

Outmigration of Hungarian medical doctors before and after EU accession

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INTRODUCTION

This brief article summarises the results of a research¹ that investigated the effects of the EU enlargement on Hungarian medical doctors' and dentists' international mobility. The migration of medical doctors between countries is a growing concern in many European countries because of its impact on doctor shortages. The European Commission predicts that 'the EU will face a shortage of 230,000 physicians and a further shortage of 150,000 dentists, pharmacists and physiotherapists by 2020 if existing workforce problems are not addressed' (European Commission, 2012, Table 2). Both EU-12 and EU-15² countries are losing medical doctors, but, unlike EU-12 countries, many EU-15 countries are simultaneously receiving health professionals. The outward migration of health professionals is a significant problem for the Central and Eastern European new Member States that could intensify doctor shortages in these countries.

Several projects (MoHProf³, PROMeTHEUS⁴) and studies (e.g. Buchan et al., 2014; Dussault et al., 2009; Vujcic and Zurn, 2006; Jinks et al., 2000) examined the migration of medical doctors. Most of these emphasise that there is a lack of reliable data on outmigration. In most countries, the only data source available to estimate outflows is 'intention-to-leave' data, that is the number of applications for certificates of recognition of diplomas or survey data asking medical doctors' intention to work abroad. These data have limited reliability on the movement trends of doctors because not everyone who applied for certificates or who is planning to leave their home country actually leaves. In addition, individuals may apply more than once leading to overestimates of actual flows. Furthermore, not all countries systematically request these certificates, and many of those who work abroad do so on a part-time basis while also being employed in their home country. Our research explores a unique, large-scale, individual-level, panel data set that allows to follow outmigration, attrition and other employment status changes of Hungarian medical doctors at the individual level on a monthly basis between 2003 and 2011.

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¹ The detailed research results can be found at <http://www.econ.core.hu/file/download/bwp/bwp1506.pdf> (in Hungarian).

² EU-15 countries: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, United Kingdom, Austria, Finland, Sweden. EU-12 countries: Bulgaria, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia, Slovakia.

³ MoHProf reviewed the trends in international migration of health workers in 25 countries around the world, with a focus on migration within, to and from the EU (Tjadens and Weilandt, 2012).

⁴ PROMeTHEUS looked at health professional mobility and health systems of 17 countries in Europe (Wismar et al., 2011).

DATA AND METHODS

Our sample is drawn from a large, longitudinal data set covering 50% of Hungary's population aged 5-73 in 2003. The data set collects information from registers of the Pension Directorate, the Tax Office, the Health Insurance Fund, the Office of Education, and the Public Employment Service. All individuals who worked as a medical doctor or dentist in Hungary for at least one month between January 2003 and December 2011 were included in the sample. We have data for 18,266 individuals. As we do not have data on medical graduates who have never worked in the Hungarian health system, our results give a lower bound estimate on the outmigration of Hungarian doctors⁵.

We analysed the probability of outmigration of doctors with the help of competing risk models (Fine and Gray, 1999). Doctors may leave the domestic health workforce for different reasons: outmigration, a movement to non-health sector employment, retirement, child-care leave, etc. A competing risk is defined as an event which precludes or alters the probability of occurrence of the main event under examination. Competing risk models define separate hazard functions for each event. The cause-specific hazard is the instantaneous risk of failure (in our case exit from the domestic health workforce) from a specific cause given that failure has not happened before. The total hazard of leaving the domestic health workforce is computed as the sum of the subhazards. Based on the predictions of the competing risk model the cause-specific cumulative incidence function gives the proportion of doctors at a given time who have left the profession for a given cause accounting for the fact that the profession can also be left for other causes. In the analysis we distinguished four competing risk events: (1) outmigration, (2) exits out of profession (attrition), (3) exits out of employment (related to inactivity, unemployment), or (4) death.

We conducted the analysis for the whole sample and also for subsamples of four age groups. The independent variables were: gender, age (in the models that used the whole sample), dummy variables indicating whether the individual was a general practitioner or a specialist doctor versus a dentist, and dummy variables accounting for the region of residence. A further variable controlled for the relative labour income of the individual, that is the average labour income of the individual in the preceding three months as a ratio of the average national labour income during the same period. To determine whether the example of peers strengthened outmigration decisions, we included a variable indicating whether any medical doctors had out-migrated during the preceding three months from the same workplace where the individual had been working before migrating. We also put in the models two dummy variables indicating the month of Hungary's EU accession (05.2004) and another indicating the month (05.2011) when the transitional period of restrictions on the free movement of labour from EU-8⁶ countries to Austria and Germany ended.

FINDINGS

Table 1 summarises the results of the competing risk model for outmigration for the whole sample and the age-group-specific subsamples. A subhazard rate greater than one implies a higher probability of outmigration compared to the reference category while a rate less than one implies a lower probability. For instance, in the model for the whole sample, the subhazard rate is 1.22, indicating that the

⁵ Data on medical graduates indicate high outward migration for graduates. About 40% of those who finished their studies between 2007 and 2010 have not registered with the system (Jávorszkykyné Nagy, 2012).

⁶ EU-8 countries: Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia and Slovenia.

probability of outmigration of men is 22% higher than for women. Similarly, a 1% increase in relative labour income will decrease the probability of outmigration by 6% (the subhazard rate is 0.94). The results show that, while EU accession has not changed the probability of outmigration of Hungarian medical doctors, after lifting the Austrian and German restrictions on the free movement of labour from EU-8 countries the probability of outmigration of Hungarian doctors increased considerably. For the whole sample, there was a more than fivefold increase in the probability of outmigration in May 2011. The increase was even larger for the young: more than sevenfold for medical doctors younger than 31 years and more than sixfold for medical doctors 31-40 years old. But even the probability of outmigration of doctors 41-50 years increased fourfold.

Table 1 / Competing risk models (subhazard rates) – outmigration

Competing risks: attrition/exit out of employment/death

| Variable | Subhazard rates | | | | |
|--|-----------------|----------|------------|------------|------------|
| | Whole sample | aged <30 | aged 31-40 | aged 41-50 | aged 51-60 |
| Gender (Male=1) | 1.22* | 1.395* | 1.50* | ns | 0.76* |
| Age | 0.99* | - | - | - | - |
| General practitioner | 1.33* | 2.17* | 1.86* | ns | ns |
| Specialist doctor | ns | ns | 1.62* | ns | ns |
| Relative labour income | 0.94* | 0.46* | 0.68* | ns | ns |
| Peer effect | ns | ns | 1.38* | ns | ns |
| Central Transdanubia | 1.42* | ns | ns | ns | ns |
| Northern Great Plain | ns | 2.33* | ns | ns | ns |
| Western Transdanubia / Southern Transdanubia / Northern Hungary / Southern Great Plain | ns | ns | ns | ns | ns |
| EU accession (May 2004) | ns | 0* | ns | ns | ns |
| Lifting of temporary restrictions (May 2011) | 5.75* | 7.65* | 6.72* | 4.04** | 0* |

Notes: ns – not significant; * significant at the 1% level; ** significant at the 5% level. Reference category: female; dentist; Central Hungary; month other than 05.2004; month other than 05.2011.

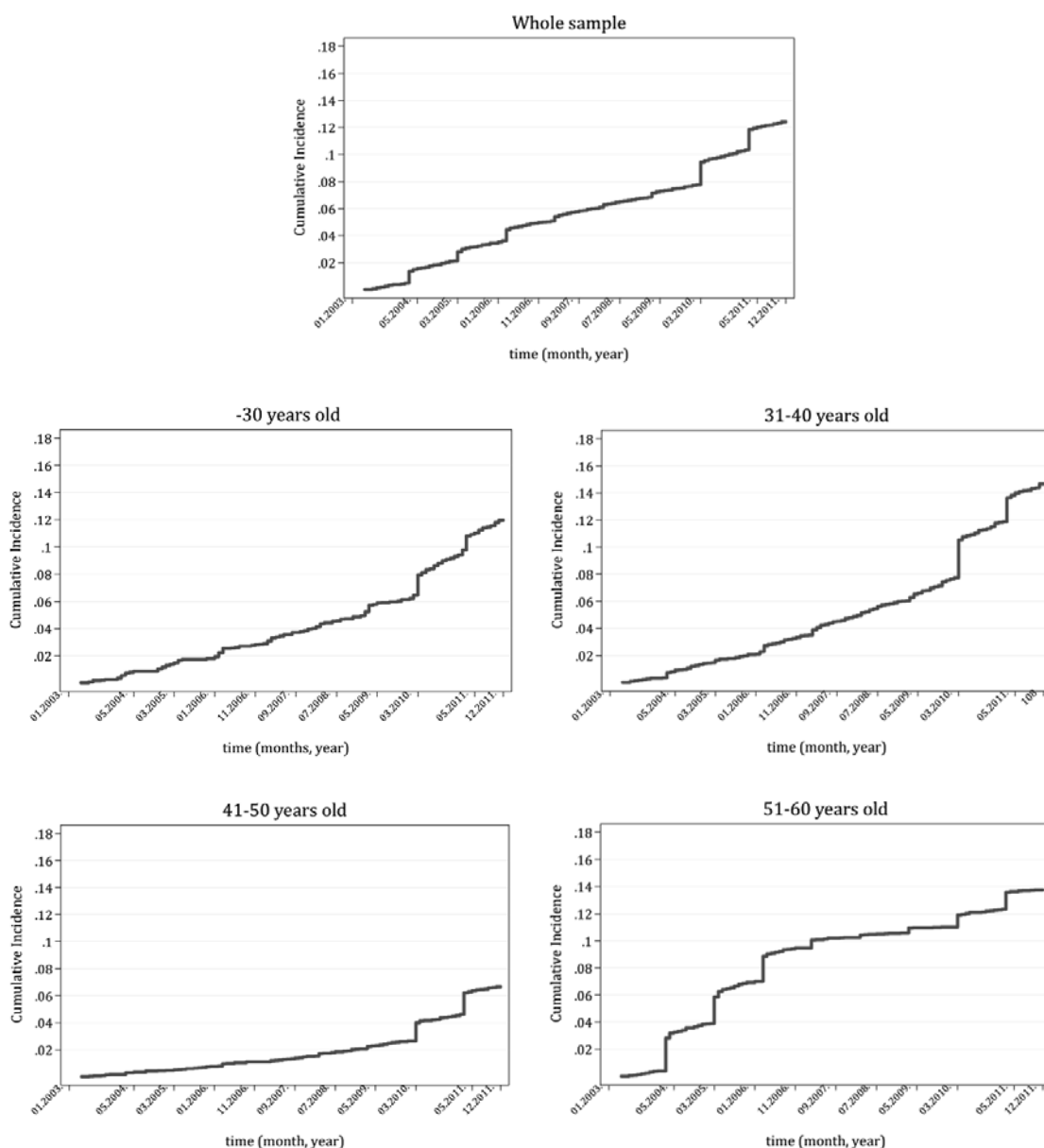
Source: Varga, J. Hova lettek az orvosok? Az orvosok külföldre vándorlása és pályaelhagyása Magyarországon 2003-2011. BWP – 2015/6.

The changes in the dynamics of the probability of outmigration in the examined period can be traced with the help of the cumulative incidence functions. Figure 1 shows the cumulative incidence functions of outmigration for the whole sample and for the different age groups as predicted by the competing risk models.

Between 2003 and 2012 about 12% of Hungarian medical doctors and dentists left Hungary: more than 14% of those 31-40 years old, 12% of those younger than 31 years, and even 14% of those 51-60 years

old. The group of doctors aged 41-50 years shows the lowest rates. Immediately upon EU accession, doctors of the highest age group, 51-60 years, had left the country at the fastest pace, probably because they could take advantage of their previous professional contacts in finding suitable jobs. Thereafter, until March 2010, the outflow of the age group 51-60 years stopped. For the other age groups, there was a steady outflow until March 2010: until that date, 8% of those 31-40 years old, 6% of those younger than 31 years and only 3% of those 41-50 years olds went abroad.

Figure 1 / Cumulative incidence functions – outmigration of Hungarian medical doctors



Source: Varga, J. Hova lettek az orvosok? Az orvosok külföldre vándorlása és pályaelhagyása Magyarországon 2003-2011. BWP – 2015/6.

It was not only the end of the transitional period (May 2011) of restrictions on the free movement of labour from EU-8 countries to Austria and Germany that increased the probability of outmigration of

medical doctors of all age groups. We observe also another turning point in March 2010. While we cannot explain the reasons for this sudden change, it is very likely that the forecasted results of the upcoming general elections in Hungary in April 2010 contributed to that change. In fact, in March 2010, the rise in the outflow was higher than the rise in May 2011. After March 2010, the probability of outmigration rose steeply not only for the younger medical doctors but for those 41-50 years old as well. This may highlight that not only the pull factors play a decisive role in the outmigration decisions, but the push factors might be equally important in these decisions. The results of the competing risk models for medical doctors' attrition in Hungary during the same period confirm this explanation. Between 2003 and 2011 18% of Hungarian physicians and dentists left their profession and took up another job in Hungary. It seems that shortages of healthcare professionals in Hungary are not only due to high outward migration, but also attributable to other problems in the Hungarian health system. Yet, outward migration plays an important and growing role in it.

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