	2,526	2,500	2,551
Agriculture	7%	6%	6%	8%	7%	8%	5%	8%
Natural sciences	19%	18%	18%	19%	18%	19%	15%	20%
Engineering	34%	31%	31%	28%	25%	27%	27%	23%
Health	11%	18%	16%	14%	17%	16%	20%	17%
Economics	4%	4%	5%	6%	6%	6%	5%	5%
Law	3%	4%	4%	4%	4%	4%	4%	5%
Behaviour & Social Sciences	14%	13%	13%	13%	14%	15%	14%	13%
Language & Culture	7%	6%	7%	8%	9%	6%	8%	9%

Source: VSNU, Annual Reports PhD Students 2011. Excluding UU (2004-2007), EUR and OU

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The intake of PhD student employees has grown over the past years (Table 2). Within the various HOOP fields², the number of incoming PhD students fluctuates over the years. The HOOP field of Engineering has the largest number of incoming PhD students, although this majority has decreased.

² Scientific fields, based on the classification of the former so-called Higher Education and Research Plan (in Dutch: HOOP) of the ministry of Education, Culture & Science: Agriculture, Natural Sciences, Engineering, Health, Economics, Law, Behaviour & Social Sciences, Language & Culture.

Success rate

The success rate for PhDs obtained is expressed by the percentage of PhD students that obtain a PhD after four, five, six, seven, or more than seven years. Here we present the figures relating to the cohorts of PhD students of whom we may assume that they are currently finished with their doctorate. For PhD students who began in or after 2005, the success rates are not representative because it was too recent. Around three quarters of the PhD students complete their PhD. This success rate is relatively stable. The number of PhD students who complete their PhDs in four years is rather small. It is customary to take five years; at this point, half of the students obtained a PhD. The remaining quarter takes longer to complete their PhDs and 25 per cent drops out, as said previously.

Table 3 Success rate for PhDs obtained for standard PhD students in the Netherlands (as per 2011)

Intake	2001	2002	2003	2004
Number	1,522	1,605	1,680	1,776
≤ 4 years	8%	7%	8%	9%
≤ 5 years	40%	38%	41%	40%
≤ 6 years	60%	58%	60%	61%
≤ 7 years	68%	66%	69%	69%
Total (incl. > 7 years)	76%	73%	75%	72%

Source: VSNU, PhD students 2011. Excluding EUR, OU and UU

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There do appear to be clear success rate differences between the HOOP fields, with higher success rates within Agriculture, Natural Sciences, and Engineering and lower success rates within Language & Culture and Law, as can be seen in Table 4 below.

Table 4 Success rates for PhD students and PhD duration for standard PhD students in the Netherlands, per HOOP field

	Success rates for PhD students (total)*				PhD duration**			
	2001	2002	2003	2004	2008	2009	2010	2011
Total	76%	73%	75%	72%	4.9	5.0	5.1	5.1
Agriculture	78%	74%	85%	78%	5.0	5.1	5.1	5.2
Natural Sciences	84%	78%	77%	75%	5.1	5.1	5.1	5.1
Engineering	78%	78%	79%	75%	4.6	4.8	4.8	4.8
Health	71%	70%	75%	66%	5.1	5.2	5.2	5.6
Economics	84%	66%	75%	67%	4.7	4.9	4.8	4.5
Law	67%	51%	52%	50%	5.6	5.9	5.7	6.2
Behaviour & Social Sciences	75%	75%	73%	75%	5.1	5.0	5.3	5.5
Language & Culture	65%	59%	59%	61%	5.4	5.6	5.4	5.6

Source: VSNU, Annual Reports PhD Students 2011. Excluding UU, EUR and OU

* Total % of graduated PhD students according to their year of admittance.

** Duration of PhD programme in years listed per year of graduation. Excluding individuals who graduated within two years.

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PhD duration

PhD student employees with a fulltime appointment (1.0 fte) normally received a contract for four years within which they were expected to complete their PhD programme. As can be seen in the above table, PhD students often need more time: an average of five years. However, there are differences per HOOP field. PhD students in Economics and Engineering need the least amount of time and PhD students within Law and Language & Culture need the most. The difference between the fastest and slowest sectors is over a year. However, in determining the average PhD duration, no consideration was given to part-time factors, absence through illness, and pregnancy leave; factors of which the influence may not be identical for each HOOP field. Throughout the years, PhD duration is slowly on the rise in almost all HOOP fields (with the exception of Economics).

Supervision capacity

PhD students receive supervision from supervisors and co-supervisors. These individuals generally hold the position of professor or associate professor. However, these supervisors must have enough time to supervise their PhD students. The supervision index table below shows the relation between the number of PhD students and the number of professors and associate professors (Table 5). An index of 1 indicates that there is one PhD student per every senior (associate professor and professor). The higher the index, the more PhD students there are per senior and the less (senior) supervision capacity.

Table 5 Supervision index according to HOOP field per year in the Netherlands

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total	1.33	1.41	1.53	1.53	1.47	1.50	1.52	1.53	1.61
Agriculture	1.79	1.89	1.89	1.85	1.95	2.19	2.42	2.41	2.73
Natural Sciences	1.87	1.93	2.04	1.99	2.02	2.00	1.98	1.96	2.12
Engineering	1.79	1.99	2.15	2.28	2.24	2.26	2.32	2.37	2.38
Health*	2.18	2.23	3.07	3.77	2.67	2.43	2.37	2.19	2.26
Economics	0.66	0.66	0.68	0.70	0.73	0.79	0.83	0.86	0.86
Law	0.52	0.59	0.67	0.63	0.61	0.62	0.64	0.65	0.71
Behaviour & Social Sciences	1.03	1.13	1.30	1.27	1.26	1.31	1.41	1.45	1.53
Language & Culture	0.90	0.96	0.98	0.95	0.93	1.00	0.97	0.99	1.11

Source: VSNU/Wetenschappelijk Onderwijs Personeelsinformatie (WOPI), table by Rathenau Instituut

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* In recent times, for almost all academic hospitals, medical faculties staff went from being employed by the university to being employed by the academic hospital (University Medical Centre). The HOOP field Health, therefore, shows inconsistencies over the years. The supervision index also turns out relatively high, because medical professors are not included in the WOPI figures.

When we compare data on PhD duration, PhD success rates, and supervision capacity, surprisingly supervision capacity does not appear to influence the PhD success rates. Despite reduced supervision capacity, there appears to be a rather constant success rate. Supervision capacity does affect PhD duration. When we compare these patterns within the various HOOP sectors we come to the following. The most average sector is Behaviour & Social Sciences, with an average success rate, an average PhD duration, and an average supervision capacity. The HOOP sectors Agriculture, Natural Sciences, Engineering, and Health have a strong PhD tradition. There are many PhD students per senior, above average success rates, and an average PhD duration of five years (Engineering a little shorter, Health a little longer). In these sectors we see the largest number of PhDs obtained; for many years now, over two thirds of the PhDs in the Netherlands are granted in these four sectors. Law and Language & Culture, the other extremes of the spectrum, have relatively high capacity for supervision, but lower

success rates and a longer PhD duration. For Economics we see a pattern of high supervision capacity, paired with average success rates and short PhD durations.

Nationality

Dutch universities have welcomed international students and staff for many years. We analysed data on PhD students for 2003 and 2011 (see Table 6). In 2011, 43 per cent of PhD students in the Netherlands had a non-Dutch nationality; in 2003 this was just over a third (36 per cent). In both years, most foreign PhD students came from Germany and China, followed by Italy. In 2011, the next biggest nationality groups were Indian, Iranian and Turkish, while in 2003, Belgian PhD students were still the fourth biggest group among foreigners.

Table 6 Nationalities of PhD students in the Netherlands in 2003 and 2011

Nationality	2003		2011	
	Number	%	Number	%
Dutch	4,197	64.0%	5,124	56.9%
German	161	2.5%	523	5.8%
Chinese	155	2.4%	387	4.3%
Italian	122	1.9%	285	3.2%
Indian	94	1.4%	248	2.8%
Iranian	24	0.4%	219	2.4%
Turkish	40	0.6%	208	2.3%
Belgian	118	1.8%	143	1.6%
Polish	83	1.3%	130	1.4%
Greek	32	0.5%	104	1.2%
Other	1,529	23.3%	1,638	18.2%
Total	6,555	100.0%	9,009	100.0%

Source: VSNU/WOPI

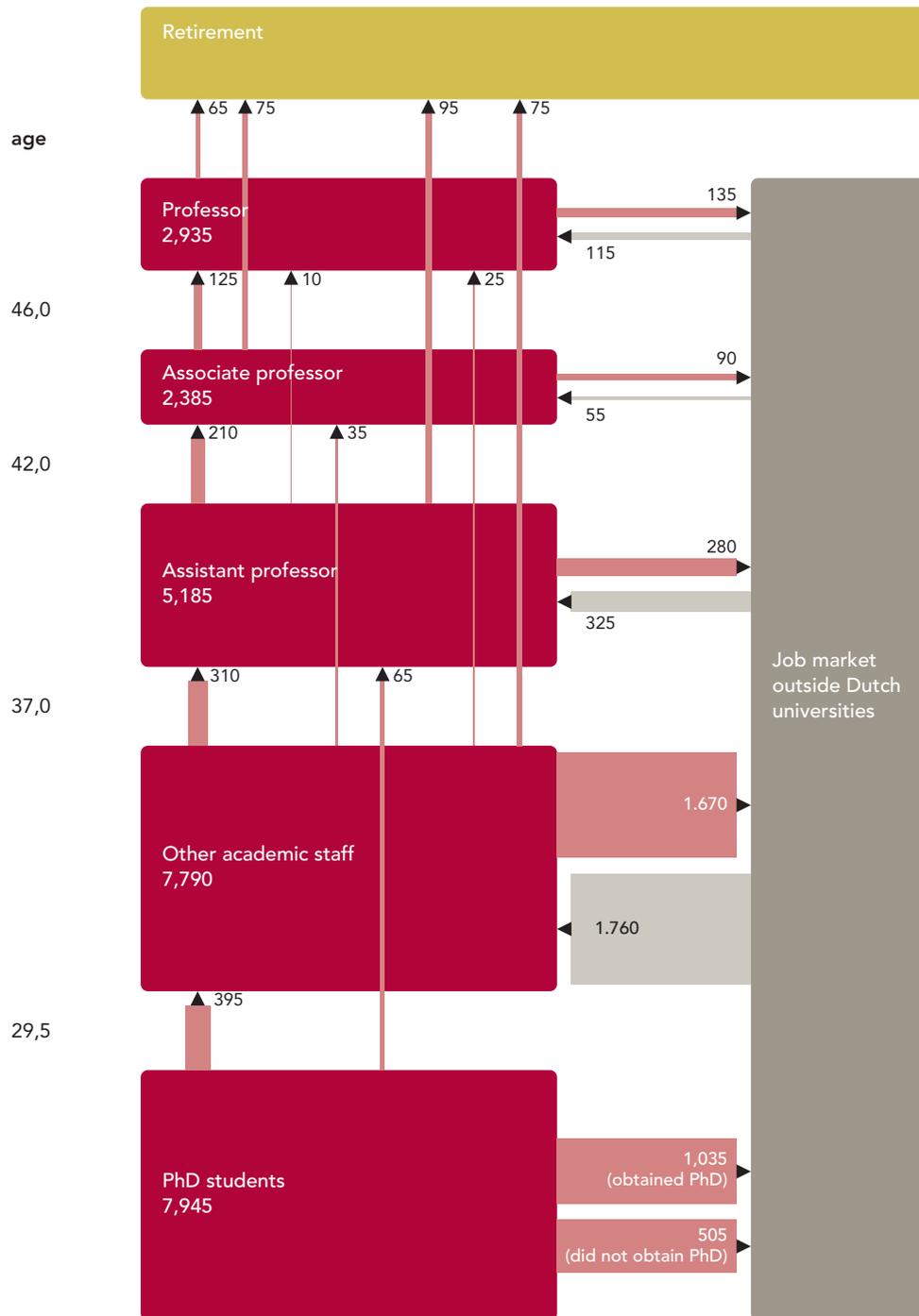
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When we look at the various nationalities in their eight respective HOOP fields, we observe large differences. For example, in the HOOP field Behaviour & Social Sciences, almost 77 per cent of PhD students are Dutch, while in Engineering this is only 41 per cent. In Economics, too, less than 50 per cent of PhD students are Dutch.

4. Mobility within the academic ranking structure

Academic positions in the Netherlands are structured hierarchically. At the top are professors, then associate and assistant professors, and below them a broad range of other academic staff (researchers and teachers) with PhD students on the bottom rung. This section describes the mobility and flow within the academic ranking structure. We focus on mobility within universities, but also on mobility from universities to external sectors and vice versa. There are also steps downward and between academic positions such as assistant professor or professor, and a position such as SMP (support and management personnel). Figure 4 below gives an overview of the most significant mobility.

Figure 3 Most significant job market mobility, yearly averages of number of people (period spanning 2003-2011)³



Source: VSNU (WOPI; PhD student data), CBS (MUP); figure by Rathenau Instituut

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³ Please note – this infographic is a simplified representation of the data available. Values are based on the average of nine consecutive years of data. Net in- and out-flows of personnel are not equal, due to the infographic not including personnel stepping to 'lower' functions, and the infographic does not include support and management personnel. These data are available.

A few points in this figure are striking. First, the academic job market appears dynamic on all levels. This is not a closed system; it is decisively open, be it with a strongly selective character. Each year, on average, 32 per cent of the postdoc researchers and teachers (OAS) move job, around 15 per cent of the assistant professors do so, 14 per cent of the associate professors, and 10 per cent of the professors. For the transition from PhD student to OAS and the subsequent transition from OAS to assistant professor, the majority of academics head for jobs outside Dutch academia. Conversely, there is also a large inflow of academics. Large numbers of PhD students, postdocs, assistant professors, associate professors, and professors leave Dutch academic life, and large numbers enter academia from the job market outside of Dutch universities. At the OAS level, most mobility takes place between universities and the job market elsewhere; 68 per cent of mobile OAS leave Dutch academia, and simultaneously, an equal number of the vacant positions is taken by 'outsiders'. Assistant professor mobility entails a 34 per cent outflow from academia, but also a 42 per cent inflow. Associate professors have least mobility: 28 per cent of associate professors that change function leaves university, and only 18 per cent of the new associate professor positions is taken by people from outside academia. Surprising is that the highest position in the academic ranking structure, that of the professor, is decidedly less closed. 50 per cent of the mobile professors (5 per cent of the total) leaves for a different function outside of academia, and over a third of the newly appointed professors comes from outside the university.

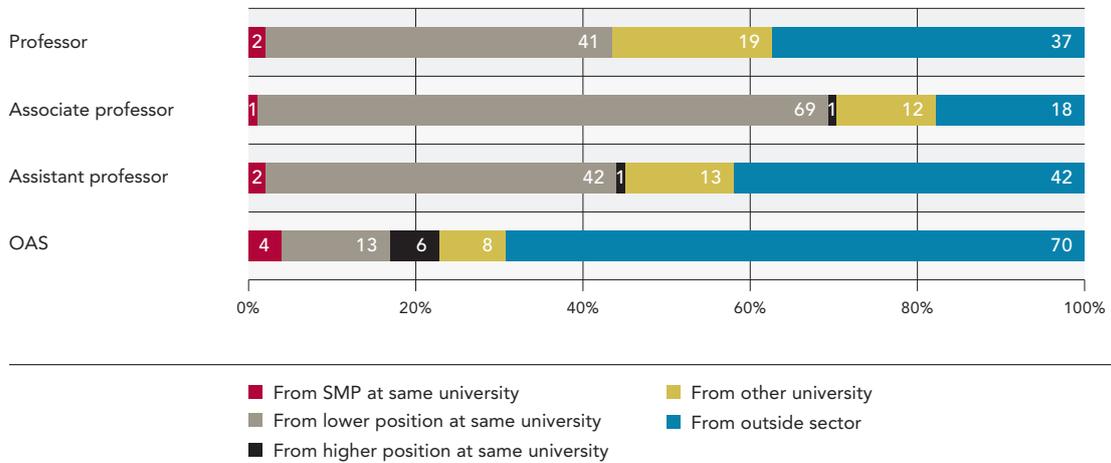
Figure 3 gives an indication of the duration of an academic career. PhD students mostly fall into the age category of up to 35 years, with a core between 25 and 30 years. The end of the appointment of PhD students is an important selection moment for the next step in their academic careers. PhD students are on average 29.5 years old when they obtain their PhD and continue to an OAS position. The next step in an academic career can take a little longer; those who transition from OAS to assistant professor are, on average, 37 years old. This means that the average duration of an OAS position is 7.5 years. For those who advance further on the academic ladder, the next step is a quicker one: new associate professors are, on average, 42 years old. Thus, the average assistant professor position takes 5 years. The step to professor – if made – on average takes 6 years: on average, transferring to professorship takes place at the age of 49 years. All in all, it takes an average of 16.5 years from obtaining a PhD to professorship. And this last position has an average duration of 11 years; departing or retiring professors are, on average, 57 years old.

The sections below cover the most significant job market mobility developments per position. Figures 4 and 5 show job market developments (mobility and flow) in the sector. Figure 4 concerns the origin of newly appointed academics per level. Figure 5 shows where departing academics are headed.

Upon obtaining a PhD

After completing a PhD, or even before this moment, PhD students and graduates are confronted by the question: what now? Stay in academia or do something else? Figure 5 shows that around 30 per cent of PhD graduates continues a career at university and around 70 per cent leaves university. PhD graduates who continue in academia usually do this at their own university, the university where they obtained their PhD, and in most cases as OAS (85 per cent). Furthermore, a small portion transitions to academic positions at other universities. The PhD graduates that leave university have varied destinations. About a third of these working graduates proceed to the private sector (not R&D intensive), a quarter finds a job at public research institutions (R&D intensive private sector) or at UMCs (academic hospitals), and another quarter goes abroad.

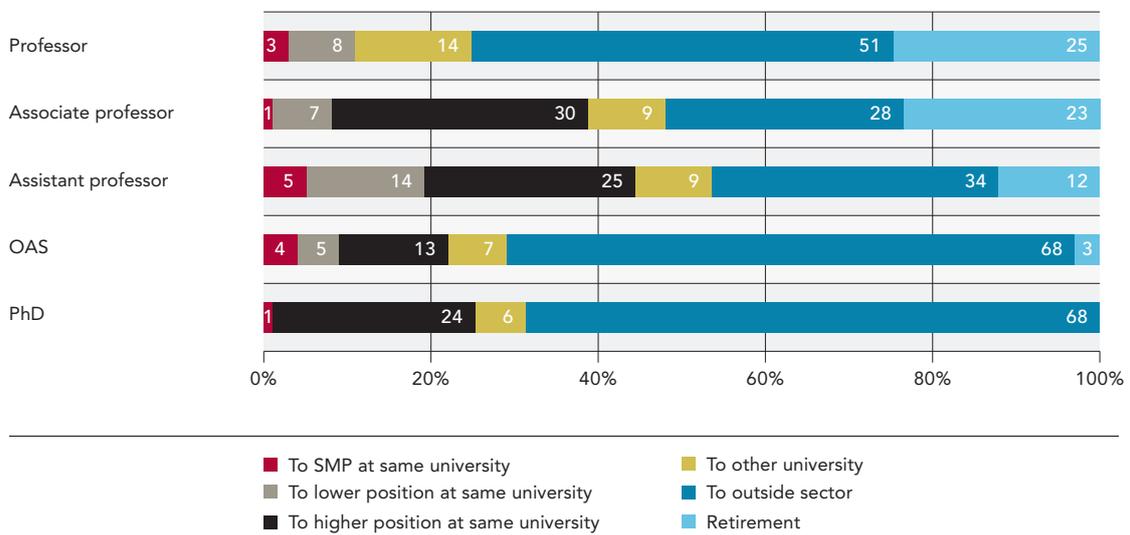
Figure 4 Origin of new academic staff (average for the period spanning 2004-2011)



Source: VSNU (WOPI), CBS (MUP); figure by Rathenau Instituut

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Figure 5 Destination of departing academic staff (average for the period spanning 2003-2010)



Source: VSNU (WOPI; PhD student data), CBS (MUP); figure by Rathenau Instituut

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The transfer position: postdoc researcher

For an academic career, the position of postdoc is an interesting link between a PhD programme and a position as a more independent researcher. As previously mentioned, a postdoc researcher falls within the category of other academic staff (OAS). As of 2005, within this category a distinction is made between researchers (among others, postdocs), teachers, and other. The number of postdocs is increasing: from 2,559 in 2005 to 3,464 in 2011. In 2005, postdocs made up about 35 per cent of the category of OAS; in 2011 this was 43 per cent. Based on available data, job market mobility can only be estimated for the total group of OAS. OAS positions mostly come with a temporary contract. This is also shown by mobility figures: of the almost 7,800 positions, each year an average of one third (over 2,500) is transferred.

A part of the OAS comes from within the institution (around 23 per cent). For a large part (56 per cent), this concerns PhD students who become postdoc/OAS in the following year. A further average of 8 per cent of the OAS originates at another university (mostly PhD graduates). The largest part (70 per cent) of the inflow concerns individuals who come from outside the university sector (see Figure 4). The data from the MUP study illustrates that a rather substantial part comes from abroad (almost 20 per cent). Furthermore, large numbers come from businesses and the public sector. A possible explanation for this could be that this concerns former PhD student employees who become postdocs after a sabbatical, unemployment, or a period elsewhere. Appointments for PhD student employees are generally for four years, while the PhD duration is five years on average. All sorts of things take place in that one year, and often enough, the almost-graduates will bridge this year with a job outside of academia or be unemployed. There is currently no data source that can confirm or deny this.

After a position as postdoc/OAS, again a moment takes place at which an academic career can be continued, ceased, or paused. The position of OAS is not only characterised by a high degree of new inflow; mobility and outflow is also significant. In the context of the academic career ladder, the postdoc position is a direct transfer position on a small scale. Only 13 per cent of the OAS transfers to a higher position within the same institution and 7 per cent departs to another university. Two thirds of the departing OAS leave the university sector entirely. The destinations vary greatly: from the public sector, private sector, abroad, and other knowledge institutions and UMCs (academic hospitals), to – rarely – welfare benefits.

The intermediary position: assistant professor

The next stage of an academic career is as an independent researcher. About 15 per cent (over 750) of the average of almost 5,200 assistant professor positions is filled by new staff each year.

Over half of the newly appointed assistant professors are individuals who move up within the university sector (at the same university or a different one). An occasional person climbs down to a lower position. A large number of newly appointed staff comes from outside of academia: an average of over 40 per cent of the total (see Figure 4). Of these, 37 per cent comes from abroad, 20 per cent from the public sector and research institutions, and another 14 per cent from the private sector.

The number of assistant professors in 2011 is a little lower than in 2003 (5,422 compared with 5,573), but – after a drop to 4,890 in 2006 – the number has risen over the past few years. From 2003 to 2011, on average a few more people left positions than accepted them. What is striking is that while 34 per cent move on to a higher position or to a different university, an equal portion actually leaves the university sector altogether (see Figure 5). A quarter of these departing individuals retires, for them the assistant professor position was a final position; 14 per cent goes abroad. The rest goes to work elsewhere, for example in the public sector and at research institutions (12 per cent), or in the private sector (14 per cent), or ceases employment altogether (20 per cent).

Almost at the top: associate professor

Following the position of assistant professor is the position of associate professor. Interestingly, this is the most closed position in the academic ranking structure. At the same time, each year, around 13 per cent of the almost 2,400 associate professors switches positions (over 300 individuals). The majority (four fifths) comes from within Dutch universities, of which the largest part transfers within the same university. Only 18 per cent comes from outside the university (Figure 4).

The number of associate professors has remained relatively stable over the years: 2,419 in 2003, 2,437 in 2011. For every position that opens up, another position must therefore be closed (see Figure 5). This was the final position before retirement for almost a quarter of departing associate professors. An average of 30 per cent moves up one level and becomes professor at the same university and another 10 per cent switches universities and in most cases also becomes professor. Finally, almost 30 per cent leaves Dutch universities, and the majority departs for abroad (17 per cent).

The top of the academic ranking structure: professorship

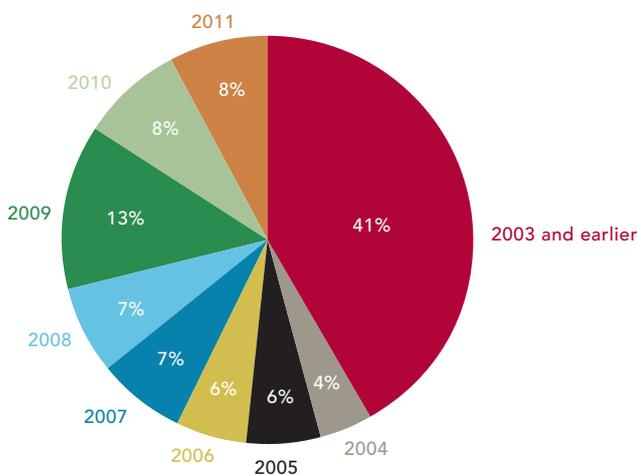
Professor is the highest rank on the academic career ladder. Each year, an average of 300 new professors are appointed. In Figure 4 we see that about two fifth come from within the same university, one fifth from another university, and two fifth from outside of academia. In comparison with newly appointed associate professors this is almost double.

Of the new professors that are mobile within academia, the majority comes from a lower position (mostly associate professors but also assistant professors and OAS) from the same university (65 per cent), 13 per cent comes from a lower position at a different university, and 20 per cent switches universities but was already and remains a professor. Professors that come from outside Dutch universities come for a large part from abroad (around 25 per cent), another 20 per cent comes from the public sector and 20 per cent comes from the private sector.

Every year, a large number of professors leave their position (see Figure 5). Of course some individuals switch universities but remain in the sector. However, the majority leaves academia. The fact that professorship is seen as the final position implies that a large part of these individuals retires, but this actually only accounts for 32 per cent of the outflow. The other 68 per cent continues a career elsewhere, for example abroad (21 per cent), in the private sector (10 per cent), or at UMCs: academic hospitals (11 per cent).

Each year, about 10 per cent of professors switches position. The total number of professors has seen a slight rise between 2003 and 2011: from 2,809 to 3,153. At a first glance, there does not appear to be much mobility within the professor position. However, when we look at the total group of professors that are employed at Dutch universities at the end of 2011, as well as at the year of appointment to their current position, we see that only 41 per cent held the same position in 2003. The other 59 per cent was appointed more recently. This implies that half of the total population is renewed every six to seven years, and the position of professor is more accessible than is often assumed.

Figure 6 The year of appointment for professors in 2011



Source: VSNU(WOPI); figure by Rathenau Instituut

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Nationality

Previously we saw that the number of foreign PhD students is rising. Furthermore, we see much international job market mobility for other academic positions. In the last few years, the number of non-Dutch academics has risen. In 2003, 23 per cent of all academics were international, and in 2011, this was 30 per cent. For professors and associate professors this is a stable 15 per cent; for assistant professors the number of foreigners has risen from 13 to 24 per cent. Only figures from 2011 are available for postdocs: 49 per cent were international. This leads to the conclusion that the internationalisation of academic staff is becoming increasingly prominent, and this is not limited to PhD students, but also concerns postdocs/OAS and, to a lesser extent, other university ranks.

5. Career policy at universities

The inflow and mobility of talented researchers has received much attention over the past years within career policy, especially through the creation of extra space for the research of young and talented researchers. This has taken shape in the development of personalised instruments, such as talent programmes. These were, initially, primarily external and temporarily financed by means of grants. Over the past years, an increasing number of activities have also taken place that aim to offer researchers within universities a more long-term perspective, for example through a so-called tenure track: a clear career path spanning multiple years, for which achievement criteria are determined upfront. Both forms are discussed below.

The role of grants in academic careers

The Vernieuwingsimpuls (Innovational Research Incentives Scheme) of NWO (Netherlands Organisation for Scientific Research) is the most extensive personal career grant and it is focused on all academic fields and on the different stages and levels of an academic career. The Innovational Research Incentives Scheme consists of three personal types of grants: Veni (for recent PhD graduates), Vidi (for experienced postdocs), and Vici (for experienced top researchers). The number of applications for the talent programmes has seen a strong increase over the past years, especially for the Veni grant. The number of grants, however, has not risen. In the past two years, only 17 per cent of the applicants received grants.

Table 7 Applications for and awarding of the 'Innovational Research Incentives Scheme', 2002-2011, as per type of grant*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Veni										
Applications	507	663	337	811	494	802	647	809	984	953
% female	32.7	37.4	35.3	40.9	39.3	38.7	39.3	37.9	41.7	41.8
% awarded	24.5	21.4	26.1	22.1	18.8	22.4	17.9	17.8	16.4	16.7
Vidi										
Applications	431	282	271	307	348	436	394	509	555	-
% female	21.1	22.0	26.6	34.2	27.9	26.8	30.2	30.3	37.1	-
% awarded	17.4	29.1	29.2	25.7	24.4	19.3	20.8	17.5	15.9	-
Vici										
Applications**	61	64	62	68	65	86	76	94	104	95
% female	13.9	23.4	16.1	19.1	23.1	20.9	14.5	20.2	21.2	27.4
% awarded	44.3	40.6	45.2	39.7	46.2	36.0	40.8	33.0	30.8	32.6

Source: Annual reports NWO 2002-2011

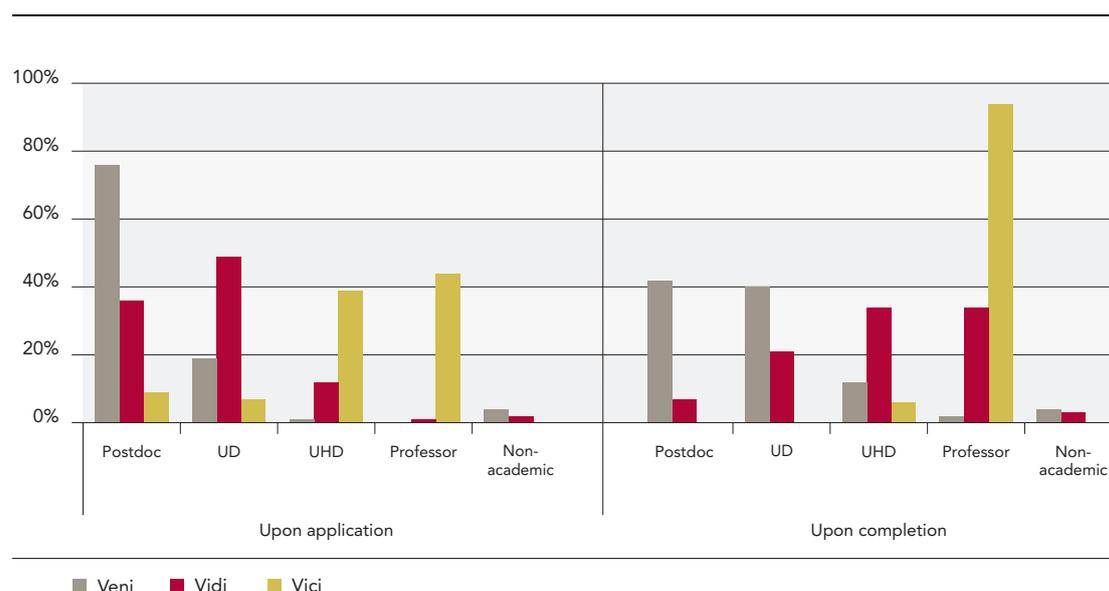
* Two Veni rounds in 2005. No data available yet for the Vidi round in 2011.

** After the first selection based on pre-applications

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In the past ten years, a total of almost 2,500 applications have been awarded (1,386 Veni, 743 Vidi, 294 Vici). The career paths of the grant holders who completed their projects since 2002 have also been mapped. Upon completion of their project, the majority had a higher academic position than at the start of the project (see Figure 7). At the project's commencement, most Veni-grant holders were postdocs, and by the time of its completion they had become assistant professor or associate professor. The majority of the Vidi-grant holders became associate professor or professor, while almost all Vici-grant holders had become professors by the end of the project. It is unknown, however, if those awarded grants were promoted faster or more often than researchers who did not receive a grant.

Figure 7 Career development for grant holders of the Innovational Research Incentives Scheme*



Source: Annual Report NWO 2011

* 542 Veni-laureates, 227 Vidi-laureates, and 54 Vici-laureates

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At the European level, too, personal grants exist for excellent - beginning or experienced - researchers who aim to conduct pioneering research: the 'Starting Independent Researcher Grants (ERC Starting Grants)' and the 'Advanced Investigator Grants (ERC Advanced Grants)'. While on average, one in ten to one in fifteen awarded grants goes to Dutch researchers, the number of Dutch researchers that received an ERC grant is relatively limited. In total, 173 Dutch researchers received a 'starting grant' and 107 an 'advanced grant'.

Table 8 ERC grants, 2007-2012, per type of grant

	2007	2008	2009	2010	2011	2012
Starting grant						
Applications	9,167	-	2,503	2,873	4,040	4,741
% awarded	3.4	-	10.2	15.8	12.2	11.5
Of which Dutch (%)	9.4	-	6.5	6.2	10.2	9.7
Advanced grant						
Applications	-	2,167	1,584	2,009	2,284	2,304
% awarded	-	13.9	16.1	13.8	13.5	13.8
Of which Dutch (%)	-	7.1	7.3	6.6	6.9	9.6

Source: website European Research Council (ERC) - Statistics

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Tenure track in the Netherlands

Next to the externally financed talent programmes aimed at stimulating the mobility of researchers, the Netherlands also uses so-called tenure track positions as instruments for talent management. The most important reason for the use of tenure tracks is to draw in (international) top talent and to keep existing talent. A tenure track position gives a researcher a clear career path for multiple years, where achievement criteria are formulated upfront. Researchers are evaluated at fixed points in time; a positive evaluation will eventually lead to a permanent appointment (tenure). When criteria are not met, one can lose one's position and be expected to leave the university.

Various types of tenure tracks are employed.

- The associate professor track: postdocs who start with a temporary assistant professor appointment, which will be transformed into a permanent associate professor appointment upon a positive evaluation after four/six years.
- The professor track: a possible continuation on the associate professor track or for externally recruited, talented associate professors, who, upon a positive evaluation, are promoted to professor. The aim is not to enable a permanent contract – as this already exists – but to promote the mobility of talent.
- A tenure track as instrument to attract and maintain more female talent.

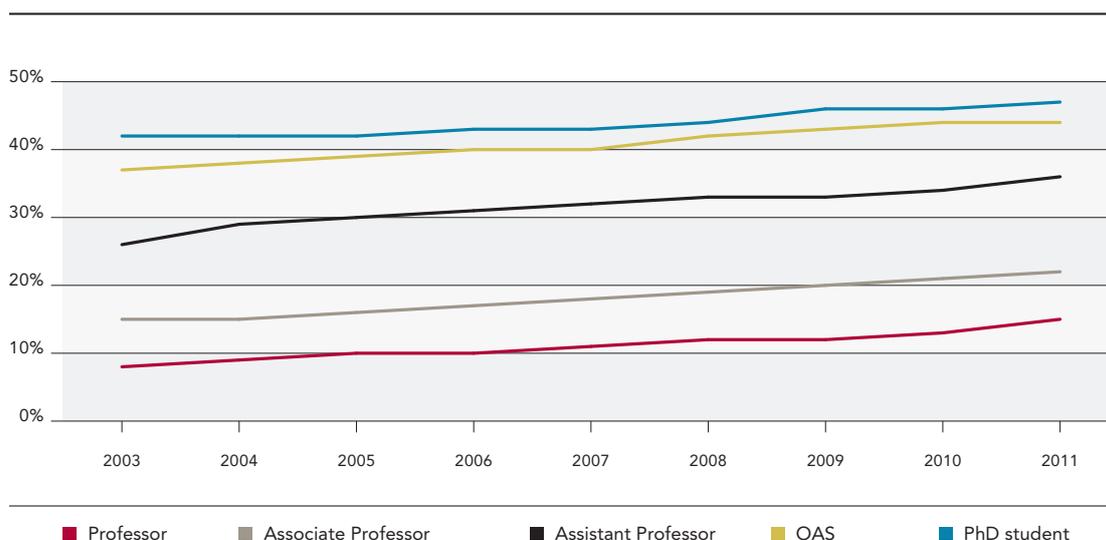
Due to a lack of data, not much can be said on the effectiveness of tenure tracks, yet.

6. Women in academia

Job market mobility for men and women at universities

The figures below show that women are underrepresented in academic positions in the Netherlands. Furthermore, the higher the position, the smaller the proportion of women. In 2011, 47 per cent of PhD students was female, versus 15 per cent of professors (see Figure 8). At the first step, already – from student to PhD student – the proportion of women declines (-5 per cent). As can be seen in Figure 8, the proportion of women decreases with each next step, and the largest decrease can be seen at the step from the assistant professor position to the associate professor position (-13 per cent).

Figure 8 Developments in the proportion of women in academic staff according to position category



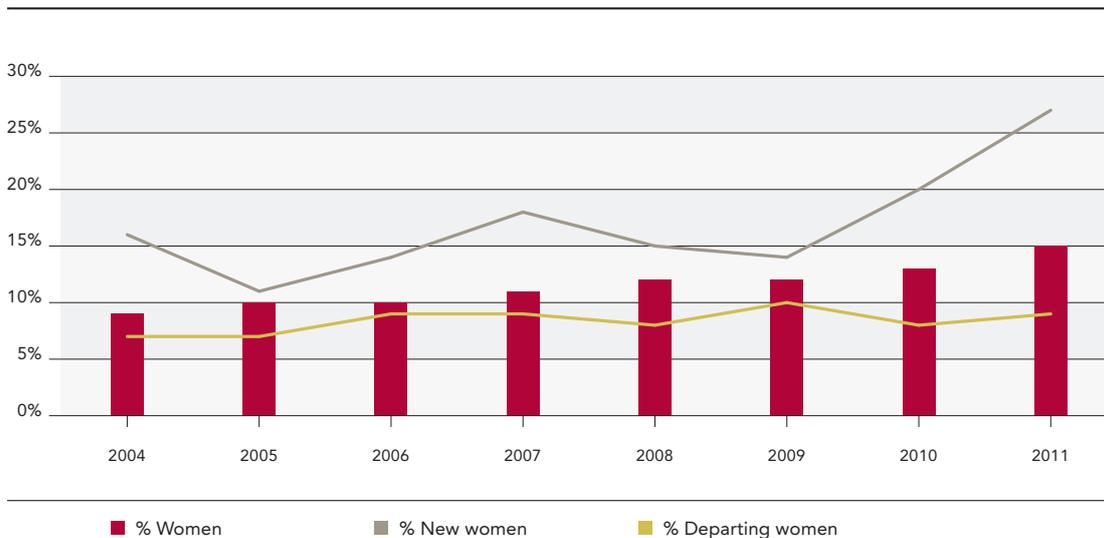
Source: VSNU (WOPI)

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However, the total proportion of women has strongly increased over the past years. Over the past eight years, we see the average percentage of women as academic staff rise from almost 31 per cent to over 38 per cent. Such increases can be seen in all position categories. The differences between the position categories are also clear. The percentage of female PhD students closes in on 50 per cent, followed by 44 per cent female OAS. Almost 15 per cent of the professors are female; where this is almost double the percentage in 2003, it is still low.

Here, too, we not only looked at the yearly figures; we also looked at job market mobility to and from the professor position. In the table below, not only the fixed total of female professors is displayed; there is particular focus on the relation between newly appointed professors and departing professors.

Figure 9 Departing and newly appointed female professors



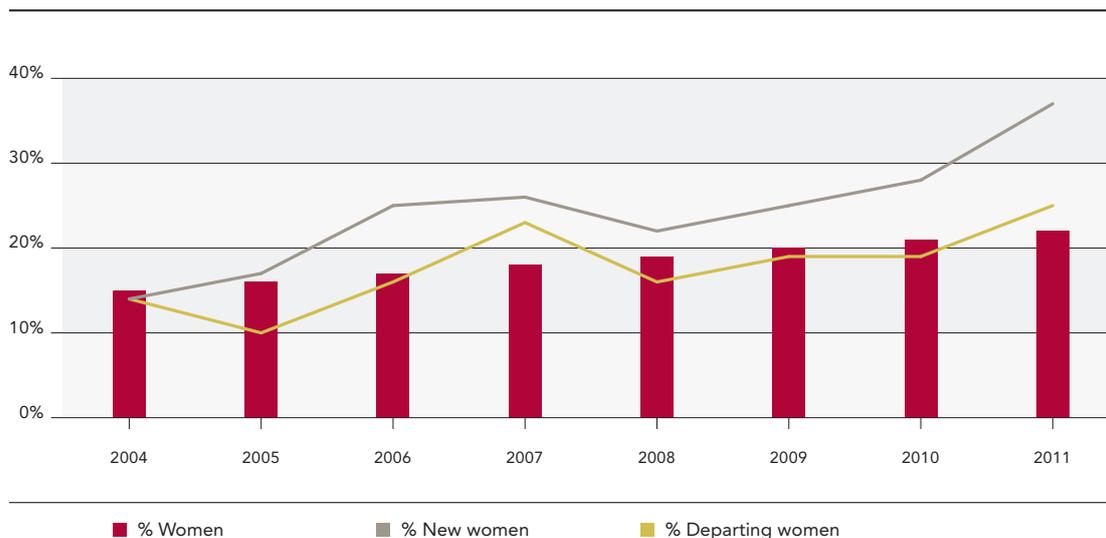
Source: VSNU (WOPI); figure by Rathenau Instituut

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We observe a quick increase in the number of female professors. Where the portion of arriving and departing female professors in the period up to and including 2009 was relatively similar, we now see that in the past two years these figures strongly differ. On average over the past eight years, the portion of women in the transition from associate professor to professor was 21 per cent and the newly appointed professors that came from outside academia were 15 per cent female. 17.5 per cent on average of the associate professors were female. The net result is that direct access to professorship is proportionate. In 2011, 27 per cent of the newly appointed professors is female, while the number of departing female professors is 9 per cent. Of the associate professors 22 per cent is female. The portion of women in the transition of associate professor to professor was 34 per cent in 2011. Of the newly appointed professors that come from outside academia, 24 per cent is female. There are significantly more women who arrive than women who leave. If the trend of the past eight years continues, it will take more than forty years before there are an equal number of male and female professors. However, if we project the trend of the past three years onto the future, then we will reach this situation in a mere thirty years.

The pattern that can be seen with professors can also be seen with associate professors. The portion of women in new associate professor positions has increased, especially in the past two years. The transition from assistant professor to associate professor represents the biggest bottleneck. On average over the past eight years, we see that the portion of women in the assistant professor position is 31 per cent, but the portion of women in this group that continues on to an associate professor position is 25 per cent. This also counts for the new associate professors that come from outside academia (24 per cent). However, this appears to be changing only gradually. In 2011 the portion of women in an assistant professor position was 36 per cent, the portion of women in the group that promoted to an associate professor position 39 per cent, and the portion of women in the group from outside academia 36 per cent.

Figure 10 Departing and newly appointed female associate professors

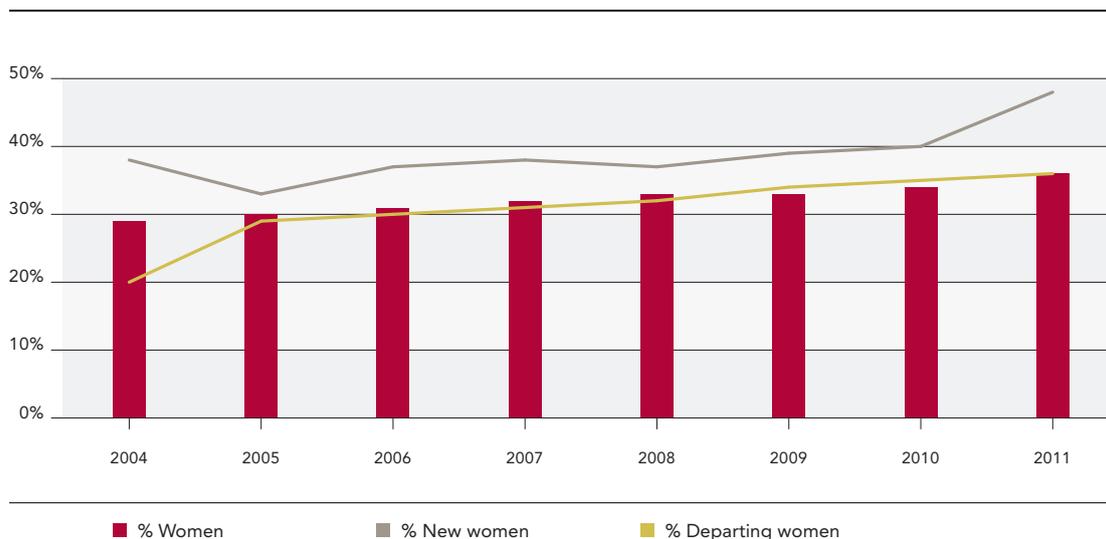


Source: VSNU (WOPI); figure by Rathenau Instituut

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With the transition of an OAS position to an assistant professor position we see no difference between men and women. We see that the proportion of women in the most recent group of new associate professors is almost 50 per cent (Figure 11). The proportion of women that transitions to a assistant professor position is as big as the proportion of women that holds an OAS position. An analysis of job market mobility does show that slightly more women than men directly promote from being a PhD graduate to an assistant professor position.

Figure 11 Departing and newly appointed female assistant professors



Source: VSNU (WOPI); figure by Rathenau Instituut

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Additional Information

This is the seventh edition of the Science System Assessment series Facts & Figures. This edition gives an overview of the figures on various aspects pertaining to Dutch academic careers and career policy in the Netherlands. The figures were collected from various sources.

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Colophon

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