

## 2.5 FACTORS AFFECTING THE INTERNATIONAL LABOUR MIGRATION OF MEDICAL DOCTORS IN HUNGARY\*

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The strong increase in the demand for medical doctors has accelerated doctor migration over recent decades. Medical professionals from Eastern Europe have gradually joined this global process and the migration of Eastern European doctors to Western Europe intensified after EU accession (*Kaczmarczyk, 2006, Dumont–Zurn, 2007, Glinos et al., 2014, Merçay et al., 2015*). Statistics and data sources suitable to describe doctor migration are slowly catching up with the interest surrounding this issue (*Buchan et al., 2014, Dumont–Zurn, 2007, Merçay et al., 2015*). This is also characteristic of the study of doctor migration in Hungary and estimates are used to make up for the absence of data. There is no reliable register of the number of doctors in Hungary.<sup>1</sup> The uncertainty means that the number of doctors is potentially over- or underestimated, and it is assumed that doctors who are no longer in the register have emigrated.<sup>2</sup> Research on migration potential and studies using the number of applications for official certifications generally do not measure actual outmigration (*flow*) either, but only the intention to migrate (*Balázs, 2012, Csernus et al., 2013, Eke et al., 2009, 2011*). Obviously, both methods overestimate the actual outmigration of doctors and disregard the possibility of return migration. The number of migrant doctors (*stock*) can be estimated on the basis of mirror statistics on the number of Hungarian doctors registered abroad. This also allows us to quantify the extent of outmigration of doctors from Hungary: in 2012 approximately 3,250 doctors, 9–11 percent of the total number of doctors in Hungary, lived abroad.<sup>3</sup> The total number of doctors in Hungary can be estimated at around 30,000 on the basis of data from the National Institute for Quality- and Organisational Development in Healthcare and Medicines<sup>4</sup> on the number of publicly employed doctors, CSO data on general practitioners, and expert estimates on the number of doctors working exclusively in the private health sector. Based on mirror statistics, information is available on the stock of Hungarian migrant doctors in Germany, the United Kingdom, and Sweden (*OECD, 2015*); the number of licenses issued in these three countries constitute up to 60 percent of the total number of licenses issued (*Katona, 2015*) and the number of Hungarian doctors working abroad was estimated on the basis of this.

### Methods of analysis, data

Unlike previous estimation-based studies, this research was based on a direct survey of medical practitioners working abroad in order to investigate the

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1 The number of registered doctors also includes those that are not practising, while the survey on doctors in state hospitals does not include private doctors (general practitioners, dentists, doctors only working at private clinics) who are not registered separately.

2 Varga's (2015) estimate confirms that career attrition is higher than international labour migration.

3 Varga's estimate in Chapter 2.4 uses a different dataset and a narrower comparison group (rather than the total population of doctors), and by disregarding the possibility of return migration, the estimated migration rate is higher.

4 In Hungarian: Gyógyszerészeti és Egészségügyi Minőség- és Szervezetfejlesztési Intézet.

factors that explain the migration of doctors. Data collection was conducted from the spring of 2014 to the winter of 2015. The study examined the period between 2000 and 2015. The analysis looked at two groups of participants: doctors affected by migration, namely those who worked abroad for at least one week at any time during the period of 2000–2015, and – as a control group – those who have never worked abroad. To recruit *doctors currently working abroad* the method of network sampling was used and members of social networking sites dedicated to doctors working abroad made up the initial sample. On the social networking site a sample was selected using the method of *reweighted random walk* (Gjoka et al. 2010), a form of respondent-driven sampling (Salganik, 2006). The size of the obtained sample does not differ substantially from that in commonly-used multi-stage sampling (the effect of sampling design – the differing selection probabilities – can be estimated at around 2%), where it might be even smaller due to the relative size of the sample to population (approximately 7% in this segment). *Doctors in Hungary* who have never worked abroad were surveyed using a random sample stratified on region and type of employment, and the data was weighted on these as well as age group. In the case of doctors currently working in Hungary who also worked abroad previously, the above sampling method was used to screen participants and those who met the inclusion criteria (i.e. worked abroad between 2000–2015) were invited to respond to the survey. The survey was administered as an online questionnaire for all participants. The unweighted composition of the sample is as follows: 736 doctors who have worked only in Hungary, 154 doctors who are currently working in Hungary but worked abroad previously, and 196 doctors currently working abroad.

### **Motivations for working abroad**

The motivating factor considered most important for migration, wage gain, was examined using multiple questions in this study. To measure expected wage gain for those working in Hungary, the actual net earnings in Hungary and the expected earnings abroad for those with comparable experience were used. For those working abroad we used the actual earnings abroad and the expected earnings in Hungary for someone with comparable experience; and the real value of earnings abroad was operationalised as the ratio of living expenses abroad and in Hungary. To ensure that previous employment abroad does not bias the results, only data for people currently working abroad and those who have never worked outside Hungary were analysed. The mean values of factors determining net wage gain are shown in *Table 2.5.1*.

Doctors working exclusively in Hungary consider monthly net pay higher in their profession than doctors working abroad. (This difference is probably also explained by the fact that doctors working abroad are younger.) The two groups perceive the difference in pay between Hungary and abroad similarly.

Doctors working abroad earn approximately six times the estimated pay in their profession in Hungary. The actual average pay of doctors in Hungary exceeds the estimated average. The difference in living expenses between Hungary and abroad is somewhat overestimated by doctors in Hungary. Overall, the computed real wage gain is estimated to be slightly higher by doctors in Hungary, however the difference is not significant.

**Table 2.5.1: Mean values of factors determining real wage gain**

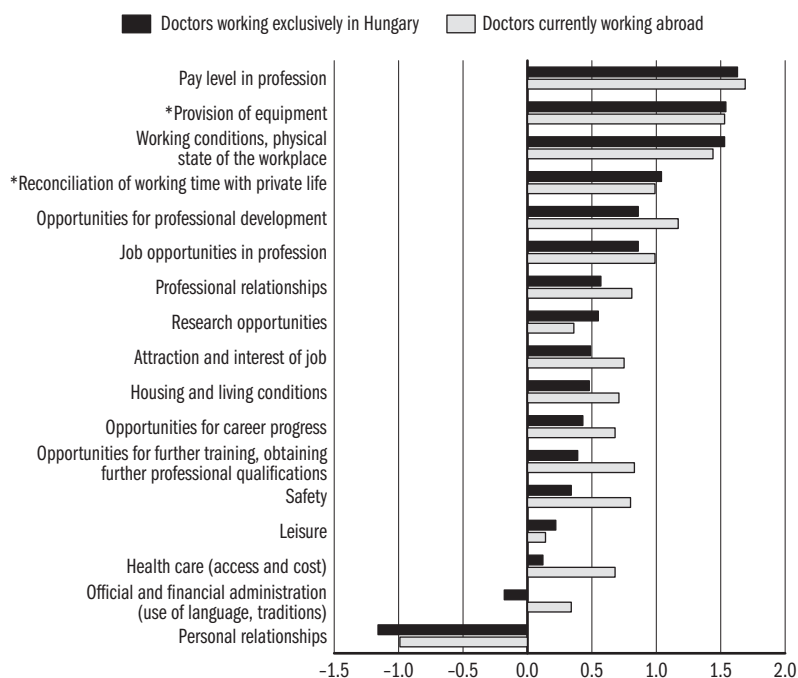
Factor	Doctors working exclusively in Hungary		Doctors currently working abroad		Test statistics	
	Mean	Standard error	Mean	Standard error	<i>t</i>	Significance
Monthly net pay in their profession for someone with comparable experience in Hungary according to respondent (thousand forints)	299.5	10.7	219.1	6.89	6.32	0.000
Total current income of respondent (thousand forint)	326.8	7.38	1389.7	67.3	-15.7	0.000
Ratio of foreign and Hungarian pay estimated by respondent	6.44	0.09	6.52	0.17	-0.40	0.685
Ratio of foreign and Hungarian living expenses estimated by respondent	2.99	0.05	2.58	0.09	4.07	0.000
Computed real wage gain (thousand forints)	407.8	23.31	374.9	22.34	1.01	0.309

Note: The value of 1000 HUF is around Euro 3.01.

In addition to wage gain, other important factors can also influence the migration of doctors. Out of these, working and living conditions are considered here. The following factors were examined: (1) opportunities for professional development, (2) opportunities for career progress, (3) research opportunities, (4) attraction and interest of the job, (5) further training, (6) opportunities to obtain further professional qualifications, (7) professional relationships (relationship with manager, team work), (8) job opportunities in the profession, (9) personal relationships (relatives, friends), health care (access, costs), (10) official and financial administration (use of language, traditions), (11) safety, (12). housing and living conditions (13) leisure, (14) pay level in profession, (15) provision of equipment, (16) working conditions and physical state of the workplace, (17) reconciliation of working time with private life.

For each factor respondents were asked whether they considered Hungary or the preferred foreign country as more favourable. The perceived importance of each area was also measured and used to weigh each factor. *Figure 2.5.1* compares the views of doctors working exclusively in Hungary and doctors working exclusively abroad.

**Figure 2.5.1: Perception of factors affecting employment  
(in order of increasing mean values)**



Note: The mean values of factors weighted by individual importance, five-point scale where -2 means that it is much better in Hungary and +2 means that it is much better in the preferred foreign country.

The asterisk indicates factors where the difference is not significant (in all other cases it is significant).

There were no major differences between the two groups. The only significant differences between doctors working exclusively in Hungary or abroad were found for factors that were perceived similarly in Hungary and abroad. In 12 out of the 17 factors considered here, doctors working abroad perceived the situation abroad more favourably than doctors in Hungary, and only three factors were perceived as significantly worse, namely: 1. working conditions and the physical state of the workplace, 2. research opportunities and 3. leisure.

### Reasons for working abroad and its impact

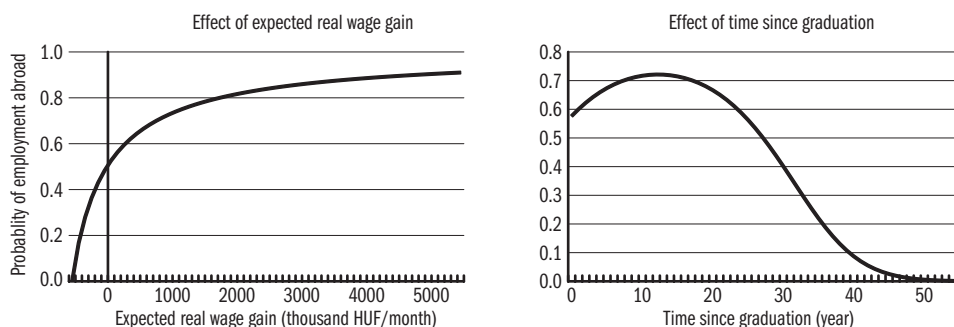
Logistic regression models were used to examine the effect of individual factors on the probability of working abroad. The outcome variable was employment abroad versus employment in Hungary and the estimated marginal probabilities are presented here. The model applies for those currently working abroad and doctors who have never worked outside Hungary. An estimated 12 per cent of Hungarian doctors are working abroad.<sup>5</sup>

<sup>5</sup> Previously the percentage of doctors working abroad was estimated at 12% of doctors in Hungary for 2014. If the percentage of doctors currently working abroad differs from this estimate, it might change the position of estimated distributions but it has no effect on their shape or the extent and direction of differences between values.

The basic model examined the effect of expected real wage gain on the probability of working abroad. For a better fit, the model uses the logarithm of the real wage gain. The basic model was controlled for sex, profession (doctor or dentist), time since graduation (and its square), the status of specialist qualification, and preferred destination country.<sup>6</sup> The model showed a good fit and had adequate explanatory power (Hosmer & Lemeshow test:  $p = 0.351$ ; Nagelkerke's pseudo  $R^2 = 0.291$ ).

According to the model, doctors would be willing to take up employment abroad even without a wage gain. Any additional wage gain increases the probability of working abroad at a diminishing rate, which finally converges to 90% from the very high 3.5 million forints per month. All control variables were significant. Time since graduation initially slightly increases the probability of working abroad, then 10 years after graduation it starts to reduce it, and its effect returns to around zero toward the end of one's career (Figure 2.5.2).

**Figure 2.5.2: Effect of real wage-gain expectations and time since graduation on the probability of working abroad**



Men, those without specialist qualification, and doctors were more likely to take up employment abroad than women, those with a specialist qualification, and dentists. Those indicating Germany as a preferred destination country are most likely to work abroad, while among those who indicate a preference for the United Kingdom or Scandinavian countries, all other conditions being equal, the probability of working abroad is 14–17 percentage points lower (Table 2.5.2).

The model was expanded in two directions: on the one hand additional factors related to working abroad were considered, as well as factors relevant from the perspective of the Hungarian labour market.

The main results of the expanded model (see the 17 factors listed previously) are presented in Figure 2.5.3.

Of the indices for working and living conditions, five factors are significant. In terms of further education opportunities as well as official and financial

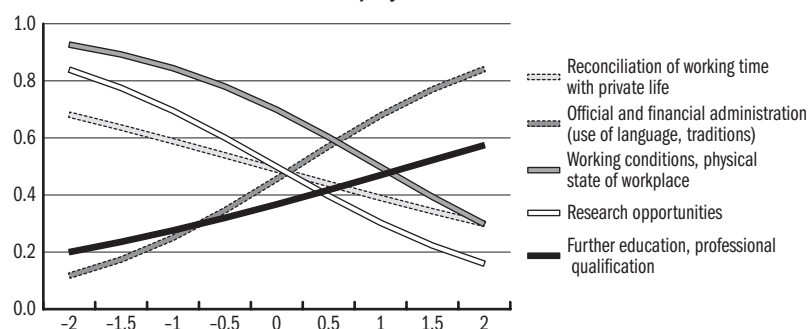
<sup>6</sup> In all cases the reference group for marginal probabilities was newly graduated male doctors without a specialist qualification, aiming to work in Germany, with average wage gain expectations.

administration, a more favourable perception of the preferred country is associated with a higher probability of employment abroad. In terms of the other three factors, the relationship is negative.

**Table 2.5.2: The effect of some control variables on the probability of working abroad**

Factors	Wald-statistic	Significance	Probability of working abroad
Sex	6.27	0.012	
Male			0.58
Female			0.42
Profession	4.77	0.029	
Doctor			0.58
Dentist			0.33
Specialist qualification	15.54	0.000	
No			0.58
Yes			0.17
Destination (preferred) country	22.68	0.000	
Germany			0.58
United Kingdom			0.44
Scandinavia			0.41
Other countries			0.25

**Figure 2.5.3: Marginal effect of the perception of working and living conditions on employment abroad**

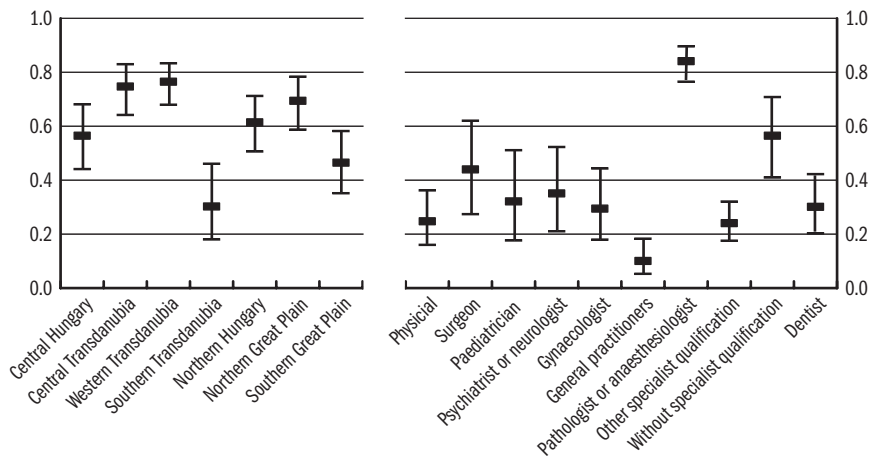


The effect of wage gain is smaller in this model. Doctors would rather prefer to work abroad than in Hungary when the wage gain is 630 thousand forints or more. As wage gain increases so does the probability of employment abroad. This difference suggests that the effect of wage gain is not independent from the expected living conditions (however, this could not be tested here due to the small sample size). The effect of time since graduation is also somewhat different: the probability of working abroad peaks approximately seven years after graduation and then starts to fall sharply (by year 20 it drops to a third of the maximum).

The negative effect of the perception of working conditions and research opportunities can be explained by the fact that doctors working abroad *ceteris paribus* consider these as more unfavourable than doctors working in Hungary.<sup>7</sup> In other words, doctors working in Hungary have a more idealised picture of the situation abroad. The situation is probably similar in the case of the reconciliation of working and private life as well; however the size of the sample did not allow the identification of significant differences.

The last model attempts to estimate the effects of a further two factors in addition to the basic model: the region of residence in Hungary and specialist qualification (Figure 2.5.4).

Figure 2.5.4: The effect of region and specialist qualification on employment abroad



Note: The lines indicate the standard error of estimation.

There are considerable differences between regions. The probability of working abroad from Southern Transdanubia is smaller, while from Central and Western Transdanubia as well as the Northern Great Plain it is higher than the general tendency (Hárs–Simon, 2015). The probability of migration is high in particular among pathologists and anaesthesiologists, and those without a specialist qualification. It is well-known that the low income of pathologists and anaesthesiologists from ‘parasolvency’ might explain their higher migration propensity. By contrast, among general practitioners the probability of employment abroad is below average. (The model has adequate fit and good explanatory power: Hosmer & Lemeshow-test:  $p = 0.420$ ; Nagelkerke’s pseudo  $R^2 = 0.379$ .)

## Conclusions

The pay advantage of working abroad is seen as considerable by doctors: respondents estimated a more than six-fold wage gain. However, the computed

<sup>7</sup> This was demonstrated with a separate regression model that cannot be presented here in detail due to limitations of space.



net real-wage gain was just over two-fold. As regards working and living conditions, there are few potential motivations for doctors to return to Hungary; in most areas doctors working abroad perceived the situation in Hungary as less favourable than their counterparts working in Hungary. However, our model suggests that even a modest pay increase could reduce the probability of labour migration. This is particularly important for those at the beginning of their career prior to professional qualification, because the probability of labour migration falls sharply later on. It is also important to improve the quality of training and further education because the model estimates suggest this would also reduce the probability of migration. Apart from professional considerations, making official and financial administration easier could potentially encourage people to stay in Hungary, suggesting difficulties with general bureaucracy in Hungary.

## References

- BALÁZS, P. (2012): *Orvosi létszámok és a nemzetközi orvosmigráció aktuális hatása Magyarországon*. (Number of medical doctors and actual effects of medical doctors' out-migration). *Orvosi Hetilap*, Vol. 153, No. 7, pp. 250–256.
- BUCHAN, J.–WISMAR, M.–GLINOS, I. A.–BREMNER, J. (eds.) (2014): *Health professional mobility in a changing Europe. New dynamics, mobile individuals and diverse responses*. Vol. II. The European Observatory on Health Systems and Policies, Observatory Studies Series 32, WHO, Copenhagen.
- CSERNUS, R.–EKE, E.–GIRASEK, E.–RAGÁNY, K. (2013): *Migráció az egészségügyben*. (Migration in the health care sector). *Magyar Tudomány*, Vol. 173, No. 3, pp. 292–298.
- DUMONT, J.-CH.–ZURN, P. (2007): *Immigrant Health Workers in OECD Countries in the Broader Context of Highly Skilled Migration*. International Migration Outlook, OECD, Paris, pp. 161–207.
- EKE, E.–GIRASEK, E.–SZÓCSKA, M. (2009): *A migráció a magyar orvosok körében*. (Migration among Hungarian doctors.) *Statistikai Szemle*, Vol. 87, No. 7–8, pp. 795–827.
- EKE, E.–GIRASEK, E.–SZÓCSKA, M. (2011): From melting pot to laboratory of change in Central Europe: Hungary and health workforce migration. In.: *Wismar, M.–Maier, C. B.–Glinos, I. A.–Dussault, G.–Figueras J.* (eds.): *Health professional mobility and health systems: Evidence from 17 European countries*. Observatory studies series, 23. World Health Organization, Geneva.
- GJOKA, M.–KURANT, M.–BUTTS, C. T.–MARKOPOULOU, A. (2010): *Walking in Facebook: A case study of unbiased sampling of OSNs*. IEEE INFOCOM, 2010, pp. 1–9.
- GLINOS, I. A.–BUCHAN, J.–WISMAR, M. (2014): Health professional mobility in a changing Europe: lessons and findings. In.: *Buchan et al.* (2014) pp. 17–32. o.
- HÁRS, Á.–SIMON, D. (2015): *A munkaerő-migráció változása a kétezres években Magyarországon*. (Changes in labour migration in Hungary in the 2000s). Budapesti Munkagazdaságtani Füzetek, BWP, 2015/2.
- KACZMARCZYK, P. (2006): *Highly Skilled Migration from Poland and Other OECD Countries – Myths and Reality*. Reports and Analyses, 17/06, Center for International Relations, Warsaw.
- KATONA, E. (2015): *Migráció az egészségügyben*. Az orvosmigráció alakulása 2009 és 2013 között. Az Egészségügyi Engedélyezési és Közigazgatási Hivatal adatainak elemzése alapján. (Migration in health care. The migration of doctors between 2009 and 2013. An analysis of data from the Office for Health Registration and Administration). Paper submitted to the Council of National Scientific Students' Associations.
- MERÇAY, C.–DUMONT, J.-CH.–LAFORTUNE, G. (2015): Changing patterns in the international migration of doctors and nurses to OECD countries. In.: *OECD* (2015) pp. 105–176.
- OECD (2015): *International Migration Outlook, 2015*. OECD Publishing, Paris.
- SALGANIK, M. J. (2006): Variance Estimation, Design Effects, and Sample Size Calculations for Respondent-Driven Sampling. *Journal of Urban Health*, Bulletin of the New York Academy of Medicine, Vol. 83, No. 7, pp. 98–112.
- VARGA, J. (2016): *Hova lettek az orvosok? Az orvosok külföldre vándorlása és pályaelhagyása Magyarországon, 2003–2011*. (Where have all the doctors gone? The migration and career change of doctors in Hungary, 2003–2011). *Közgazdasági Szemle*, Vol. 63. No. 1, pp. 1–26.