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Stratification in the Medical Profession: Non-Western Physicians in Norway

Abstract: Previous studies of internal stratification in medicine suggest that non-White foreign-trained physicians fill the bottom level of the specialist hierarchy. However, in this study we use administrative registers for majority and non-Western physicians in Norway and find that non-Western physicians acquire specialisation in the same volume as majority colleagues, are equally likely to enter several of the high prestige specialties and are not delayed in their careers. The equal distribution is discussed as a consequence of strong professional closure, bureaucratisation of hiring procedures and hospital organisation and governmental influence. Identified patterns, however, are not unequivocal. First, immigrant physicians have a significantly higher chance of becoming specialists compared to majority physicians. Second, foreign-educated non-Western physicians have a significantly lower likelihood of specialising in surgery fields. The exception from the overall equality may result from exclusionary practices previously identified in surgery, but it could also result from differences in motivation.

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An important characteristic of professional occupations which separates them from other high-skilled work is the degree of control that they have over specific market segments. To explain how professions have managed to control service supply, and even monopolize it, scholars in the sociology of professions have used closure perspectives. According to these perspectives, a crucial feature of closure is the definition of membership and the criteria which are set for those who seek to become a member. Training credential is an essential strategy employed by professions in their efforts to achieve and maintain occupational closure, and consequently the credential is instilled as the qualifier that separates the insiders from the outsiders (Parkin, 1979; Freidson, 2001). Thus the occupational group can ensure its monopolized advantages to the group by way of competition or by regulated and rationed access.

Yet situations can arise whereby not all members of a profession have equal access to resources and positions within the market shelter. 'Elites' within professions can control a disproportionate share of the resources, as a result of which aspiring professionals experience disadvantage in terms of gaining access to prestigious positions within the occupation (Hansen, 2001a; Leicht and Fennell, 2001; Tomaskovic-Devey, 1993; Riska, 2001; Carter, 2003). Research on women's

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entry into medicine, for instance, has documented that women are represented across fewer specialties than men, and that women are especially underrepresented in surgical specialties, internal medicine and any branch specialty (Gjerberg 2001; Gjerberg 2002; Miller and Clark 2008), although newer cohorts of women are shown to choose specialties that are more in line with those of men (Gjerberg, 2001).

But whereas terms and conditions for women's integration has attracted much attention, studies on foreign physicians' integration are scarce and results are inconclusive (Raghuram and Kofman 2002). In the wake of the feminization-wave in medicine, migration and the freedom of movement within the European Economic Area (EEA) is contributing a more ethnic diverse profile of the profession. At the turn of the 21st century, 18 per cent of physicians working in OECD-countries were foreign-born. In addition to those migrating physicians, ethnic minorities are overrepresented in medical schools across Europe (Goldacre, Davidson et al. 2003). This constitutes a demographic change of the profession parallel to the feminization, but one which is less studied.

In this article, we explore non-Western physicians' career trajectories in the Norwegian labour market. More precisely, we investigate the extent to which these physicians pursue specialisations and which medical specialties they enter compared to their majority colleagues. Whether they specialize, and what specialty they enter, has a significant impact on their clinical career. Being a specialist not only broadens the spectrum of available positions; it can also yield higher incomes as it conveys the right to charge specialist rates, and in some instances specialists are placed higher on the salary scale. Although it may be difficult to chisel a prestige hierarchy, there exists a fairly uniform idea of which specialties are the most and least prestigious. Surgery, internal medicine and anaesthesiology are at the very top while psychiatry and general practice are low in esteem (Rosoff and Leone 1991; Norredam and Album 2007; Creed, Searle et al. 2010).

Previous studies suggest that although immigrant physicians often aspire to enter highly prestigious medical fields, they tend to fill the bottom level of the medical hierarchy. A study by Goldacre et al. (2003) showed that the main divergences between non-White and White physicians' fields of practice in Britain were determined by ethnicity and country of training. Whereas non-White, United Kingdom-trained physicians were evenly dispersed across specialties, non-White, foreign-trained physicians were overrepresented in low prestige specialties (e.g., geriatric medicine, psychiatry and learning disabilities) and underrepresented in prestigious fields (e.g., general medicine and general surgery). In the British National Health Service (NHS), foreign physicians are overrepresented in staff positions that lead to no further qualifications (Raghuram & Kofman, 2002). Furthermore, amongst qualified specialists, foreigners more often fill associate specialist posts, not consultant posts. In addition, they are more at risk for unemployment in the United Kingdom compared to their home country (Kangasniemi et al., 2007). Similar results have been reported regarding the integration of former Soviet physicians in Israel (Bernstein & Shuval, 1998, 1999; Friedberg, 2001). Thus, a more difficult labour market exists for foreign physicians.

However, previous studies mostly stem from and reflect particular features of the British and Israelian context. The United Kingdom is a popular destination for postgraduate training because of a deficiency of doctors and the widespread use of

English as a second language (Nicholas, 2004). Israel is also a special case as the mass migration of former Soviet Jews to Israel in the 1990s swamped the market for physicians. The Norwegian context, we argue, provides a different and compelling case; for several reasons. First, although Norway is comparable to Britain in terms of an increased reliance on the recruitment of foreign physicians and specialists (Jakubowski & Hess, 2004), the language barrier facilitates migration from other Scandinavian countries. Second, it ranks high on measures of gender equality, and the egalitarian orientation is continued with regard to ethnicity and mandatory diversity policy. Although the underemployment of academically trained non-Western immigrants in Norway is commonplace (Henriksen, 2008; Villund, 2008; Støren & Wiers-Jenssen, 2010), research has revealed that non-Western immigrant health professionals have a reduced risk for unemployment (Brekke, 2007; Støren, 2004) and overqualification (Villund, 2008). Moreover, both immigrant nurses (Karlsen, 2012) and immigrant physicians (Drange, 2013) have equal or higher earnings compared to majority colleagues.

The economic outlook for immigrant physicians in Norway is good, yet there is limited knowledge on career opportunities for foreign health personnel and whether immigrant professionals are given equal opportunities to specialise. In Norway, 20 % of general practitioners are of immigrant origin, and the percentage of foreign physicians in decentralised municipalities is more than twice that of central municipalities. Additionally, the increase in general practitioners who are immigrants exceeds the increase in GPs altogether (Statistics Norway, 2009). The present study is delimited to physicians who originate from Norway or non-Western regions, as physicians with citizenship and training from the European Economic Area (EEA) are part of the free exchange of labour and thus not easily captured by the data registers used. In addition, studies have revealed that the labour market performance for citizens of the European Union (EU) is generally on par with the native population (Dustmann & Frattini, 2011). We differentiate between physicians who are foreign born and foreign educated (FEA) and those who are foreign born but educated in Norway (FEN) and compare them with majority physicians educated in Norway (NEN) and majority physicians educated abroad (NEA). Comparisons along the two dimensions of nationality and country of education will allow us to investigate whether it is immigrant status, foreign education, or the combination of the two, that is decisive for the outcome in specialisation.

Access to the labour market and specialty training

Physicians educated outside Norway have differentiated access to the labour market. Those who are authorised in any other Nordic country can claim a Norwegian authorisation. Physicians educated in any other EEA country must complete an internship before claiming authorisation, unless they have full authorisation from their home country. Physicians educated outside the EEA need to apply for approval of their education, take examinations to demonstrate medical proficiency and knowledge of relevant subjects for practising in Norway and fulfil an internship requirement before receiving an authorisation. Exemptions are made for experienced physicians and specialists who can document relevant practice from their previous countries of practice. The language requirement for receiving

authorisation was abolished in 1997. There is, however, a language requirement for internship candidates (SAFH). The Norwegian Registration Authority for Health Personnel (SAFH), a government body, issues authorisations to foreign physicians but delegates to employers the responsibility of ensuring sufficient language and medical skills.

Labour market shortages – not only in Norway but also in the United States, the United Kingdom, Canada, Australia and elsewhere (Iredale, 2001) – make it necessary to recruit foreign physicians and specialists (Jakubowski & Hess, 2004). In Norway, the personnel situation has primarily been solved within the Nordic labour market and secondarily within the larger European region. This recruitment has been facilitated by harmonisation of qualifications and the linguistic similarity amongst the Nordic countries. Recruitment from third-nations (outside the EEA) has been attempted. However, this process is laborious and it is difficult to obtain authorisations for third-country nationals because these individuals are obliged to write additional exams in Norway; hence, this strategy has been mainly abandoned by the authorities (White paper 18, 2007-2008). Therefore, most non-Western physicians have independently made the decision to migrate, rather than being targeted by government-led recruitment programmes. Contrary to skilled migration in the financial sector, welfare professionals are not recruited by their current employer but use network contacts to find employment (Raghuram & Kofman, 2002). This implies that it is resourceful individuals who manage to transfer their third-country qualifications and find jobs in Norway.

Although it may be drudgery for FEA physicians to re-qualify in Norway, the time spent may be valuable. For example, they may close the gap to domestically trained physicians by becoming informed about the medical culture and the health services sector. They may establish contacts and references to further their careers. Furthermore, because internship positions are assigned by raffle, the candidates are randomly distributed throughout health-care institutions.

After receiving authorisation, physicians may commence specialty training as residents either at a hospital or in primary health care. The position must have been publicly announced as a training position, and current provisions allow institutions or departments to fund two positions per accredited specialist unless reasons suggest there be more. The training period is a minimum of 5 to 6 years and combines practical and theoretical training. The general terms regulate the minimum requirements with regard to length of training, course hours and tutoring. In addition, each specialty has specific goal descriptions and course plans that elaborate on those general terms. Physicians who have concluded their training can apply for accreditation as specialists (NDH).

Authorised physicians in Norway have six years of education and 18 months of obligatory internship. There are four medical schools in Norway and the grade point average (GPA) score for admittance is consistently high across universities. Authorised physicians can undertake postgraduate specialisation in 44 specialties in Norway, of which eight are branch specialties under internal medicine and six under general surgery. To become an accredited specialist in any of the branch specialties necessitates accreditation in the main specialty of general surgery or internal medicine (Mundal, 2007). The largest specialist groups are, in descending order, general practice, anaesthesiology, general surgery, internal medicine and psychiatry. Most specialties relate to health services in hospitals (i.e. secondary

health care). Specialties that relate to primary health care are general practice, community medicine and occupational medicine.

Integration vs. horizontal segregation in the labour market

Although most physicians today become specialists (Aasland et al., 2008), it is possible to practise medicine without specialisation. Furthermore, as mentioned, there exists a fairly uniform idea of which specialties are the most and least prestigious. As Abbot argues (1988), medical prestige tends to derive from the degree to which specialties apply core medical knowledge and the purity of professional problems, i.e. limited involvement with clients' non-medical realities. Hence, surgery, internal medicine and anaesthesiology are at the very top whereas psychiatry and general practice are generally low in prestige. This hierarchy has proved consistent across Norway (Norredam & Album, 2007), the United States (Rosoff & Leone, 1991) and Australia (Creed et al., 2010).

Given the traits of the medical labour market, one would expect that merit criteria constitutes the primary framework for employment and career advancement. The labour market is structured as an occupational internal labour market with a defined job ladder where one enters at the bottom and moves upwards, conditional on possession of advanced skills and knowledge (Althausser & Kalleberg, 1981). The system tolerates status differences amongst members that are conditioned on merit. Ideally, differentiation based on purely ascriptive characteristics has no legitimacy (Grimen, 2008).

The commitment to credentials as quintessential for career development is also strengthened by regulations from the government and professional associations. Both the internship arrangement and the requirement that all residencies are publicly announced limit employers' chances of exercising discretion in hiring. Regulations might curtail network recruitment and sponsorship from impinging on the odds of ethnic minorities gaining positions, which is important as employers' decisional power contributes most to labour market segmentation (Cohn, 2000). Furthermore, Parliament suggestions and decisions regarding the authorization of foreign physicians as well the structure and content in specialty training might also impinge in different ways on the specialists' career development. For instance, The Norwegian Directorate of Health (executive agency subordinate to the Norwegian Ministry of Health and Care Services) has for several years suggested ways of clarifying and improving the quality and predictability of application assessments and authorization requirement (NDH 2009). The Parliament has also several times suggested changes in the content and organization of specialty training and stressed the need for an increased political control over the authorization and licensing of medical specialists. In 2011, by Parliament decision (Ot.prp.nr 83), the Norwegian Directorate of Health also overtook the formal responsibility for the accreditation of specialist, previously delegated to the Norwegian Medical Association who currently plays an important advisory role. A main argument for the decision of transferring responsibility was increased political and public control. Empirical research also indicate that, despite expectations of less political involvement and stronger autonomy and discretion for managers and boards as a result of the 2002 Hospital reform, the involvement and influence of the Norwegian Parliament on hospital matters in general has increased considerably

during the last couple of years (Rommetvedt and Opedal 2005; Lægreid, Opedal and Stigen 2005).

In addition, the strong regulation of the labour market has yielded nearly full employment during the period of time under study. In contrast to former Soviet physicians in Israel who were supposed to integrate into a saturated market (Bernstein & Shuval, 1998; Shuval, 1995), the deficiency in the Norwegian market, also of specialists, may facilitate integration. These characteristics of the profession and the labour market should yield minor differences between the extent to which FEN and FEA pursue specialisation and in the specialties to which they enter. For those reasons, no internal differentiation in specialisation rates or in specialty field between physicians of majority or ethnic origin could be expected.

Nevertheless, the collegial ideal might give way for dominant stratification systems such as gender and ethnicity (Lamont & Molnár, 2002). Social closure; the preserving of privileges by restricting people's access to resources and rewards on the grounds of certain criteria, may begin to take place as a result of individual actions. For instance, status-based closure arises when actors are able to mobilise group resources for their own advantage (Hansen, 1995). The importance of gaining access to an "internal fraternity" and acquiring an influential sponsor to further one's career has long been acknowledged (Hall, 1948) The lack of such support has been reported as a hindrance for foreign physicians (Jinks et al., 2000). Closure of this kind is especially discussed as "old boys' networks" that facilitate men's careers but not women's (McGuire, 2002; Miller & Clark, 2008; Van den Brink, 2011) and immigrants' careers (Carter, 2003). The theory suggests that sponsors choose protégés based on composite criteria involving social compatibility. In line with this view, formal qualifications are necessary but not sufficient. The theory predicts that people with similar social backgrounds are likely to be more attuned to each other. Research has also shown that male networks are most steadfast in surgical disciplines, which gives the prediction that immigrant physicians have a lower likelihood of gaining accreditation in surgery. If this also holds for FEN physicians it would indicate that ethnic background and not foreign educational background, is decisive. Men and male cultures, such as surgical environments, however, may prefer men of any ethnicity to women.

In addition to the aforementioned selection mechanism, exclusion and social inequality might result from non-intentionally biased cognitive instruments, such as stereotypes (Reskin, 2000). Siniver (2011) showed that immigrant physicians receive lower earnings owing to statistical discrimination in Israel, and Shuval (1995) addressed the negative stereotyping of immigrant physicians' qualifications as a barrier for integration. Such stereotypically informed perceptions about productivity, and employers' preferences, create ethnic and gendered hiring queues where employees apply for the best jobs and employers hire those workers whom they perceive to be the best (Reskin & Roos, 1990). Employers may have a preference for workers whose qualifications they can best judge. A foreign diploma and a larger variation in skills amongst foreign nationals could add to insecurities and make it difficult to separate the qualified from the less qualified. Therefore, domestically trained physicians would be likely to be preferred over foreign-trained physicians. A Norwegian study, investigating labour market outcomes along the same dimensions as this article (Norwegian/non-western, educated domestically or abroad), show that graduates with diplomas from abroad are more

at risk for being overqualified, especially if they are non-Westerners. This is set in connection with employers' greater uncertainty about diplomas with a non-Western origin (Støren & Wiers-Jenssen, 2010: 45).

Employers might also have a preference for certain personal characteristics (Jenkins, 1984) which physicians with a majority background are more likely to possess. Hence, FEA physicians in general may be ranked below FEN physicians who again are ranked below majority physicians. We know that Norwegian graduates show an interest in jobs in centralised specialist hospitals, and shy away from jobs located in rural districts. They are also less interested in psychiatry, community medicine and laboratory medicine (Aasland & Wiers-Jenssen, 2001). The large and centrally located specialist hospitals may therefore have a richer pool of applicants from which to choose, as will the most prestigious specialties. The combination of queuing of labour, crowding of applicants to hospital disciplines and jobs with good prospects, is considered to result in horizontal stratification. If immigrants and especially FEA physicians experience greater difficulties finding employment, or are more often employed in locum positions, we expect a delay in their specialist education. Next, because of the relative undersupply, FEA and possibly FEN physicians will have a higher likelihood of specialising in primary care or psychiatry than any other speciality, as compared to majority physicians.

Main hypotheses

From this review, we have developed three hypotheses. While findings supporting the hypotheses would suggest discrimination against immigrants in hiring to specialist training posts and exclusionary medical cultures, findings that reject them would rather suggest the prevalence of equality of opportunity by egalitarian outcomes.

H1: Physicians of immigrant origin display lower transition rates to specialism than those of majority origin.

H2: Physicians of immigrant origin have a higher probability of specialising in psychiatry and general medicine than those of majority origin.

H3: Physicians of immigrant origin have a lower probability of specialising in surgical disciplines than those of majority origin.

In terms of comparability, FEN and majority physicians are of approximately equal ability and have analogous labour market experience. Admittance to medical school is highly competitive; hence, those who are accepted have solid academic records. Employers are knowledgeable about the content of their education, (i.e. in which medical culture they are trained and which techniques they are taught). For FEN physicians, it also signals good language skills. Moreover, FEN physicians most probably have good knowledge of the health care system and have a professional network. Only ethnic background distinguishes the groups. The NEA group typically has a lower GPA in high school compared to Norwegian graduates, but exhibits high motivation for becoming physicians and has more ambitious career plans (Aasland & Wiers-Jenssen, 2001). As most return to Norway for work, their labour market experience is equivalent to that of Norwegian graduates. The comparability is reduced amongst FEA physicians, who have more varied

backgrounds, quality of training and likely several years of medical experience in their country of origin. Their competence and experience may outperform new graduates, in which case they should find any medical career of their choosing available. In addition, they may have already decided which specialty to pursue. Immigrants might also be self-selected in terms of resources and personality traits that make them particularly able to make the most out of the situation. However, re-qualification can cause career delay and lowered ambitions. Incumbents may refrain from pursuing the most prestigious fields or a postgraduate degree altogether if their careers are reset at a late stage. Immigrants may therefore self-select to fields of medicine they perceive to be open or less laborious. To ensure comparability with graduates from the other three groups, FEAs older than 40 years are excluded from the study. In summary, whether FEA physicians as a group perform better, on par with or worse than Norwegian graduates thus reflects skill composition and labour market reception, and we have no clear means to distinguish between those causes.

Data, variables and method

This study used administrative registers for health personnel to obtain information on education, demography and labour market affiliation. It encompassed all physicians educated between 1985 and 2002 who received authorisation in the period from 1992 through 2004; the observation period was from 1992 through 2008. The study was delimited to physicians who originated from Norway or non-Western regions. The data consisted of 4550 individuals, with 532 individuals of non-Western origin. Amongst the latter group, 202 graduated from a Norwegian university, and 330 held foreign degrees. Of the Norwegians, 442 possessed a foreign education. All physicians whose time lapse from authorisation to specialist accreditation was less than 4 years were excluded, as it was unlikely that they had undertaken their specialist education in Norway, or at least the majority of it. Those who received their degree after the age of 40 years or who never became authorised were excluded.

Two dependent variables were used for this inquiry. First, we analysed the relative hazard of becoming a specialist from the time of accreditation. Second, we investigated the specialties to which non-Westerners were recruited. The specialties were categorised as surgery, internal medicine, primary health care, psychiatry and other specialties, including laboratory medicine, obstetrics and gynaecology and paediatrics. The categorisation is drawn from a study by Aasland et al. (2001), but was slightly amended by the grouping of three specialties into “other specialties.” Physicians can hold one or more specialty certificates, but in this study, which focuses on the early career, less than one per cent has two certificates and the second certificate is typically a branch specialty of surgery and internal medicine. It is the first achieved certificate that is subject for analysis.

The independent variables combined demographics and labour market affiliation: FEN, non-Westerners with a Norwegian education; NEN, Norwegians with a Norwegian education; FEA, non-Westerners with a foreign degree; and NEA, Norwegians with a foreign degree. Those who originated from Africa, Latin America, European non-EEA countries and Asia, including Turkey, were defined as non-Western. Other demographic variables were gender, and age at graduation

(not authorisation). We also controlled for marital status and age of children, as they are known to have an impact on women's careers in particular. Next we added five career and labour market controls. They included whether the candidate held a medical PhD, which mediated the career track to specialisation. We also added controls for years of self-employment and part-time employment and for three levels of centrality (rural districts, central municipalities and municipalities with university hospitals). To control for time since authorisation, a linear variable (years since authorisation) were included in the multinomial logit analysis.

The first analysis was a duration model, which used yearly records from authorisation to specialisation or censoring, if no specialisation was observed by the end of the observation period. We used a Cox proportional hazards model, which specifies how the relative hazard of experiencing an event changes as a function of the covariates. The model's major advantages are that it makes no assumption about the distribution of duration times and that time-varying covariates can easily be included. The model was run separately for men and women because the impact of marriage and children on their careers are known to be different. To avoid problems of reversed causality (i.e. physicians move because they are finished or about to finish their specialty), time-varying covariates were entered as lagged values from the previous year. Schoenfeld residuals and score residuals were calculated to evaluate the proportional hazards assumption, and a link test and Cox-Snell residuals were used to assess the overall model fit. Test results and steps taken to accommodate these are discussed in the "Findings" section. The model was stratified by age, meaning that a different baseline was calculated for each stratum while the covariates were restricted to be similar across strata. Stratification yielded a log likelihood superior to modelling age as a covariate; the strata were divided at 30, 32 and older. Cluster robust standard errors were applied to adjust for multiple records.

The second analysis was a multinomial logit, which compared the likelihood of becoming specialised in any of the five categories, conditioned on being a specialist. The base outcome was the surgery category, and the coefficients shown were changes in likelihood for any specified outcome contrasted to the base outcome. Comparisons amongst any of the other categories were retrieved by alternating the base category using the 'listcoef' command in Stata and the results are presented in appendix table 5.

Findings

The descriptive statistics in Table 1 show that non-Western physicians acquired specialism in the same volume as majority colleagues. By the end of the period, about half of the physicians, independent of ethnic origin, achieved specialty status; the exception was NEA physicians, of whom one third were specialists. FEN and FEA physicians were, on average, two and five years older respectively when they received their medical degrees compared to majority physicians. FEA physicians were overrepresented in rural municipalities relative to cities with university hospitals. FEN physicians were underrepresented in rural municipalities and equally represented in cities with university hospitals compared to majority physicians.

Table 1
Descriptive statistics.

	NEN physicians ^{a)}	NEA physicians ^{b)}	FEN physicians ^{c)}	FEA physicians ^{d)}
Gender				
Women	52	48	37	49
Men	48	52	63	51
Origin of non-Westerners				
Europe (Non-EEA)			9	47
Africa			5	5
Asia incl. Turkey			84	46
Latin America			1	2
Type of physician				
Not specialist	44	67	50	45
Specialist	56	33	50	55
Mean age in years (<i>SD</i>) at graduation	27.9 (2.5)	28.3 (2.2)	29.8 (3.5)	32.5 (3.8)
Number of individuals	3576	442	202	330
Place of employment				
Rural districts	23	24	17	25
Central districts	27	34	33	38
Uni. hospital cities	49	42	51	37
Number of observations	21,801	2218	987	1477

All values are percentages unless otherwise indicated. ^{a)} Norwegian, educated in Norway; ^{b)} Norwegian, educated abroad; ^{c)} Foreign, educated in Norway and ^{d)} Foreign, educated abroad.

Becoming a specialist

The Cox proportional hazards model showed that foreign-educated immigrants have a higher likelihood of becoming specialists, amongst both men and women. The relative hazards are presented in Table 2.

Amongst FEA physicians, the hazard ratios for men and women were 1.43 and 2.65, respectively, meaning that male physicians had a 43 % increased hazard of becoming specialists compared to the baseline hazard, whereas their female counterparts had a 165 % increased hazard compared to baseline. Amongst FEN physicians, the hazard rate for men was 1.13 and 1.03 for women. These results were not significantly different from the hazard of majority colleagues, nor were the estimates for majority physicians educated abroad significantly different from the baseline hazard. The findings reject the first hypothesis concerning the transition rates to specialty status that stated immigrant physicians would be delayed in their specialty education.

Three tests were performed on the model. First, link tests showed that the variables included in the models were correctly specified because the test was highly insignificant. Second, the Cox-Snell residual plot showed a good overall fit for the models for both women and men. Tests based on Schoenfeld residuals, however, revealed signs of non-proportionality for the FEA coefficient in the highest age stratum for men and women alike and in the youngest age stratum for men.

Table 2
Cox proportional hazards model.

	Men		Women	
	Haz. ratio	SE	Haz. ratio	SE
NEAa)	1.037	0.122	0.881	0.128
FENb)	1.131	0.143	1.033	0.165
FEAc)	1.433**	0.189	2.654***	0.356
PhD	0.653***	0.073	0.633*	0.129
Rural municipalities	1.571**	0.236	1.904***	0.302
Central municipalities	1.914***	0.275	2.435***	0.343
Uni. hospital municipalities	2.333***	0.319	3.023***	0.416
Part-time employed	0.648***	0.077	0.465***	0.050
Self-employed	1.156	0.148	1.515**	0.199
Married	1.302***	0.086	0.863*	0.058
Age of first child	1.017	0.011	0.986	0.012
Age of second child	0.987	0.013	1.023	0.014
No. of unique individuals	2249		2301	
No. of failures	1333		1122	
Log pseudolikelihood	-8180.492		-6859.927	

Sig. levels: * $p \leq 0,05$, ** $p \leq 0,01$, *** $p \leq 0,001$. ^{a)} Norwegian, educated abroad; ^{b)} Foreign, educated in Norway and ^{c)} Foreign, educated abroad.

Some of the control variables also showed signs of non-proportionality in the youngest age stratum. The consequences of nonproportionality is that relative risks become overestimated for positive coefficients and underestimated for negative coefficients and that standard errors will be incorrect, thus reducing the power of test statistics (Mills, 2011). Nonproportionality of FEA was corrected by interaction with marital status for men and women. The interaction term, however, was not significant. The control variables were interacted with the logarithm of time, a standard textbook solution (Box-Steffensmeier & Jones, 2004); but because the main variables of interest did not change in any substantial manner by this treatment, those results are not shown. The Cox model is known to be quite robust in the face of nonproportionality.

Two models were run separately for non-Western physicians educated in Norway and abroad, respectively, to determine whether length of residency had any impact on the results, which it did not (data not shown). The test statistics for each individual group showed that non-proportionality was present in the model for majority physicians educated in Norway only. The model for FEA physicians also showed no gender differences in this group, whereas among the other groups, women had a lower relative risk of becoming specialists.

Type of specialty

We also investigated the probability of becoming specialised in any of the five outcomes, conditional on origin and country of training. A multinomial logit was modelled on those who became specialists during the period under study. The regression results are presented in Table 3.

Table 3
Multinomial logit model: Type of specialisation with surgery as the base category.

	General practitioner		Internal medicine		Other specialities		Psychiatry	
	Logit	SE	Logit	SE	Logit	SE	Logit	SE
Norwegian, educated abroad (NEA)	-0.934*	0.414	-0.670*	0.283	-0.187	0.258	-0.899*	0.355
Foreign, educated in Norway (FEN)	0.761 α	0.412	0.439	0.314	0.302	0.344	-0.600	0.487
Foreign, educated abroad (FEA)	0.405	0.421	1.238***	0.319	0.927**	0.341	0.123	0.369
Age at graduation	0.012	0.046	-0.121***	0.032	-0.105**	0.034	0.108**	0.040
Age at graduation squared	-0.007	0.007	0.012*	0.005	0.000	0.006	-0.003	0.006
Male	-1.117***	0.201	-0.760***	0.139	-1.453***	0.145	-1.307***	0.169
PhD	-1.702*	0.707	0.171	0.265	0.024	0.302	-1.300*	0.527
Years in uni. hospital municipal	-0.950***	0.095	-0.107	0.068	-0.177*	0.072	-0.461***	0.078
Years in uni. hospital municipal squared	0.086***	0.011	0.014*	0.007	0.021**	0.008	0.044***	0.008
Years as part-time employee	1.068***	0.103	0.141	0.096	0.141	0.102	0.519***	0.100
Years as self-employed	0.926***	0.160	-0.101	0.133	0.169	0.154	-0.266 α	0.149
Years as self-employed squared	0.052	0.036	0.043	0.035	-0.037	0.046	0.106**	0.036
Time since authorisation (>4)	-0.496***	0.054	-0.038	0.033	-0.207***	0.038	-0.128***	0.041
Constant	1.795***	0.336	0.687**	0.258	1.844***	0.268	1.425***	0.293
N	2455							
Log likelihood	2881.641							

α $p \leq 0,1$, * $p \leq 0,05$, ** $p \leq 0,01$, *** $p \leq 0,001$

The multinomial logit analysed differences in distribution patterns across the five outcomes for each group of physicians compared to majority physicians. In addition, any significant differences in levels for each specialty were evaluated across the categories of physicians. In contrast to the previous model, the coefficients for spouse and children were not significant; hence, family responsibilities probably had an effect on time to specialisation rather than on the type of specialty chosen. Also, the coefficients for years of rural and central practice were not significant in this model estimation. The findings are presented as calculated probabilities in Table 4, with all control variables set at grand mean values and age set to 30 years at graduation.

Table 4

The probability of being specialised in any of five categories

	General practice %	Surgical disciplines %	Internal medicine %	Other disciplines %	Psychiatric disciplines %
NEN ^{a)}	14	16	19	29	22
FEA ^{b)}	11	8	33	37	12
FEN ^{c)}	23	12	24	31	9
NEA ^{d)}	8	24	16	38	14

^{a)} Norwegian, educated in Norway; ^{b)} Foreign, educated abroad; ^{c)} Foreign, educated in Norway and ^{d)} Norwegian, educated abroad.

The probabilities displayed in Table 4 show that FEA physicians were most likely to specialise in “other” disciplines and internal medicine at 37 % and 33 %, respectively, and about equally likely to specialise in psychiatry, general practice and surgery. There was no significantly higher likelihood of FEA physicians specialising in psychiatry or general practice relative to surgery, as compared to NEN physicians. Actually, the trend showed FEA displayed a lower likelihood of specialising in psychiatry compared to NEN physicians, whereas there was no difference in the likelihood of becoming a general practitioner. The second hypothesis, in which immigrant physicians would become concentrated in disciplines low in prestige, is therefore rejected for FEA physicians. FEA physicians, however, were less likely to specialise in surgical disciplines compared to NEN physicians. The third hypothesis, in which FEA physicians would be underrepresented in surgery, thus receives support. It should also be mentioned that FEA physicians had a significantly higher likelihood of specialising in internal medicine and other disciplines than NEN physicians; therefore, they were well represented within hospital-based disciplines.

In descending order, FEN physicians had the highest probability for specialising in “other” disciplines, followed by (in descending order), internal medicine, general practice, surgical fields and psychiatry. Significant differences, however, existed between general practice and psychiatry, as well as between internal medicine and psychiatry. FEN physicians were more likely to become specialised in the first mentioned categories of those relationships. Compared to majority physicians, FEN physicians were significantly less likely to specialise in psychiatry. There was no significant difference between FEN and NEN physicians regarding the likelihood of becoming surgeons. Thus, both the second and the third hypothesis are rejected for FEN physicians.

NEA physicians were most likely to specialise in “other” fields, followed by surgery, internal medicine, psychiatry and lastly, general practice. Compared to majority physicians educated in Norway, NEA physicians had a significantly higher likelihood of specialising in surgical fields. In fact, NEA physicians were significantly less likely to specialise in general practice and psychiatry relative to surgery (cf. Table 3).

Discussion

The findings show that FEA physicians have a higher chance of becoming specialists compared to majority physicians educated in Norway, but that FEA physicians are equally likely to specialise, irrespective of gender. In addition, FEN physicians display an equal hazard for specialisation compared to majority physicians. Hypothesis 1, which stated that non-Western physicians were less likely to specialise, receives no support. Furthermore, we find no significant difference in fields of specialisation between majority physicians and immigrant physicians with Norwegian medical degrees. The hypothesis of exclusion is therefore not supported. The results for FEA physicians show that they have a lower likelihood of specialising in surgical fields as compared to majority physicians; however, FEA physicians are significantly more likely to specialise in internal medicine and “other” disciplines. Overall, immigrant and majority physicians are equally likely to specialise in hospital disciplines.

We hypothesised that queuing of labour would cause a concentration of immigrants in low prestige specialties, like general practice and psychiatry. Although evidence supporting this hypothesis has been found for Britain (Fazel & Ebmeier, 2009), it is not found in our study. That immigrant physicians are not overrepresented in psychiatry might have to do with it being the most “social” of the specialties under scrutiny; that is, it requires a strong command of language and cultural skills. Thus, foreign physicians who come to Norway primarily to obtain their postgraduate education may be more inclined to choose a hospital discipline in laboratory or internal medicine rather than psychiatry.

In general, immigrant physicians neither seem to be crowded out of high prestige specialties, nor do employers appear to queue immigrant physicians into low prestige specialties, as discussed earlier. One strand of theory is that the labour market for physicians could function as a meritocracy. Strong professional closure ensures that all members are eligible, and the system’s legitimacy would disintegrate if positions were assigned on particularistic rather than universalistic criteria. Status group closure may thus pursue more effectively through the formalised system rather than on the inside. In addition, bureaucratisation of the hiring procedure further reduces the potential of any influential sponsors and networks attempting to promote one individual over another. A survey conducted by the Norwegian Board of Health Supervision (1997) documented that half of the responding hospitals and a quarter of municipalities employed physicians with inferior language skills at the time of hiring and assigned language training programmes. Employers estimated that it takes a year for foreign physicians to become well integrated into the organisation. This finding suggests a high level of acceptance rather than exclusion. It should be noted, however, that foreign doctors

are mainly recruited by municipalities and small hospitals and that the survey mainly addressed European physicians (Helsetilsyn, 1997).

The equal distribution may also be attributed to organizational context. In contrast to the hypothesized closure of prestigious specialties, hospital organization may make it easier to integrate a FEA physician in units where there are many employees, such as surgical and internist units, rather than in units more characterized by solitary work. Some hospitals have a conscious strategy to employ physicians of the same nationality so as to provide a supportive environment for their recruits (Helsetilsyn, 1997). Additionally, the distribution could be partly explained by an increased governmental involvement and influence. Parliament documents, amongst other things, show that politicians have been and still are very much involved in hospital issues (Rommetvedt and Opedal 2005). This involvement include central issues, such as efforts to provide foreign physician applicants educated outside the EEA a more well-grounded and qualified assessments of their previous qualifications (e.g. NDH 2009) and efforts to improve the structure, organization, content and efficiency of specialty training programs (e.g. White Paper nr. 24, 1996-97).

The findings could possibly also be explained by a selection effect among the FEA physicians. Immigrants who complete the process of transferring credentials might be self-selected with regard to economic resources and determination and could thus be inclined to work harder to make the most of it.

The exception from the overall equality, however, is that FEA physicians display a lower likelihood of specialising in surgical fields and a higher likelihood of specialising in internal medicine and “other” disciplines. The lower likelihood of the FEA group to specialise in surgery lends credit to the third hypothesis. If any difference was to accrue the hypothesis where that immigrant physicians would be less likely to specialise in the surgical field. Access to the occupational internal labour market is regulated by senior members of the profession who assess candidates’ abilities and skills (Althausser & Kalleberg, 1981). In a Norwegian context, Gjerberg (2002) showed that women started surgical and internal medicine training as often as men; however, during their training, there was a tendency to change their specialty. Although the personal motifs for changing specialty may be multifaceted, for instance incompatibilities between demands of the family and the workplace, it is acknowledged that exclusionary practices discourage many women from pursuing a career in surgery or internal medicine (Crompton & Lyonette, 2011; Gjerberg, 2002; Hinze, 1999; Miller & Clark, 2008). The exclusionary practices described include the lack of relevant training opportunities, deficient counselling from patrons and chauvinistic attitudes (Gjerberg, 2001). Although those behaviours may accentuate gender differences, it is conceivable that they are expressions of a homogeneous culture that could also be exclusionary toward immigrants, although in different ways and for different reasons. At least, this is what Carter (2003) suggested when discussing the role of patrons in reproducing the professional elite. Moreover, research on the gendered division in medicine has suggested that women still perceive surgery to be an “old boys’ club” (Lillemoe et al., 1994). If FEA physicians share this image of surgical fields as too much of a White men’s club compared to internal or laboratory medicine, they may pursue the latter fields on the basis of it being more open to immigrant physicians.

We cannot ignore the possibility that a lower representation in surgery might also be attributable to the preferences of FEA physicians themselves. At accreditation, FEA physicians are on average 4 years older than majority physicians. Undoubtedly, the group of FEA physicians is varied in terms of immigration history, ambitions and current life situation. FEA physicians' greater experience from their home country could cut two ways. On the one hand, experienced physicians could outperform recent graduates in ways that employers would appreciate and reward. Perhaps this explains the higher hazard of FEA physicians to specialise. On the other hand, the lower likelihood of FEA physicians to choose surgery could reflect a change in motivation related to experience. Their preferences need not diverge from those of recently graduated physicians, but their opportunity to realise them might. Obtaining Norwegian credentials demands investment and not everyone succeeds. Ambitions may be lowered during this process, and those who do successfully obtain Norwegian credentials may decide that they are too old to embark on specialty training with its demanding hours and high hospital presence. They may also lack the stamina to push through as they have already spent a considerable amount of time transferring their credentials. Surgery has one of the most extended training periods with six years for general specialisation and an additional three years for branch specialties. The other foreign-educated group, NEA physicians, actually has the highest likelihood of specialising in surgery and is significantly more likely to specialise in surgery relative to every field but the base category compared to those with Norwegian education. This finding is consistent with the higher level of ambition that has been documented for medical students who have been educated abroad (Aasland & Wiers-Jensen, 2001). Although foreign-trained physicians are expected to have limited knowledge of the Norwegian medical milieu, many students in this group have summer vacancies in Norwegian hospitals which could make up for any loss of contacts as a consequence of studying in a foreign environment. In the present study, immigrants educated in Norway have an equal probability of becoming surgeons compared to the NEN group, whereas majority candidates educated abroad have a higher probability. These findings thus suggest that it is the combination of foreign education and immigrant origin that is decisive, not the parameters individually.

Conclusion

In conclusion, the main finding is that non-Western physicians do not experience any career delays in the Norwegian health sector and they are evenly dispersed across specialties in primary and secondary health services with Norwegian colleagues. There is a tendency for foreign-educated non-Westerners not to become surgeons. Whether this is a result of choice, restraints, or both, require further research. Given that ethnicity does not assume negative significance within the medical profession, one could speculate whether the formalistic credentialed closure of professional occupations ensures equality of opportunity, and hence outcome, for non-Western immigrants. An avenue for more research is thus to investigate if this also applies to other professions.

References

- Abbott, A. (1988). *The system of professions: An essay on the division of expert labor*. Chicago: University of Chicago Press.
- Althausen, R. P., & Kalleberg, A. L. (1981). Firms, occupations, and the structure of labor markets: A conceptual analysis. In I. Berg (Ed.), *Sociological perspectives on labor markets* (pp. 119-145). New York: Academic Press.
- Astor, A., Akhtar, T., Matallana, M. A., Muthuswamy, V., Olowu, F. A., Tallo, V., et al. (2005). Physician migration: Views from professionals in Colombia, Nigeria, India, Pakistan and the Philippines. *Social Science & Medicine*, 61(12), 2492-2500. <http://dx.doi.org/10.1016/j.socscimed.2005.05.003>
- Bernstein, J. H., & Shuval, J. T. (1998). The occupational integration of former Soviet physicians in Israel. *Social Science & Medicine*, 47(6), 809-819. [http://dx.doi.org/10.1016/S0277-9536\(98\)00139-7](http://dx.doi.org/10.1016/S0277-9536(98)00139-7)
- Bernstein, J. H., & Shuval, J. T. (1999). Gender differences in the process of occupational integration of immigrant physicians in Israel. *Sex Roles*, 40(1-2), 1-23. <http://dx.doi.org/10.1023/A:1018898632038>
- Box-Steffensmeier, J. M., & Jones, B. S. (2004). *Event history modelling: A guide for social scientists*. New York: Cambridge University Press <http://dx.doi.org/10.1017/CBO9780511790874>
- Carter, J. (2003). *Ethnicity, exclusion, and the workplace*. Basingstoke, UK: Palgrave Macmillan. <http://dx.doi.org/10.1057/9780230005822>
- Clark, P. F., Stewart, J. B., & Clark, D. A. (2006). The globalization of the labour market for health-care professionals. *International Labour Review*, 145(1-2), 37-64. <http://dx.doi.org/10.1111/j.1564-913X.2006.tb00009.x>
- Cohn, S. (2000). *Race, gender, and discrimination at work*. Boulder, CO: Westview Press.
- Creed, P. A., Searle, J., & Rogers, M. E. (2010). Medical specialty prestige and lifestyle preferences for medical students. *Social Science & Medicine*, 71(6), 1084-1088. <http://dx.doi.org/10.1016/j.socscimed.2010.06.027>
- Crompton, R., & Lyonette, C. (2011). Women's career success and work-life adaptations in the accountancy and medical professions in Britain. *Gender, Work & Organization*, 18(2), 231-254. <http://dx.doi.org/10.1111/j.1468-0432.2009.00511.x>
- Drange, I. (2013). Early-career income trajectories among physicians and dentists: The significance of ethnicity. *European Sociological Review*, 29(2) 346-358.
- Dumont, J. C., & Zurn, P. (2007). Part III: Immigrant health workers in OECD countries in the broader context of highly skilled migration. In OECD (Ed.), *International migration outlook* (pp. 162-228). Paris, OECD.
- Dustmann, C., & Frattini, T. (2011). Immigration: The European experience. In IZA, Discussion paper series, no. 6261. Bonn: The Institute for Study of Labor.
- Fazel, S., & Ebmeier, K. (2009). Specialty choice in UK junior doctors: Is psychiatry the least popular specialty for UK and international medical graduates? *BMC Medical Education*, 9(1), 77. <http://dx.doi.org/10.1186/1472-6920-9-77>
- Friedberg, R. M. (2001). The impact of mass migration on the Israeli labor market. *Quarterly Journal of Economics*, 116(4), 1373-1408. <http://dx.doi.org/10.1162/003355301753265606>

- Gjerberg, E. (2001). Medical women – towards full integration? An analysis of the specialty choices made by two cohorts of Norwegian doctors. *Social Science & Medicine*, 52(3), 331-343. [http://dx.doi.org/10.1016/S0277-9536\(00\)00138-6](http://dx.doi.org/10.1016/S0277-9536(00)00138-6)
- Gjerberg, E. (2002). Gender similarities in doctors' preferences — and gender differences in final specialisation. *Social Science & Medicine*, 54(4), 591-605. [http://dx.doi.org/10.1016/S0277-9536\(01\)00054-5](http://dx.doi.org/10.1016/S0277-9536(01)00054-5)
- Goldacre, M. J., Davidson, J. M., & Lambert, T. W. (2003). Country of training and ethnic origin of UK doctors: Database and survey studies. *British Medical Journal*, 329(7466), 597-600. <http://dx.doi.org/10.1136/bmj.38202.364271.BE>
- Grimen, H. (2008). Profesjon og profesjonsmoral [Profession and professional morality]. In A. Molander, & L.I. Terum (Eds.), *Profesjonsstudier* (pp. 144-160). Oslo: Universitetsforlaget.
- Hall, O. (1948). The stages of a medical career. *American Journal of Sociology*, 53(5), 327-336. <http://dx.doi.org/10.1086/220199>
- Hansen, M. N. (1995). Class and inequality in Norway. The impact of social class origin on education, occupational success, marriage and divorce in the post-war generation. Institute for social research. Oslo: University of Oslo.
- Henriksen, K. (2008). Leger på lager [Physicians in storage]. *Samfunnsspeilet/Statistics Norway*, 22(8).
- Hinze, S.W. (1999). Gender and the body of medicine or at least some body parts. *Sociological Quarterly*, 40(2), 217-239. <http://dx.doi.org/10.1111/j.1533-8525.1999.tb00546.x>
- Iredale, R. (2001). The migration of professionals: Theories and typologies. *International Migration*, 39(5), 7-26. <http://dx.doi.org/10.1111/1468-2435.00169>
- Jakubowski, E., & Hess, R. (2004). The market for physicians. In M. McKee, L. MacLehose, & E. Nolte (Eds.), *Health policy and European Union enlargement* (pp. 131-142). Berkshire, UK: Open University Press.
- Jenkins, R. (1984). Acceptability, suitability and the search for the habituated worker: How ethnic minorities and women lose out. *International Journal of Social Economics*, 11(7), 64-76. <http://dx.doi.org/10.1108/eb013977>
- Jinks, C., Ong, B. N., & Paton, C. (2000). Mobile medics? The mobility of doctors in the European Economic Area. *Health Policy*, 54(1), 45-64. [http://dx.doi.org/10.1016/S0168-8510\(00\)00097-X](http://dx.doi.org/10.1016/S0168-8510(00)00097-X)
- Kangasniemi, M., Winters, L. A., & Commander, S. (2007). Is the medical brain drain beneficial? Evidence from overseas doctors in the UK. *Social Science & Medicine*, 65(5), 915-923. <http://dx.doi.org/10.1016/j.socscimed.2007.04.021>
- Karlsen, H. (2012). Gender and ethnic differences in occupational positions and earnings among nurses and engineers in Norway: identical educational choices, unequal outcomes. *Work, Employment and Society*, 26(2), 278-295. <http://dx.doi.org/10.1177/0950017011432907>
- Lamont, M., & Molnár, V. (2002). The study of boundaries in the social sciences. *Annual Review of Sociology*, 28, 167-195. <http://dx.doi.org/10.1146/annurev.soc.28.110601.141107>
- Lillemo, K. D., Ahrendt, G. M., Yeo, C. J., Herlong, H. F., & Cameron, J. L. (1994). Surgery – still an “old boys' club”? *Surgery*, 116(2), 255-259; discussion 259-261.

- Lægreid, P., Opedal, S., & Stigen, S. (2005). The Norwegian Hospital Reform – Balancing Political Control and Enterprise Autonomy. *Journal of Health, Politics, Policy and Law*, 30(6), 1027-1064.
<http://dx.doi.org/10.1215/03616878-30-6-1027>
- McGuire, G. M. (2002). Gender, race, and the shadow structure: A study of informal networks and inequality in a work organization. *Gender & Society*, 16(3), 303-322. <http://dx.doi.org/10.1177/0891243202016003003>
- Miller, K., & Clark, D. (2008). “Knife before wife”: An exploratory study of gender and the UK medical profession. *Journal of Health Organization and Management*, 22(3), 238-253. <http://dx.doi.org/10.1108/14777260810883521>
- Mills, M. (2011). *Introducing survival and event history analysis*. London: SAGE.
- Mundal, A. (2007). Stadig mer spesialisert medisin [More specialized medicine]. In R.R. Bore (Ed.), *På liv og død. Helsestatistikk i 150 år*. (pp. 198-203). Kongsvinger: Statistics Norway.
- NDH (Helsedirektoratet: The Norwegian Directorate of Health). (2009). Godkjenning av helsepersonell utdannet i land utenfor EØS. Forslag til ny ordning [Approval of health personnel educated outside EEA. Suggestion for a new arrangement]: <http://www.helsedirektoratet.no/helsepersonell/godkjenning-helsepersonell/utdannet-i-utlandet/Documents/godkjenning-av-helsepersonell-utdannet-utenfor-eos-forslag.pdf> (accessed ???.???)
- Nicholas, S. (2004). The challenges of the free movement of health professionals. In M. McKee, L. MacLehose, & E. Nolte (Eds.), *Health policy and European Union enlargement* (pp. 82-108). Berkshire, UK: Open University Press.
- Norwegian Board of Health Supervision [Statens Helsetilsyn] (1997). Spørreundersøkelse om ansettelse av utenlandske leger [A survey on foreign physician employment]. Oslo: Norwegian Board of Health Supervision.
- Norredam, M., & Album, D. (2007). Prestige and its significance for medical specialties and diseases. *Scandinavian Journal of Public Health*, 35(6), 655-661. <http://dx.doi.org/10.1080/14034940701362137>
- Proposition nr 83 to the Odelsting [Ot prp nr 83] (2008-2009). Om lov om endringer i helsepersonelloven (opphevelse av adgangen til å delegere spesialistgodkjenningsmyndighet til private yrkesorganisasjoner) [Concerning the Act on changes in the health personnel act (revocation of access to delegate specialist recognition authority to private vocational organisations)].
- Raghuram, P., & Kofman, E. (2002). The state, skilled labour markets, and immigration: The case of doctors in England. *Environment and Planning A*, 34(11), 2071-2089. <http://dx.doi.org/10.1068/a3541>
- Reskin, B. F. (2000). The proximate causes of employment discrimination. *Contemporary Sociology*, 29(2), 319-328. <http://dx.doi.org/10.2307/2654387>
- Reskin, B.F., & Roos, P.A. (1990). *Job queues, gender queues: Explaining women's inroads into male occupations*. Philadelphia: Temple University Press.
- Robinson, V., & Carey, M. (2000). Peopling skilled international migration: Indian doctors in the UK. *International Migration*, 38(1), 89-108.
<http://dx.doi.org/10.1111/1468-2435.00100>
- Rommetvedt, H., Opedal, S. (2005). Sykehus på Løvebakken. Stortingets engasjement og innflytelse før og etter sykehusreformen [Parliament engagement and influence before and after the Hospital reform]. *Tidsskrift for samfunnsforskning*, 46(2), 100-132.

- Rosoff, S.M., & Leone, M.C. (1991). The public prestige of medical specialties: Overviews and undercurrents. *Social Science & Medicine*, 32(3), 321-326. [http://dx.doi.org/10.1016/0277-9536\(91\)90110-X](http://dx.doi.org/10.1016/0277-9536(91)90110-X)
- Shuval, J.T. (1995). Elitism and professional control in a saturated market: Immigrant physicians in Israel. *Sociology of Health & Illness*, 17(4), 550-565. <http://dx.doi.org/10.1111/1467-9566.ep10932701>
- Siniver, E. (2011). Testing for statistical discrimination: The case of immigrant physicians in Israel. *Labour*, 25(2), 155-166. <http://dx.doi.org/10.1111/j.1467-9914.2010.00515.x>
- Statistics Norway. (2009). Hver femte fastlege er innvandrere [Every fifth GP is an immigrant]. Oslo: Statistics Norway. <http://www.ssb.no/vis/magasinet/analyse/art-2009-10-14-01.html>, accessed: 6th June, 2012
- SAFH, The Norwegian Registration Authority for Health Personnel: <http://www.safh.no/yrkesgrupper/legeturnus.html>, accessed: 6th June, 2012.
- Storen, L.A & Wiers-Jenssen, J. (2010). Foreign Diploma Versus Immigrant Background: Determinants of Labour Market Success or Failure? *Journal of Studies in International Education*, 14(1), 29-49. <http://dx.doi.org/10.1177/1028315308327951>
- Van den Brink, M. (2011). Scouting for talent: Appointment practices of women professors in academic medicine. *Social Science & Medicine*, 72(12), 2033-2040. <http://dx.doi.org/10.1016/j.socscimed.2011.04.016>
- Villund, O. (2008). Right occupation after education? An investigation of competence and work tasks among employers with immigrant background based on register data. *Rapporter*, 2008/37. Oslo: Statistics Norway
- White paper nr 18 (2007-2008) Arbeidsinnvandring [Labour immigration]. Oslo: Ministry of health [Det kongelige Helsedepartementet].
- White paper nr 24 (1996-97). Tilgjengelighet og faglighet. Om sykehus og annen spesialisthelsetjeneste [Availability and professionalism. On hospitals and specialist health service]. Oslo: Ministry of labour [Det kongelige Arbeids- og Inkluderingsdepartement].
- Aasland, O. G., Røvik, J. O., & Wiers-Jenssen, J. (2008). Legers motiver for valg av spesialitet under og etter studiet [Motives for choice of specialty during and after medical school]. *Tidsskrift for Den Norske Lægeforening*, 128(16), 1833-1837.
- Aasland, O. G., & Wiers-Jenssen, J. (2001). Norske medisinerstudenter i utlandet - karriereplaner, personlighet, røyking og alkoholbruk [Norwegian medical students abroad – career plans, personality, smoking and alcohol use]. *Tidsskrift for Den Norske Lægeforening*, 121(14), 1677-1682.

Appendix A

Table 5

Significance levels for the probability of being specialised in any of the five categories (table 4) for FEN, FEA and NEA physicians relative to NEN physicians

	General practice	Surgical disciplines	Internal medicine	Other disciplines	Psychiatric disciplines
General practice		NEA*	FEA*		FEN**
Surgical disciplines			NEA* FEA***	FEA**	NEA*
Internal medicine					FEN* FEA***
Other disciplines					NEA* FEA*
Psychiatric disciplines					

FEA: Foreign, educated abroad; *FEN*: Foreign, educated in Norway and *NEA*: Norwegian, educated abroad.

* $p \leq 0,05$, ** $p \leq 0,01$, *** $p \leq 0,001$