

# **Gender Differences in Rank within the Academic Profession: The case of Denmark.\***

*by*

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## **Abstract:**

The distribution across positions within the academic profession is investigated using data for all academic staff at Danish universities. Special focus is given to the fact that, women constitute a small fraction of the higher ranking positions as only 8% of the full professors are female. Compared to the increasing proportion of women holding a university degree, this is a very low female representation within the academic profession. Often, differences in family formation and responsibilities within the family are used to explain this difference. This is confirmed in the regressions analysis as information from the private sphere have much higher explanatory power for women than males. Important differences are the effect of marital status and partners' occupation which are major determinants for women's ranking, but does not matter for the ranking of their male colleagues.

**JEL codes:** J13, J16, J24, J44

**Keywords:** Academic labour market, women in academia, family status, interruption behaviour.

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## **1 Introduction**

Women constitute a relatively small fraction of the academic staff at the Danish universities, especially in the high ranking positions which are typically also the permanent positions. Around 8% of full professors are female in year 2000 and 20% of associate professors. In the light of the fact that women started entering the universities at a high rate in the 1970'es, in principle the female hiring potential is larger than that. Various reasons have been offered to explain the fact fewer women than men stay in Academia and that the women that actually chooses to stay have difficulties in getting the high ranking positions. One possible explanation is discrimination in the hiring process. If employers or other employees in the workplace prefer to work with men rather than women, an employer facing female and male applicants that are equally qualified will hire the male applicant. But also if the (male) employers have non-perfect information about the productivity of young women they will tend to hire young men instead. Another possible explanation is that women are more family oriented than men, and hence leave the universities for less demanding jobs.

This paper describes the occupational structure of the Danish academic labor market in the years 2000-2002. By the use of a new data set including all scientific staff of the Danish universities we analyse differences in the distribution of position between men and women. The data includes rich information on family variables and therefore we can uncover the potential relation between family status and ranking and compare between men and women. Regression analysis shows that most of the estimated effects are quite similar across gender, also the (relative large) effects of having taken parental leave. However it appears that the effect of marital status and partners' occupation is more important for women than men in the academic profession. Also the field of science and the distribution across the Danish universities matters for the probability of obtaining a higher ranking position, especially for women.

The paper proceeds as follows: In section 2 theoretical background and previous international evidence is outlined. Section 3 describes the dataset and in section 4 the regression analysis is presented. Section 5 concludes.

## **2 Background**

The theoretical framework applied in this study is both classical and new theories on gender differentials in pay and occupational position. To our knowledge, there are no economic theories explicitly focusing on gender in the academic labour market.

Numerous theories attempt to explain the existence of occupational and wage differences between seemingly identical types of workers. Discrimination in the labour market can be defined as different treatment of workers from different groups based solely on group membership rather than on the workers' productivity. Becker (1957, 1996) pioneered the study of the economics of labour discrimination. He models discriminatory behaviour as being *taste-based*, in which people prefer dealing with one gender or ethnic group over another, and then act accordingly. Becker defines three distinct types of taste-based discrimination: Employer discrimination, employee discrimination and consumer discrimination. If employers prefer to work with men rather than women and if the wage for a particular position is given, an employer faced with equally qualified male and female job applicants will hire the male. The only way that such an employer will hire the female applicant is at lower wage. Other employees in the organisation can also have a taste for discrimination.

As an alternative to taste-based discrimination theories, wage differentials may be explained by the existence of information asymmetries and statistical discrimination. Information asymmetries and imprecise knowledge about the productivity of young women may lead to systematic underestimation of the productivity of this group. If the employers' information is based on old and outdated information on these groups, and employers base their information on women's productivity, turnover rates, fertility and labour force attachment on information from the past when fertility and female turnover rates were higher and female labour force participation much lower, this may explain lower female wages. Again the classical theory on statistical discrimination by

Phelps (1972) does not explain that some groups earn less on average than their productive capacity, since statistical discrimination only harms individuals who have an above average productivity while less productive workers are overcompensated. However, if employers are risk averse, the uncertainty about females may be seen as a cost and this may explain that these groups earn lower wages. In the case of the academic labour market, the members of evaluation committees (typically men in senior positions) may not fully have the information on the changing role of women in the family and their changing career plans, which applies to young female applicants.

In later theories in the statistical discrimination tradition (e.g. Coate and Loury (1993)), it is argued that statistical discrimination against women (or ethnic minorities) may induce employers to allocate women into jobs with a lower level of on-the-job-training. Thus, even though the initial skills for the women and men on average were identical, statistical discrimination may end up being self-confirming, i.e. women may end up with less skill than men. Another argument based on statistical discrimination theory is that women with above average abilities and productivity may know the statistical discriminating behaviour of the employers in advance and this knowledge discourages them from investing in further skills, again inducing a self-confirming process. This may be one explanation of the relative low proportion of female applicants for academic positions, especially at higher levels of the academic hierarchy (Ståhle (1999)). In addition, theories of systematic discrimination exist, that is, unintended discrimination caused by labour market dynamics and frictions. Possible sources here are the informal recruitment (Burdett and Mortensen (1998)), which may be very important in an academic labour market. Professors and senior researchers often recruit potential new researchers among the pool of students and if the senior researchers (who are most often men) tend to recruit and encourage students of their own gender. This may be another important explanation of why relatively few women apply for academic positions.

It is important to realise, that the mechanisms of the academic labour market varies from the general labour market in various respects. The process of allocation of positions within the universities is complex and the availability of positions at high levels is very limited and also the decision of how to formulate and post job openings and when to post may be important (Nexø Jensen (1997)). This type of labour market can be compared to the labour market for CEOs as analysed in Lazear & Rosen (1990) and Lausten (2001).

## **International evidence.**

Only few economic studies on gender in academic labour market exist. The scarce international evidence (see below) shows that obtained position is a good predictor of pay in academia and therefore it is crucial to study gender differences in the distribution of positions.

In studies for humanities in the USA, Ginther & Hayes (1999, 2003) find that a substantial fraction of the salary gap can be contributed to more favourable observable characteristics of males – including higher rank positions. The analysis of promotion to tenure, however, reveals that significant gender differences exist, even when demographic characteristics and productivity are taken into account.

On the basis of a questionnaire on the academic economist labour market in the UK, Booth et al. (2002) find evidence that (for given characteristics) women are less likely to be promoted, they receive lower salaries *within* a given rank, they receive fewer job-offers and they perceive gender discrimination.

For Scottish case (all academic fields), Ward (1999) finds salary gaps in the range 15-30% and they find that “time out of the labour force” is very important. Euwals & Ward (2000) conclude that, in terms of salary, one year out of academia requires production of 4-5 additional refereed papers to outweigh the salary loss. This suggests that in studies comparing gender-specific attainment, the interruption behaviour and other family-related characteristics may be of major importance. Nielsen et al. (2003) and Verner (2001) investigate the effects of childbirths and career interruptions in general for the Danish labour market as a whole. The wage effects related to childbirths and child-related leaves are estimated to be up to -7% for highly educated women, taking a one-year period out of the labour market.

The appointment to positions is of major interest, when the dynamics of the academic labour market is investigated. In addition to the combined pay-rank studies mentioned above, few economic studies exist on gender and promotion in academia, though general descriptions of the distributions of women across disciplines and rank exist (Ståhle (1999), Booth & Burton (1999)). McDowell et al. (1999) analyse the probability of promotion for female economists and find evidence of a “glass ceiling” in promotion, even in the case only with individuals with equally strong attachment to the labour market. Ward (2000), shows by simulations of a rank attainment that for the current population of academic personnel, according to characteristics, fewer women should hold positions

as researchers and more women should hold positions as lecturers and professors than is actually the case, whereas the opposite should be the case for males.

Part of the gender bias in the distribution of positions may be attributed to gender-specific differences in the evaluation process of job candidates and awarding of research grants. Due to secrecy in procedures, this is a very difficult process to evaluate. In a unique study, Wennerås & Wold (1997) have analysed the awarding of postdoctoral fellowships in the case of the Swedish Medical Research Council. They found evidence of both gender discrimination and nepotism in the peer-reviewing process.

(more on recent studies to be added)

### **3 Data**

#### *3.1 Data source*

The data set used in this study has two main sources: All employees at the Danish universities are registered in the wage database of each university. From these registers information on occupation, department, field and university is extracted twice a year during three years, namely 2000, 2001 and 2002. Observations for all these individuals are then matched with register based information at Statistic Denmark by the use of the CPR-number, a unique identifier.. The registers contain information on a long range of individual characteristics on e.g. education, civil status, children, occupational status, wage, income etc. Furthermore, spouse information is available on the same variables. These register-data are yearly information covering the period 1990-2002.

From the initial data coming from the universities during 2000-2002 it is possible to construct exact event history data on occupations within the universities. Furthermore, the larger observation window of the register based information makes it possible to extend the event histories and include retrospective information on a broad range of various variables that may be important factors for the later working career, e.g. educational choice and childbirths.

In Table 1 the distribution across university, gender and rank are presented. In total, the dataset contains 34495 observations. The total fraction of women is 21.7%.

**Table 1. Number of observations in dataset by rank, gender and university**

	Assistant professors		Associate professors		Full professors	
	Women	Men	Women	Men	Women	Men
University of Aalborg	251	780	397	2001	33	641
University of Aarhus	377	715	887	4211	92	1147
Copenhagen Business School	65	193	144	659	40	257
Faculty of Pharmaceutical Sciences	54	66	163	154	6	78
Technical University of Denmark	105	177	200	2204	14	572
Aarhus School of Business	66	52	191	450	8	55
Copenhagen University	778	943	1623	5115	173	1402
Royal Veterinary and Agricultural University	274	275	410	968	43	400
Roskilde University	135	161	340	911	34	237
University of Southern Denmark	256	398	660	2389	49	682
All	2362	3759	5015	19062	492	5471

#### 4. Descriptive analysis

In this section the data are described, with a special focus on the gender dimension.

From Table 2 it is very clear that the distribution of women varies substantially across fields and rank. In Humanities, Agricultural Sciences and Health the distribution is fairly equal at the level of assistant professors. However, when the higher levels are considered it is clear in all cases that males possess the high ranking positions to a much larger extent than women.

**Table 2. Number of observations in dataset by rank, gender and field.**

	Assistant professors		Associate professors		Full professors	
	Women	Men	Women	Men	Women	Men
Humanities	548	542	1463	2946	84	583
Agricultural Science	275	274	410	968	43	400
Natural Science	530	1603	682	5082	66	1294
Social Science	322	561	636	2637	123	1055
Health Science	386	364	1093	4100	122	1249
Technology	159	243	363	2358	20	650
All	2220	3587	4647	18091	458	5231

One obvious factor that must be taken into account when comparing these gender specific distributions, is the underlying age distribution. As women started entering higher education much later than men, there may be a significant age/cohort effect. This is demonstrated in Table 3. It is clear that the female distribution peaks in the age interval 36-40 years, whereas the male distribution peaks at the age of 56-60 years.

**Table 3. Age distribution by rank and gender, %.**

Age	Assistant professors		Associate professors		Full professors		All	
	Women	Men	Women	Men	Women	Men	Women	Men
26-30	10	18	0	0	0	0	3	3
31-35	37	42	3	4	1	1	13	9
36-40	30	22	15	11	3	5	19	11
41-45	11	9	18	15	14	9	15	13
46-50	6	4	19	16	13	14	14	14
51-55	3	2	18	17	21	22	14	16
56-60	2	1	16	21	29	25	12	19
61-65	0	0	9	13	16	17	7	12
66-70	0	0	2	3	3	7	2	3
71-75	0	0	0	0	0	0	0	0
All	100	100	100	100	100	100	100	100

**Table 4. Number of children, by rank and gender, %.**

Number of children	Assistant professors		Associate professors		Full professors		All		Number of observations	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
0	34	45	24	17	22	15	27	21	381	992
1	25	21	20	15	21	13	22	16	306	750
2	30	25	38	42	40	44	36	40	505	1918
3	10	6	14	20	9	19	13	18	179	849
4	1	2	3	5	5	7	2	5	33	231
>4	0	0	1	1	2	2	0	1	8	65

It is an ongoing discussion, whether it is possible to have both a successful academic career *and* children and whether it is easier for men than women. In Table 4 the distribution of the number of children shows some remarkable gender differences. It appears that overall more women than men have no children or one child, whereas men are more likely to have 2 children or more. When the rank specific distributions are examined, this picture is most clear for the full professor level, as 72% of the male full professors have 2 children or more, whereas this is the case for 57% of the female full professors. The only rank where this picture is reversed is in the case of assistant professors. This may be explained by the fact that women tend to have children when they are younger than males are.

**Table 5. Marital status by rank and gender, %.**

Marital status	Assistant professors		Associate professors		Full professors		All		Number of observations	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Single (nevermarried)	17	23	14	8	20	4	16	9	219	441
Cohabiting	21	23	8	7	5	5	12	9	167	440
Married	56	52	67	80	60	86	63	77	896	3705
Divorced	5	2	10	5	15	4	9	5	130	219

Also in the case of marital status, notable gender differences are found at all ranks. At the associate- and full professor levels significantly more women than males are living single (never-married)!!! Furthermore, the share of divorced women (that are not engaged in a new relationship) is more than double the share of divorced men. This can be considered strong evidence that combining an academic career with family and partner is not an easy task for women, whereas it appears that their male colleagues are more successful in this respect. As this evidence is only descriptive, no causal conclusions can be drawn, however it may be possible that some husbands find it hard to live with career oriented women and hence these are more likely to divorce. On the other hand, it may be that very career oriented women choose to remain single and not have children in order to be able to pursue their academic goals.

One way to summarize the likelihood of being successful both in the academic life and in the family life is simply to count the persons that “have it all”. We define “having it all” as being full professor, have at least one child, having a partner (cohabiting or married) and never having divorced. The number of women in the sample fulfilling these criteria is 52 (3.7%) and 758 (15.8%) for men. As experience is crucial for obtaining a full professorship and age for fertility, restricting the sample to individuals aged more than 45 years changes the picture slightly the resulting likelihood of “having it all” for women is then 6.5% and 21% for men. Hence men have a *three times higher* probability of succeeding in these respects.

**Table 6. Spouse education by rank and gender, %.**

	Assistant professors		Associate professors		Full professors		All	
	Women	Men	Women	Men	Women	Men	Women	Men
Spouse education								
Short theoretical	13	10	8	14	1	15	9	14
Medium theoretical	17	37	11	38	6	33	12	37
Long theoretical	70	53	82	48	93	52	79	49

Another potential important predictor of achievement in the academic profession related to family matters is the educational attainment of the spouse (for those not single). In table 6 we find that women at the higher ranks are very likely to be in a relationship with a man that having a long theoretical education. This tendency is not so strong for men where only half of the spouses have a long theoretical education. This may confirm that men to a higher extent than women have had the possibility to obtain a high ranking position because their spouses do not pursue a career. On the other hand it seems to be the case that women live in double career families. However, also in this case some age effects may play a role, as high education for women have become more normal only for the later cohorts.

## **5 Estimation results**

In order to investigate the distribution across positions more closely, a series of ordered probit models are estimated. The dependent variable is the rank of the individual, observed two times per year (April and November). The models are estimated both jointly for all individuals and afterwards the sample is split and the models estimated separately for men and women.

(Table 9 here)

In table 9 the estimation results from the ordered probit model for the full sample are presented. In model 1 no gender information is included. The results show that the length of education has a negative effect, which may reflect that older cohorts of academic staff did not have a PhD-degree, and that did not have implications for their possibility to advance. Not surprisingly age has a significantly positive effect (up to the age of 80 years) and so does experience (up to experience equal to 30 years). The tenure inside the university is insignificant, but this is mainly explained by the fact that it is a censored variable only accumulated during the very short period of observation.

The effects of the family related variables appear to have considerable effects on the achievement of rank. The effect of having children aged 0-17 is positive, adding 0.0371 pr child. However, if one or

more of the children are younger than three years old, some of this effect is counteracted, though not significantly. The incidence of recently having taken parental leave reduces the probability of having obtained a higher position, but the duration of the leave has no further effect. Marital status has no significant effect on the distribution across ranks.

Another important predictor is the citizenship of the individual. As the coefficient to the variable indicating that the individual is an immigrant is significantly positive and relatively large, we find strong evidence that country of origin matters, and in this case it seems that people from outside the Danish labour market have a better chance of being promoted into top positions in Danish universities.

In the models, information on the spouses is also included. It appears that the occupation of the spouse has no effect on the obtained rank, whereas individuals living with a partner also having obtained a university degree has a higher probability of having obtained a high rank. This may be explained by a good common understanding on how the academic profession works and what is demanded.

In the models we also control for field of research and university. The reference field of research is humanities and as all the coefficients are significantly positive, it is clear that it is easier to obtain a higher rank in all other sciences. Furthermore, there are significant differences across university (University of Copenhagen is the reference category). Aarhus, Aalborg and Roskilde all comes out better than the rest. This may partly depend on different hiring policies and different economic possibilities hiring.

The only difference between model 1 and model 2 is the inclusion of a gender indicator. The coefficient of the indicator for women is very significant and negative, i.e. the women have a significantly lower probability for having high ranking positions than men do. This confirms the descriptive evidence presented in the previous sections. Whether this can be attributed to

discrimination or it rather reflects that the model is too strictly specified cannot be concluded from these estimations alone.

(Table 10 here)

In table 10 the model is presented where all the coefficients are allowed to vary depending on gender. The general impression is that this modification of the model leaves most of the previous conclusions unchanged. However, there is a few differences worth noticing. First, having a partner is of larger importance for the women than the men, as the indicator for being married is significantly positive (and also the indicator for cohabitation is significant at the 10% level). Furthermore, the occupational status has a very strong effect on the obtained rank of the women, whereas this has *no* effect for men! Hence, women in the academic profession having a partner with an occupation different from skilled (reference category) and unskilled have a disadvantage in terms of the probability of obtaining a high rank, whereas the occupation of their male does not play a role.

Regarding university differences we find that women employed at University of Aarhus and University of Southern Denmark have significantly higher positions than women employed at University of Copenhagen (reference category), whereas males do better at University of Aalborg.

### ***Transition models***

In this section the likelihood of promotion is investigated. First, the promotion from assistant professor to associate professor (hence obtaining tenure), then the promotion to full professor is investigated (still to be done, problems with sample sizes and to few promotions in the case of women).

The models are estimated by the use of simple probit models. The model for the transition from a given rank to higher rank can be written as:

$$P(R_{it} = 2 | R_{it-1} = 1, X_{it-1}) = \Phi(\beta X_{it-1})$$

Where R denotes the rank of the individual (R=1,2,3),  $X_{it-1}$  is a matrix of individual specific covariates measured at time t-1, and  $\Phi$  is the cumulative normal distribution. In order to be included in the estimations only individuals must be observed two subsequent years.

This model is estimated for the full population of associated professors and separately by gender.

(Table 11 here)

In Table 11 the results of the transition models for the full sample of assistant professors are presented. Age and experience are important predictors of promotion, as expected. The quadratic terms show that the profiles peak at 41 years of age and 16 years of experience. In this specification, the individuals' own parental leave do not come out significant, whereas each child reduces the probability of promotion with 3.6%. However, the effect of having a child aged 0-2 apparently counteracts this effect. Again immigrant status increases the likelihood of obtaining promotion to associate professor. The only source of spouse information attributing to explain the promotion probability is having an unskilled partner, increasing the likelihood with 41 percentage point!!

In the last column, the results of some joint tests of coefficients are presented.

According to this model, being a woman reduces the promotion probability by 7 percentage points, hence there appears to be some gender bias in promotion rates. Therefore, the model is estimated separately by gender, see Table 12.

(Table 12 here)

The estimates from the model for men tends to give the same qualitative results as the pooled model for most of the variables. However, it appears that having small children (aged 0-2) has no significant impact on the promotion probability for men, while each child (aged 0-17) has a negative effect of 3.8 percentage points. The other notable difference is that males married to an associate professor have significantly higher probabilities of getting tenure, and this effect is very

large (0.43). Furthermore, the field and the university specific indicators do not come out significant, hence none of these factors affect the promotion probability.

In the case of women, there is some notable differences. One difference is that the experience profile is no longer quadratic but linear.

For the child measures it is seen, that having been on parental leave (i.e. having given birth at least once) reduces the probability of promotion by 9.3 percentage points. The duration of parental leave taken, however, has no effect. Neither has the number of children aged 0-17 (in contrast to men). What may seem counterintuitive is the relative large positive effect of having a child aged 0-2 years of age, as one might expect that having responsibility for a small child may affect the time and flexibility of (especially) the mothers.

The variables of civil status had no effect in the case of men, however, in the case of women, being divorced (compared to being married) significantly reduces the likelihood of promotion. This may be explained by the fact that custody of children to a large extent is given to mothers (this should be formally tested by introducing cross- terms with the child indicators). As in the joint model for the genders, the women having an unskilled spouse have a significantly higher probability of getting promoted.

Women face different likelihoods of promotion depending on their field of research. In the natural and social sciences the probability of promotion into associate professors are higher than in the humanities (though the coefficients are only significantly different from zero at the 10% level of significance), whereas the women in technological sciences are less likely to obtain tenure. Also the university indicators show that there is significant differences across universities and especially women from the University of Aalborg have lower promotion probabilities.

In sum, the findings of the transition models (promotion from assistant to associate professor) show significant differences in the factors affecting the probability of getting promoted across genders.

Especially the effects of children, marital status and the occupations of the spouse differ significantly. Hence, the factors of the private lives of the women tend to influence their success in academia to a much larger extent than in the case of men.

## **6 Conclusion**

In this paper the distribution across positions within the academic profession is investigated using data for all academic staff at the Danish universities. Special focus is given to the fact that women constitute a small fraction of the individuals employed in Academia, namely 22%. Most of these are employed in the lower ranking positions and only 8% of the full professors are female. Often differences in family formation and responsibilities within the family are used to explain this. Regression analysis (ordered models) shows that most of the estimated effects are quite similar across gender, also the (relative large) negative effects of having taken parental leave. However, the marital status and spouse information adds significant knowledge to the gender differences as women married to salaried workers have more difficulties in obtaining a high ranking position than women married to skilled and unskilled workers. This latter result also applies in the promotion models of the transitions into associate professorship. As the occupational attainment of the partners of their male colleagues does not have as significant an impact on the ranking, this may be a key determinant for the success of female faculty. Also the field of science and the distribution across the Danish universities matters for the probability of obtaining a higher ranking position, but according to the transition models, only for female assistant professors.

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**Table 9. Estimation results, ordered probit models.**

	Model 1		Model 2	
	Coefficient	Std. Dev.	Coefficient	Std. Dev.
Woman			<b>-0.5381</b>	<b>0.0393</b>
Length of education	<b>-0.0230</b>	<b>0.0091</b>	<b>-0.0216</b>	<b>0.0091</b>
Education not observed	<b>-0.5222</b>	<b>0.2270</b>	<b>-0.5194</b>	<b>0.2269</b>
Age	<b>0.3225</b>	<b>0.0202</b>	<b>0.3271</b>	<b>0.0203</b>
Age squared	<b>-0.0026</b>	<b>0.0002</b>	<b>-0.0026</b>	<b>0.0002</b>
Tenure	0.0017	0.0028	0.0008	0.0028
Experience	<b>0.0594</b>	<b>0.0079</b>	<b>0.0622</b>	<b>0.0080</b>
Experience squared	<b>-0.0014</b>	<b>0.0002</b>	<b>-0.0015</b>	<b>0.0002</b>
Parental leave (0/1)	<b>-0.2606</b>	<b>0.0477</b>	<b>-0.2427</b>	<b>0.0483</b>
Duration of parental leave (days)	-0.0007	0.0018	0.0008	0.0018
Parental leave squared	0.0000	0.0000	0.0000	0.0000
# of children aged 0-17	<b>0.0371</b>	<b>0.0188</b>	0.0354	0.0189
Children aged 0-2 (0/1)	-0.0340	0.0359	-0.0337	0.0361
Married	0.5580	0.3837	0.5546	0.3730
Cohabiting	0.3524	0.3852	0.3512	0.3745
Immigrant	<b>0.2637</b>	<b>0.0526</b>	<b>0.2720</b>	<b>0.0531</b>
<b>Spouse information</b>				
Higher salaried worker	-0.2641	0.3920	-0.3491	0.3820
Salaried worker	-0.2251	0.3925	-0.3525	0.3827
Lower salaried worker	-0.1846	0.3936	-0.3252	0.3837
Unskilled	-0.1758	0.1927	-0.1186	0.1981
Other	-0.3424	0.3854	-0.4157	0.3748
Medium length theoretical education	-0.0057	0.0624	-0.0425	0.0630
University degree	<b>0.1282</b>	<b>0.0630</b>	<b>0.1594</b>	<b>0.0634</b>
Education not observed	0.0028	0.0716	0.0050	0.0723
Publicly employed	0.0396	0.0418	0.0051	0.0421
No information on sector	<b>0.2301</b>	<b>0.0788</b>	<b>0.1699</b>	<b>0.0807</b>
<b>Field of research</b>				
Natural science	<b>0.3963</b>	<b>0.0487</b>	<b>0.3059</b>	<b>0.0495</b>
Social science	<b>0.5249</b>	<b>0.0616</b>	<b>0.4740</b>	<b>0.0622</b>
Agricultural science	<b>0.5275</b>	<b>0.0753</b>	<b>0.4969</b>	<b>0.0751</b>
Health science	<b>0.3191</b>	<b>0.0504</b>	<b>0.2892</b>	<b>0.0507</b>
Technological science	<b>0.5205</b>	<b>0.0655</b>	<b>0.4104</b>	<b>0.0662</b>
<b>University</b>				
University of Aalborg	<b>0.2022</b>	<b>0.0623</b>	<b>0.1848</b>	<b>0.0628</b>
University of Aarhus	<b>0.1363</b>	<b>0.0434</b>	<b>0.1046</b>	<b>0.0437</b>
Copenhagen Business School	0.0194	0.1031	-0.0086	0.1060
Danish Pharmaceutical University	-0.0446	0.1214	0.0910	0.1210
Aarhus School of Business	-0.1126	0.0999	-0.0852	0.1027
University of Roskilde	<b>0.1941</b>	<b>0.0788</b>	0.1541	0.0794
University of Southern Denmark	0.0904	0.0534	0.0766	0.0539
Year 2000	-0.0232	0.0130	<b>-0.0311</b>	<b>0.0131</b>
Year 2001	0.0056	0.0096	0.0023	0.0096
Cut 1	9.0846	0.4798	8.8872	0.4823
Cut 2	11.7682	0.4880	11.6305	0.4913

**Table 10. Estimation results, ordered probit models, by gender.**

	Women		Men	
	Coefficient	Std. Dev.	Coefficient	Std. Dev.
Length of education	-0.0140	0.0212	<b>-0.0234</b>	<b>0.0101</b>
Education not observed	<b>-0.8757</b>	<b>0.3773</b>	-0.4200	0.2669
Age	<b>0.3551</b>	<b>0.0467</b>	<b>0.3273</b>	<b>0.0229</b>
Age squared	<b>-0.0031</b>	<b>0.0005</b>	<b>-0.0026</b>	<b>0.0002</b>
Tenure	0.0109	0.0067	-0.0013	0.0031
Experience	<b>0.0865</b>	<b>0.0185</b>	<b>0.0520</b>	<b>0.0089</b>
Experience squared	<b>-0.0014</b>	<b>0.0005</b>	<b>-0.0013</b>	<b>0.0002</b>
Parental leave (0/1)	<b>-0.2864</b>	<b>0.0900</b>	<b>-0.2824</b>	<b>0.0633</b>
Duration of parental leave (days)	-0.0007	0.0021	0.0124	0.0062
Parental leave squared	0.0000	0.0000	-0.0001	0.0001
# of children aged 0-17	-0.0048	0.0403	0.0423	0.0217
Children aged 0-2 (0/1)	0.0233	0.0787	-0.0684	0.0413
Married	<b>1.1137</b>	<b>0.5557</b>	0.3523	0.4367
Cohabiting	0.9483	0.5611	0.1457	0.4383
Immigrant	<b>0.4094</b>	<b>0.1133</b>	<b>0.2379</b>	<b>0.0605</b>
<b>Spouse information</b>				
Higher salaried worker	<b>-1.3121</b>	<b>0.6188</b>	-0.0282	0.0768
Salaried worker	-1.0819	0.6241	-0.0682	0.0800
Lower salaried worker	<b>-1.4454</b>	<b>0.6392</b>		
Unskilled	-0.0537	0.2835	-0.1976	0.2774
Other	-1.0436	0.5758	-0.1585	0.1012
Short theoretical education	0.2066	0.1657		
Medium length theoretical education			-0.0376	0.0679
University degree	<b>0.4422</b>	<b>0.1203</b>	<b>0.1446</b>	<b>0.0705</b>
Education not observed	<b>0.3977</b>	<b>0.1708</b>	-0.0380	0.0789
Publicly employed	0.0928	0.0898	-0.0291	0.0487
No information on sector	-0.1791	0.2131	<b>0.1968</b>	<b>0.0862</b>
<b>Field of Science</b>				
Natural science	<b>0.3660</b>	<b>0.1075</b>	<b>0.3033</b>	<b>0.0569</b>
Social science	<b>0.4467</b>	<b>0.1204</b>	<b>0.5138</b>	<b>0.0748</b>
Agricultural science	<b>0.4087</b>	<b>0.1461</b>	<b>0.5481</b>	<b>0.0903</b>
Health science	<b>0.2278</b>	<b>0.1081</b>	<b>0.3212</b>	<b>0.0595</b>
Technological science	<b>0.4508</b>	<b>0.1677</b>	<b>0.5114</b>	<b>0.1633</b>
<b>University</b>				
University of Aalborg	0.1212	0.1338	<b>0.1875</b>	<b>0.0708</b>
University of Aarhus	<b>0.2334</b>	<b>0.0970</b>	0.0668	0.0489
Copenhagen Business School	0.4576	0.2530	-0.1243	0.1160
Technical University of Denmark	-0.0792	0.2224	-0.0914	0.1642
Aarhus School of Business	0.2468	0.1585	-0.2279	0.1322
University of Roskilde	0.2470	0.1536	0.1324	0.0934
University of Southern Denmark	<b>0.2704</b>	<b>0.1153</b>	0.0220	0.0617
Year 2000	-0.0443	0.0355	-0.0276	0.0140
Year 2001	0.0051	0.0268	-0.0004	0.0101
Cut 1	10.1766	1.0793	8.8730	0.6880
Cut 2	13.1241	1.0895	11.5840	0.6975

	Humanistic		Natural Science		Social Science		Agriculture		Health Science		Technical Science	
	Coefficient	Std. Dev.	Coefficient	Std. Dev.	Coefficient	Std. Dev.	Coefficient	Std. Dev.	Coefficient	Std. Dev.	Coefficient	Std. Dev.
Woman	<b>-0.515</b>	<b>0.087</b>	<b>-0.533</b>	<b>0.090</b>	<b>-0.412</b>	<b>0.098</b>	<b>-0.617</b>	<b>0.132</b>	<b>-0.620</b>	<b>0.102</b>	<b>-0.855</b>	<b>0.162</b>
Length of education	<b>-0.050</b>	<b>0.021</b>	-0.002	0.016	-0.028	0.021	-0.071	0.046	0.006	0.026	-0.061	0.032
Education not observed	<b>-1.306</b>	<b>0.262</b>	0.317	0.348	-0.952	0.814	-0.273	0.553	<b>-0.665</b>	<b>0.206</b>	<b>-1.937</b>	<b>0.421</b>
Age	<b>0.306</b>	<b>0.054</b>	<b>0.375</b>	<b>0.040</b>	<b>0.318</b>	<b>0.048</b>	<b>0.356</b>	<b>0.079</b>	<b>0.409</b>	<b>0.054</b>	<b>0.417</b>	<b>0.072</b>
Age squared	<b>-0.002</b>	<b>0.001</b>	<b>-0.003</b>	<b>0.000</b>	<b>-0.003</b>	<b>0.000</b>	<b>-0.003</b>	<b>0.001</b>	<b>-0.003</b>	<b>0.001</b>	<b>-0.003</b>	<b>0.001</b>
Tenure	0.004	0.008	-0.003	0.006	<b>-0.020</b>	<b>0.008</b>	-0.006	0.012	-0.013	0.008	-0.001	0.007
Experience	<b>0.066</b>	<b>0.020</b>	<b>0.073</b>	<b>0.016</b>	<b>0.053</b>	<b>0.018</b>	<b>0.106</b>	<b>0.030</b>	0.024	0.021	<b>0.065</b>	<b>0.027</b>
Experience squared	-0.001	0.000	<b>-0.002</b>	<b>0.000</b>	<b>-0.001</b>	<b>0.000</b>	<b>-0.002</b>	<b>0.001</b>	-0.001	0.000	<b>-0.002</b>	<b>0.001</b>
Parental leave (0/1)	<b>-0.470</b>	<b>0.109</b>	<b>-0.416</b>	<b>0.101</b>	-0.130	0.117	-0.058	0.159	-0.143	0.116	-0.022	0.261
Duration of parental leave (days)	<b>0.012</b>	<b>0.005</b>	<b>0.008</b>	<b>0.004</b>	-0.002	0.004	-0.001	0.006	-0.007	0.006	-0.007	0.005
Parental leave squared	<b>0.000</b>	<b>0.000</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
# of children aged 0-17	-0.062	0.047	<b>0.103</b>	<b>0.040</b>	-0.017	0.042	0.023	0.064	<b>0.092</b>	<b>0.045</b>	0.081	0.067
Children aged 0-2 (0/1)	-0.053	0.086	0.023	0.079	0.084	0.086	0.111	0.133	-0.145	0.087	-0.132	0.125
Married	<b>1.014</b>	<b>0.387</b>	1.099	0.684	-0.109	1.081	0.033	0.148	<b>-1.861</b>	<b>0.687</b>	0.002	0.166
Cohabiting	<b>0.787</b>	<b>0.394</b>	0.760	0.686	-0.341	1.083			<b>-1.959</b>	<b>0.694</b>		
Immigrant	<b>0.722</b>	<b>0.123</b>	<b>0.271</b>	<b>0.101</b>	0.144	0.152	0.098	0.197	0.064	0.144	0.027	0.167
<b>Spouse information</b>												
Higher salaried worker	<b>-1.408</b>	<b>0.458</b>	-0.631	0.699	0.496	1.087	-0.238	0.379	<b>1.990</b>	<b>0.764</b>	0.554	0.336
Salaried worker	<b>-1.329</b>	<b>0.472</b>	-0.567	0.699	0.685	1.094	0.079	0.393	<b>1.955</b>	<b>0.765</b>	0.005	0.330
Lower salaried worker	<b>-1.439</b>	<b>0.470</b>	-0.683	0.705	0.663	1.099	0.203	0.439	<b>2.163</b>	<b>0.762</b>	0.223	0.346
Unskilled	-0.404	0.306	0.320	0.391	0.560	0.536	-0.163	0.397	-0.206	0.339	<b>-1.936</b>	<b>0.347</b>
Other	<b>-1.161</b>	<b>0.417</b>	-0.939	0.687	0.356	1.080	-0.048	0.302	<b>1.953</b>	<b>0.709</b>	0.354	0.251
Short theoretical education	0.116	0.178			-0.241	0.177	0.024	0.287			0.072	0.196
Medium theoretical education			-0.111	0.124	-0.211	0.148	0.088	0.279	-0.058	0.136	0.130	0.189
University degree	0.169	0.114	0.097	0.127	-0.083	0.137	<b>0.550</b>	<b>0.267</b>	0.234	0.139	0.143	0.182
Education not observed	-0.071	0.163	-0.148	0.138					0.070	0.163		
Publicly employed	0.042	0.108	0.022	0.085	0.121	0.117	0.080	0.129	0.008	0.100	-0.057	0.129
No information on sector	-0.295	0.193	<b>0.538</b>	<b>0.149</b>	0.229	0.190	0.291	0.226	0.147	0.242	0.058	0.230
<b>University</b>												
University of Aalborg	0.248	0.174	<b>0.356</b>	<b>0.086</b>	<b>-0.494</b>	<b>0.138</b>						

University of Aarhus	<b>0.238</b>	<b>0.095</b>	0.041	0.081	0.018	0.128			0.024	0.082		
Copenhagen Business School	<b>-0.691</b>	<b>0.138</b>			-0.247	0.126						
Aarhus School of Business	0.104	0.156			<b>-0.300</b>	<b>0.144</b>						
University of Southern Denmark	0.147	0.115	0.135	0.114	-0.098	0.134			-0.029	0.099		
Danish Pharmaceutical University											0.089	0.165
Year 2000	-0.005	0.039	-0.018	0.026	-0.064	0.035	0.002	0.059	-0.003	0.029	<b>-0.161</b>	<b>0.068</b>
Year 2001	-0.012	0.027	<b>0.048</b>	<b>0.019</b>	-0.021	0.024	-0.005	0.042	0.015	0.022	<b>-0.074</b>	<b>0.033</b>
Cut 1	7.615	1.272	10.257	0.918	7.924	1.097	9.223	1.800	10.630	1.285	10.225	1.651
Cut 2	10.754	1.276	13.023	0.947	10.301	1.121	11.703	1.809	13.622	1.312	13.568	1.692

Table 11. Transition from assistant professor to associate professor, probit model, all individuals.

	All individuals		
	Marg. Eff.	Std. Error	prob>chi2
Woman	<b>-0.0702</b>	<b>0.0222</b>	
Age	<b>0.0660</b>	<b>0.0164</b>	
Age squared	<b>-0.0008</b>	<b>0.0002</b>	
Experience	<b>0.0264</b>	<b>0.0065</b>	
Experience squared	<b>-0.0008</b>	<b>0.0003</b>	
Tenure	<b>0.0177</b>	<b>0.0039</b>	
Parental leave (0/1)	0.0041	0.0285	\ 0.048
Parental leave (days)	-0.0001	0.0002	
Parental leave squared	0.0000	0.0000	
# of children aged 0-17	<b>-0.0355</b>	<b>0.0131</b>	/
Children aged 0-2 (0/1)	0.0474	0.0246	/
Single	-0.0233	0.0485	
Cohabiting	-0.0159	0.0503	
Divorced	-0.0227	0.0579	
Immigrant	0.0545	0.0307	
<b>Spouse information</b>			
Parental leave (0/1)	0.0134	0.0299	\ 0.028
Parental leave (days)	0.0000	0.0001	
Parental leave squared	0.0000	0.0000	
Assistant professor	0.0153	0.1009	\ 0.482
Associate professor	0.1118	0.1132	
Full professor	0.1404	0.1658	
Higher saleried worker	0.0419	0.0750	
Medium saleried worker	0.0411	0.0813	
Lower saleried worker	0.0501	0.0915	
Unskilled	<b>0.4104</b>	<b>0.2040</b>	
Other	0.0195	0.0589	
Public sector	0.0092	0.0251	\ 0.59
Medium length theoretical education	-0.0475	0.0339	
University degree	-0.0345	0.0374	
Education not observed	-0.0435	0.0393	/
<b>Field of research</b>			
Natural science	0.0662	0.0340	\ 0.17
Social science	0.0391	0.0390	
Agricultural science			
Health science	-0.0203	0.0334	
Tecnological science	-0.0096	0.0709	
<b>University</b>			
University of Aalborg	-0.0335	0.0280	\ 0.751
University of Aarhus	0.0251	0.0316	
Copenhagen Business School	-0.0121	0.0523	
Danish Technological University	0.0355	0.0950	
Danish Pharmaceutical Univeristy			
Aarhus School of Business	0.0471	0.0734	
Agricultural and Veteinary University	-0.0202	0.0393	
Roskilde University	-0.0155	0.0386	
University of Southern Denmark	-0.0229	0.0321	/
Year 2000	0.0336	0.0173	
Log likelihood	-778.077		
N	1840		

Table 12. Transition from assistant professor to associate professor, probit model, by gender.

	Men			Women		
	Marg. Eff.	Std. Error	prob>chi2	Marg. Eff.	Std. Error	prob>chi2
<b>Woman</b>						
Age	<b>0.0712</b>	<b>0.0250</b>		<b>0.0695</b>	<b>0.0203</b>	
Age squared	<b>-0.0008</b>	<b>0.0003</b>		<b>-0.0008</b>	<b>0.0002</b>	
Experience	<b>0.0300</b>	<b>0.0092</b>		<b>0.0209</b>	<b>0.0084</b>	
Experience squared	<b>-0.0010</b>	<b>0.0004</b>		-0.0005	0.0004	
Tenure	<b>0.0203</b>	<b>0.0052</b>		<b>0.0183</b>	<b>0.0053</b>	
Parental leave (0/1)	0.0604	0.0448	0.128	-0.0939	0.0507	0.017
Parental leave (days)	-0.0016	0.0011		0.0002	0.0003	
Parental leave squared	0.0000	0.0000		0.0000	0.0000	
# of children aged 0-17	<b>-0.0389</b>	<b>0.0186</b>		-0.0249	0.0158	
Children aged 0-2 (0/1)	0.0441	0.0337		<b>0.0761</b>	<b>0.0344</b>	
Single	0.0221	0.0835		-0.0402	0.0437	
Cohabiting	-0.0760	0.0718		0.0250	0.0585	
Divorced	0.0831	0.1283		<b>-0.0790</b>	<b>0.0221</b>	
Immigrant	0.0591	0.0425		0.0699	0.0445	
<b>Spouse information</b>						
Parental leave (0/1)	-0.0030	0.0502	0.032	0.0379	0.0336	0.033
Parental leave (days)	-0.0001			0.0000	0.0003	
Parental leave squared	0.0000	0.0000		0.0000	0.0000	
Assistant professor	0.1037	0.1812	0.424	<b>-0.0824</b>	<b>0.0242</b>	0.29
Associate professor	<i>0.4351</i>	<i>0.2427</i>		-0.0522	0.0444	
Full professor						
Higher saleried worker	0.0534	0.1166		-0.0360	0.0653	
Medium saleried worker	0.0763	0.1283		-0.0390	0.0557	
Lower saleried worker	0.0940	0.1458		-0.0495	0.0526	
Unskilled	0.3535	0.3246		<b>0.5747</b>	<b>0.2692</b>	
Other	0.0676	0.1020		-0.0803	0.0420	
Public sector	-0.0273	0.0341		0.0442	0.0356	
Medium length theoretical educa	-0.0340	0.0508	0.72	0.1011	0.0777	0.051
University degree	0.0267	0.0386		-0.0295	0.0408	
Education not observed	-0.0034	0.0477		-0.0263	0.0404	
<b>Field of research</b>						
Natural science	0.0486	0.0444	0.501	<i>0.1056</i>	<i>0.0607</i>	0.026
Social science	-0.0137	0.0495		<i>0.1277</i>	<i>0.0686</i>	
Agricultural science	-0.0626	0.0519		0.0294	0.0574	
Health science	-0.0216	0.0470		-0.0081	0.0427	
Tecnological science	-0.0504	0.0924		<b>-0.0784</b>	<b>0.0280</b>	
<b>University</b>						
University of Aalborg	-0.0193	0.0399	0.966	<b>-0.0691</b>	<b>0.0232</b>	0.016
University of Aarhus	0.0009	0.0413		0.0667	0.0491	
Copenhagen Business School	-0.0088	0.0722		0.0734	0.0957	
Danish Technological University	0.1530	0.1643				
Danish Pharmaceutical Univeristy				0.2727	0.2422	
Aarhus School of Business	-0.0550	0.0716		0.2274	0.1428	
Agricultural and Veteinary						
Roskilde University	-0.0067	0.0616		-0.0117	0.0411	
University of Southern Denmark	-0.0127	0.0466	-0.0467	0.0321		
Year 2000	<i>0.0455</i>	<i>0.0239</i>		-0.0062	0.0210	
Log likelihood	-504.66			-242.5270		
N	1110			730		

