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Medical Brain Drain in Romania: Trends before and after Accession to the European Union

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Abstract: This article aims to identify the impact of Romania's accession to the European Union on medical emigration, analyzing the evolution of the phenomenon before and after 2007. **Prior work** in this field consists in theoretical and qualitative studies, highlighting the push and pull factors contributing to the emigration of Romanian physicians, the impact and the possible measures. Emigration trends before integration are analyzed using a data set existing in the literature. For the following period, between 2007 and 2010, the data set was filled by collecting statistics on the medical doctors trained in Romania and practicing abroad from the destination countries. The **results** confirm the concern rose about the massive emigration of medical doctors following the integration**,** compared to the previous period: between 2007 and 2010, Romania lost 8131 physicians. This study has major implications for academics with interest in modeling the effects of medical brain drain on economic development. Also it is a valuable instrument for policy makers, offering an overview of the magnitude of this phenomenon, helpful in adopting the right policy measures. The article offers a unique data set on the emigration of physicians, constituting a starting point in the attempt of implementing a monitoring system.

Keywords: migration; medical brain drain; physicians; Romania

JEL Classification: F22; J21; J24; O15

1. Introduction

Medical brain drain is defined as the migration of health personnel, from developing countries to developed countries, but also between industrialized nations, in search for better opportunities.

After the fall of the communist regime, Romania became a major source country for medical emigrants. An analysis before 1990 is not relevant because emigration was not allowed, the few exceptions being limited to ethnic groups (Germans, Hungarians, and Jews).

The aim of this article is to highlight the impact of the accession to the European Union on the medical emigration. The main objective consists in analyzing emigration trends before and after 2007 in order to verify the hypothesis according to which the number of physicians leaving the country grew considerably after 2007.

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2. Methodology

The analysis of the emigration trends before accession to the European Union is based on the data collected by Bhargava and Docquier (2007) and Bhargava, Docquier and Moullan (2010). The two data sets (the one from 2010 represents an update of the previous one) rely on primary statistics on the medical doctors trained in the country of origin and practicing abroad, collected from 16, respectively 18 OECD destination countries, from 1991 to 2004. Medical emigrants are defined by their country of training, where this information was not available the country of birth or the citizenship were used as criteria. Most of the data were obtained through observation. Breaks in series were filled using a log linear adjustment (Bhargava and Docquier, 2007):

$$\ln[Mi, t+k] = \frac{n-k}{n}\ln[Mi, t] + \frac{k}{n}\ln[Mi, t+n], \qquad for\ k = 0\ to\ n$$

Data regarding the Population and the indicator Phys1000 (physicians per 1000 people) were obtained from the World Development Indicators (World Bank). The indicator PhysTot (total number of physicians) was obtained multiplying the latest two values (Docquier and Bhargava, 2007).

The medical brain drain rate was calculated in relative terms as a ratio between the stock of physicians from a country working abroad and the total number of physicians originating from the source country (residents plus emigrants) (Docquier and Bhargava, 2007).

3. Mobility before Accession to the European Union

The data set from Table 1 reveals that 82.41% of the Romanian physicians emigrate to four main destination countries: USA, Germany, United Kingdom and Sweden. USA is the most preferred destination country by Romanian medical doctors, conclusion that is not new, USA attracting the biggest number of highly skilled (physicians included in this category) from all over the world.

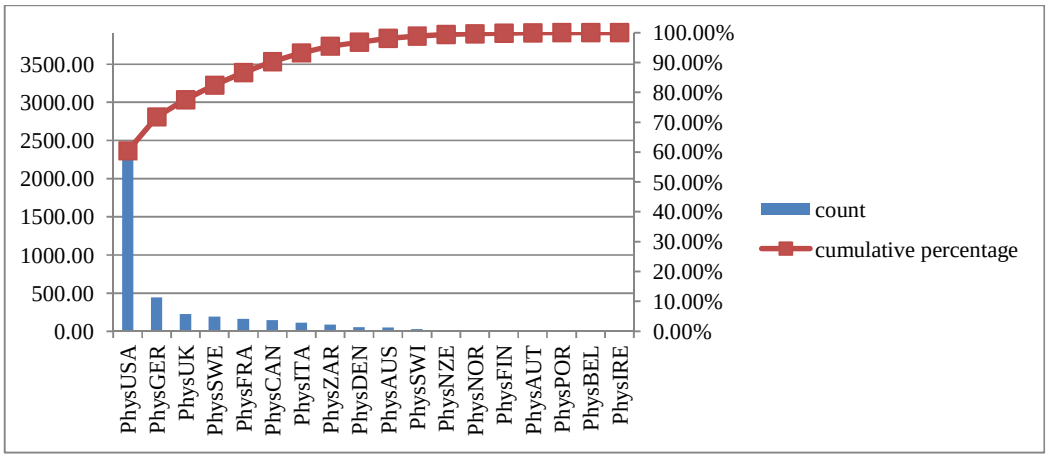

Figure 1. Main Countries of Destination

As the aim of this study is to analyze the impact of the accession to the European Union on the medical emigration in Romania, we will include only the European Union members as countries of destination.

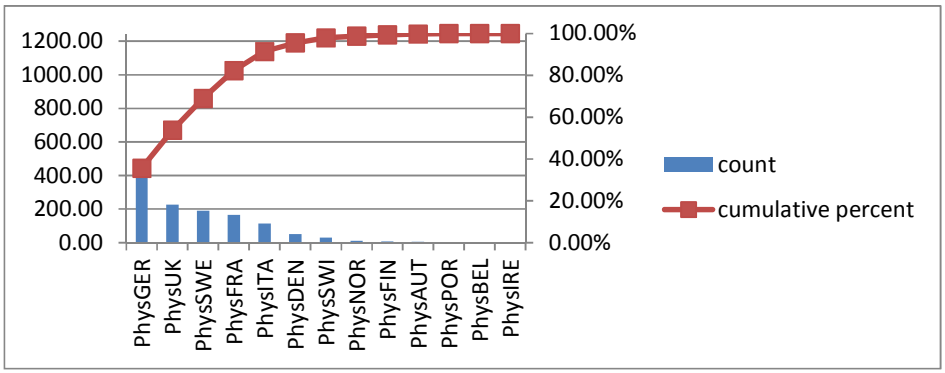

Figure 2. Main European Destinations

The most preferred European destinations are Germany, United Kingdom, Sweden and France, only these four countries attracting 82.25% of the physicians (Figure 2).

Table 1. Medical Brain Drain – Data from 18 Countries of Destination

year	MBD	PhysEmig	PhysTot	Phys1000	Population	Phys AUS	Phys AUT	Phys BEL	PhysCAN	Phys DEN	Phys FIN	PhysFRA	PhysGER	PhysIRE	PhysITA	Phys NOR	Phys NZE	PhysPOR	PhysSWE	PhysSWI	PhysUK	PhysUSA	PhysZAR
1991	0.03792	1659.6	42101.6	1.81590	23185000	28.20	4.14	0.00	137.00	8.97	0.00	30.00	239.29	0.00	93.80	9.16	12.94	0.00	105.70	48.37	16.00	858.00	68.00
1992	0.03983	1764.0	42522.0	1.86590	22789000	31.08	4.18	0.00	137.00	10.11	0.00	29.00	262.87	0.00	95.21	9.16	13.33	0.00	112.70	46.34	27.00	916.00	70.00
1993	0.04593	1938.2	40265.0	1.76950	22755000	33.96	4.22	0.00	137.00	20.47	1.00	28.00	321.02	0.00	96.64	9.16	13.73	0.00	119.70	44.31	31.00	1007.00	71.00
1994	0.04869	2053.0	40115.7	1.76480	22731000	36.84	4.27	0.00	137.00	26.36	3.00	27.00	338.20	0.00	98.08	9.16	14.14	0.00	126.70	42.28	40.00	1078.00	72.00
1995	0.05092	2152.0	40111.3	1.76850	22681000	39.72	4.31	0.00	127.00	33.90	3.00	25.00	320.81	0.00	99.56	9.16	14.56	0.00	133.70	40.25	34.00	1193.00	74.00
1996	0.05266	2274.7	40920.5	1.81000	22608000	42.60	4.35	0.00	129.00	37.30	3.00	24.00	341.29	0.00	101.05	9.16	15.00	0.00	140.70	38.22	40.00	1274.00	75.00
1997	0.05697	2440.2	40392.0	1.79090	22554000	43.20	4.39	0.00	131.00	39.31	4.00	21.00	349.27	0.00	102.56	9.16	15.45	0.00	147.70	36.19	57.00	1403.00	77.00
1998	0.06128	2696.8	41311.0	1.83580	22503000	43.80	4.44	0.00	131.00	41.68	4.00	33.00	359.62	0.00	104.10	9.41	15.91	0.00	154.70	34.16	68.00	1615.00	78.00
1999	0.06482	2971.7	42871.0	1.90894	22457990	44.40	4.48	0.00	136.00	42.85	4.00	45.00	371.70	0.00	105.67	9.66	16.39	0.70	161.70	32.13	105.00	1812.00	80.00
2000	0.06855	3119.4	42388.1	1.88870	22443000	45.00	4.53	0.00	131.00	44.64	5.00	57.00	378.00	0.00	107.25	9.91	16.88	1.40	168.70	30.10	116.00	1923.00	81.00
2001	0.07315	3296.1	41764.0	1.88704	22132000	45.60	4.57	0.00	132.00	45.54	6.00	68.00	380.10	0.00	108.86	10.17	17.39	2.10	175.70	30.10	142.00	2045.00	83.00
2002	0.07829	3494.7	41143.2	1.88704	21803000	47.88	4.62	0.00	140.00	51.23	6.00	82.00	409.50	0.00	110.49	10.46	17.91	2.80	182.70	30.10	172.00	2142.00	85.00
2003	0.08297	3712.7	41031.9	1.88704	21744000	49.80	4.67	0.00	144.00	50.31	7.00	118.00	444.50	0.00	112.15	10.70	18.45	2.80	189.70	30.10	191.00	2253.50	86.00
2004	0.08708	3913.7	41031.9	1.88704	21744000	51.29	4.71	0.00	144.00	51.79	7.00	165.00	444.50	0.00	113.83	11.00	19.00	2.80	189.70	30.10	226.00	2365.00	88.00

Source: Bhargava, Docquier & Moullan (2010)

Table 2. Medical Brain Drain – 1991-2004

year	MBD	PhysEmig	PhysTot	Phys1000	Population	PhysGER	PhysUK	PhysFRA	PhysSWE
1991	0.00920	391.0	42101.6	1.81590	23185000	239.29	16.00	30.00	105.70
1992	0.01005	431.6	42522.0	1.86590	22789000	262.87	27.00	29.00	112.70
1993	0.01226	499.7	40265.0	1.76950	22755000	321.02	31.00	28.00	119.70
1994	0.01309	531.9	40115.7	1.76480	22731000	338.20	40.00	27.00	126.70
1995	0.01264	513.5	40111.3	1.76850	22681000	320.81	34.00	25.00	133.70
1996	0.01317	546.0	40920.5	1.81000	22608000	341.29	40.00	24.00	140.70
1997	0.01404	575.0	40392.0	1.79090	22554000	349.27	57.00	21.00	147.70
1998	0.01468	615.3	41311.0	1.83580	22503000	359.62	68.00	33.00	154.70
1999	0.01569	683.4	42871.0	1.90894	22457990	371.70	105.00	45.00	161.70
2000	0.01670	719.7	42388.1	1.88870	22443000	378.00	116.00	57.00	168.70
2001	0.01801	765.8	41764.0	1.88704	22132000	380.10	142.00	68.00	175.70
2002	0.02015	846.2	41143.2	1.88704	21803000	409.50	172.00	82.00	182.70
2003	0.02247	943.2	41031.9	1.88704	21744000	444.50	191.00	118.00	189.70
2004	0.02438	1025.2	41031.9	1.88704	21744000	444.50	226.00	165.00	189.70

4. Emigration Trends after 2007

Following the same methodology used by Bhargava and Docquier (2007) and described above, we completed the data set, collecting statistics on the medical doctors trained in Romania and practicing in the four destination countries identified as mostly preferred. Annual data on the number of physicians per 1000 and population were obtained from World Development Indicators, using the interpolation method for the missing values. Information on the annual number of physicians trained in Romania and practicing abroad was obtained from the countries of destination as follows: for Germany, from the Bundesaerztekammer (observed), for UK, from General Medical Council (observed), for Sweden, from The National Board of Health and Welfare - Socialstyrelsen (observed for 2007-2010, estimated for 2011), and for France from Conseil National d'Ordre des Médecins (observed).

Table 3. Medical Brain Drain, 2007-2011

year	MBD	PhysEmig	PhysTot	Phys1000	Population	PhysGER	PhysUK	PhysFRA	PhysSWE
2007	0.049674	2163	41380.6	*1.912725**	21634371	824	567	560	212
2008	0.059809	2632	41374.92	1.9166	21587666	927	749	717	239
2009	0.069485	3257	43616.27	*2.024251*	21546873	1112	972	918	255
2010	0.090178	4559	45996.34	*2.13801*	21513622	1495	1603	1176	285
2011	0.10763	5850.33	48505.54	2.25813	21480401	2105	1931	1505	*309.33*

** Values in Italics are estimated*

Source: Author's calulations based on Bhargava, Docquier & Moullan (2010)

The emigration rate registered a significantly rise compared to the previous period after Romania became a member of the European Union (Table 3). In 2010 Romania registered a number of 4559 medical doctors practicing in the four destination countries mentioned, value more than double compared to 2007 (2163 medical doctors). After 2007, the top of the four main destination countries preferred by Romanian physicians includes Germany, United Kingdom, France and Italy (WHO, 2011). Although Italy surpassed Sweden, with a total of 555 Romanian doctors registered in 2008 (EMN, 2009), Germany, UK and France maintained their positions. Another important destination country is Belgium, registering 248 Romanian medical doctors in 2011 (FPS).

An analysis of the number of doctors registered for the first time each year in the main destination countries could be very interesting. Data available for United Kingdom reveal that, between 2007 and 2010, the percentage of Romanian physicians choosing as destination country UK grew from 7.95% of the total number of physicians emigrating in 2007, to 24.36% of the physicians emigrating in 2010.

Table 4. Romanian Physicians Registered for the First Time in UK

Year	2007	2008	2009	2010	2011
Physicians registered for the first time	175	233	254	677	449

Source: General Medical Council

The available data from the Romanian College of Physicians (Table 5) emphasis that, between 2007 and 2010 Romania lost 8131 medical doctors, with an average of 2032.75 medical doctors emigrating each year. The results confirm the major concern rose about the massive emigration following the accession to the European Union. However, the situation is not as severe as it was expected (WHO, 2011).

Table 5. Medical Emigration in Romania, 2007-2011

Year	**PhysEmigTot**
2007	2200
2008	1252
2009	1900
2010	2779
2011 (first 8 months)	1700

Source: Romanian College of Physicians

A country is affected by the brain drain when the emigration rate exceeds 3% of the total number of physicians practicing in the country of origin (WHO, 2011). In absolute terms, the medical brain drain rate in Romania was 4.68% (average, for 2007-2010). The most affected are the countries from Sub Saharan Africa or South and East Asia: Grenada and Dominica, for instance, register an emigration rate in the medical sector of 98.1%, respectively 97.9% - only 2 doctors out of 100 trained will remain in the country (Docquier and Rapoport, 2009). In this context, we can conclude that Romania's situation is not so critical. However, the exponential growth registered after 2007, the decreasing interest of youth in choosing medical career and the ageing population should be taken into account when dealing with this phenomenon whose consequences are affecting not only the health system, but also the economic growth and the national security.

5. Conclusions

This article offers a first data set on the emigration of Romanian medical doctors after the accession to the European Union, relying on statistics collected from the main destination countries. Following the methodology used by Docquier and Bhargava (2007) and Bhargava, Docquier and Moullan (2010), the panel data set was completed with data for the period between 2007 and 2010, collecting information about the medical doctors trained in Romania and practicing in four destination countries: Germany, United Kingdom, France and Sweden. Future research may focus on the extension of the data set for other destination countries, such as Italy or Belgium. This study is an important starting point for academicians with interest in modeling the effects of medical brain drain on economic development. Also, it is a valuable instrument for the policy makers in the health domain. Offering information about the magnitude of the phenomenon, it can be used at the evaluation of the impact on Romania's health system and economic growth. Moreover, based on the category of impact (rather positive or negative) adequate policy measures could be adopted by the decision makers. The main limit in this field is the lack of accurate statistical data about the medical emigration. Most of the data available in Romania are based on the intention of emigration. Relevant information could be obtained from destination countries or international organizations. However, the gaps in the series are filled using estimations, reducing the accuracy.

6. Appendix

Sources for statistical data used in this article:

Germany – Bundesaerztekammer/ German Medical Association, http://www.bundesaerztekammer.de/.

United Kingdom - General Medical Council**,** http://www.gmc-uk.org/.

France - Conseil National d'Ordre des Médecins/ National Board of Medical Association, http://www.conseil-national.medecin.fr/.

Sweden – Socialstyrelsen/ National Board of Health, http://www.socialstyrelsen.se/.

Belgium – Federal Public Service, http://www.health.belgium.be/.

Romania – Romanian College of Physicians, http://www.cmr.ro/.

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