

Physicians' Circular Migration and Economic Consequence for Jordan

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Abstract

The return of highly skilled migrants has been proofed to be a suitable instrument for reversing brain drain in developing countries. This study examines the relationship between educational attainment represented by migrants physicians' source of board and patients visits. The study focuses on evidence from Jordan since this country has a long history of skilled migration. The study analyses a sample of 267 migrants Jordanian physicians. It shows that migrant's Jordanian physicians source of education, gender, speciality and length of time spent abroad have a significant effect on their average daily income.

Keywords: Human capital, Return migration, physicians, Jordan

1. Introduction

Education, training and experiences are keys to investment in human capital formation (Becker, 1962, 1993; Mincer, 1974). Investment in human capital to attain economic performance has been recognized in the economic literature since the work of human capital theory by "Chicago School" (Shultz, Becker, Mincer and Rosen). Human capital accumulation continues to be attained lifelong (OECD, 2002) and can be achieved through education, training and on the job experience.

According to (Sjaastad, 1962), migration is a type of investment in human capital involving costs and future personal returns, in terms of better employment, higher income for individuals, increasing the productivity of human resources and positive external effects for the society. According to Sjaastad "migration cannot be viewed in isolation"; it should come with complementary investments like occupational improvement, training and experience. Persons in human capital literature are more likely to migrate if expected earnings, education and experience, are greater in the host country (Brown and Connell, 2004).

From the Origin countries point of view, the resulted benefits from the mobility of their highly skilled labour to the host country are attained through improving their human capital, strengthening cultural and commercial ties, and transferring of technology. This mobility is asymmetrical; less developed countries lose required human resources and important investments in education and fiscal revenue (Marchaland Kegels, 2003). Brain drain-particularly the migration of doctors-has been a main concern in many developing countries (Kangasniemi et al., 2007). the migration of doctors from unfortunate African countries to South Africa, South African doctors moving to UK, British doctors to Canada and Canadian doctors to the USA (Rutten, 2009). The health sector in India count more than 30,000 physicians working in US, most of them acquired training financed by public expense. Those are a clear example of brain drain as expressed by (Kapur, 2001).

The migration of health care workforce can have both a positive and a negative consequence on development. Positive impacts include economic, social and cultural contributions of migrants, mitigation of demographic and labour market pressures in both countries of origin and destination, while negative effects include brain drain, rural evacuation and labour force depletion(IOM, 2006).This will interrupt the national strategies for health care sector development(Brown and Connell, 2004). The depletion of well trained workers of origin countries, and the public resources invested in their training (Chanda, 2002; Saravia and Miranda, 2004;Dussault et al., 2009), losses of training costs, lost revenue from taxes (Ogilvie et al, 2007), reducing the opportunity for economic growth and raising the level of inequalities and poverty in origin country (Forcier et al, 2004),diminish effectiveness of health care delivery and reduction of the confidence of the remaining workforce (Connella et al., 2007). The loss of services to the country where migrant health worker were originally trained is significant, especially given the scarcity of health services in a poor country such as India, Jamaica and Ghana (Kapur, 2001; Connella et al., 2007; Kingma, 2001).

Emigration of highly skilled worker has increasingly turned out to be temporary instead of permanent (Gaillard and Gaillard 1997; Teferra, 2005). Through brain exchange, the mobility of skilled worker, who come back to their origin countries while maintaining social and professional associations with the host country, improves their productivity in the origin country (Saxenian, 2005). Hence, migration is considered a temporary phase for a number of migrants, whom come back to their origin countries with skills and knowledge, learned abroad (Hunger, 2002). Brain circulation model is one step short of brain reversal or the brain gain. Therefore, returning home after studying abroad would help to transfer technology and know-how to the origin countries (Özdenandand Schiff, 2007). Recent studies have identified several circumstances under which migration enhances human capital and increases the expected returns to skills (Mountford, 1997; Stark et al., 1997; 1998; Stark and Wang, 2002; Fan and Stark, 2007). The migrated human capital gain accumulate from returnees enhance the average human capital in the origin country (Stark et al., 1998). It is worth noting that beneficial brain drain hypothesis did not receive much testing by economists (Kangasniemi et al., 2007).

Emigration of skilled Workers to developed economies can be valuable to the origin country by acquiring better knowledge than they could at home, accumulating human capital earlier, improving their productivity and, hence, escalating the possible return of knowledge, networks, skills and of remittances (OECD, 2008; IOM, 2008). The main proposition is that if emigration encourages more skill creation than skill loss, then origin countries might increase their accumulation of skills when emigration is possible (Commander et al., 2004). Despite the significant brain drain consequences of emigration on developing and least-developed countries, developing countries are benefiting from the knowledge transfers while their graduate students are abroad (Doquier, 2006; Beine et al., 2003).A substantial agreement in the literature emphasizes that the return of foreign graduates is vital for development (Spilimbergo, 2007; Kapur and McHale, 2005; Luo and Wang, 2002; Regets, 2007). Return graduates assist developing countries in their persistence to build up their own human resource capacities (Vincent-Lancrin, 2005). Several studies have broad implications relevant to many developing countries the current investigation focuses on the collected evidence from Jordan, as Jordan is one of the first Arabic countries in which large-scale emigration of skilled professionals was observed. And since published data regarding immigration are rare and mostly unreliable to conduct empirical studies at the micro level. Therefore, data were collected through a survey. Jordan is a low-middle income country having a narrow base of industrialization and the service sector outweighs other sectors. Thus Jordan development choices are constrained by its weak natural resources coupled with high unrest situation in the Middle East region, high inflation and unemployment rates and increases in the incidence of poverty over the last two decades.

Despite the previous facts, the World Bank has ranked Jordan number one in medical tourist destination in the Middle East and fifth in the world (Watson and Stolley, 2012). The remainder of this paper is organized as follows. Section 2 reviews the applied literature on the economic impacts of return migration in general and of medical migration in particular. Section 3 provides a background on Jordan's intensive concern for education and section 4 provides data collections, definitions and methodology used in the study. Section 5 discusses the results and the final section concludes and proposes policy options from a broader perspective.

2. Background

Returnees gain general education, science, technical training and practical business skills from either working in a business sector or through having started a business (Dai and Liu, 2009). They can increase the economic development of their origin countries by bringing home new skills, knowledge, contacts and ideas attained abroad (Zweig et al., 2005; Agrawal et al., 2008; Welch, 2010:297). The Chinese students who obtained foreign PhD and returned back home contributed to the internalization of the education in China, (Zweig et al., 2006). American students who went to Europe - especially to Germany- were ultimately those returnees who initiated new academic institutions and transformed American higher education (Altbach, 1998). According to Commander et al., (2004) the length of stay overseas beside savings accumulation, increases the chances of returnees to become an entrepreneur. The Indian Diaspora's success in Silicon Valley has influenced how the world views India, reflecting the reputational spill over effects of accomplishment in a most important sector in a leading country (Kapur, 2001). South Korea has high participation rate of highly skilled returnees through their "brain adaptation" model, where they adapt most of what they learned in the U.S. and applied it back in their academic institutions According to (Lee and Kim, 2009). Immigrants from China, Taiwan and Brazil have returned back home from U.S. and started a high technological firms (Zuckerand Darby, 2007).The Indian information technology professionals -who wherein Australia- form bridge between India and other parts of the world Accordingto (Xiang, 2001).

Migration of health staffs has important potential for countries of origin through remittances, financial flows and immigrants related trade opportunities (IOM, 2006). The transfer of technology and knowledge through health care professionals encouraged as a source to develop the education and health systems of origin countries (Kingma, 2001). The government of the Philippine has encouraged the export of its health staffs as a successful tool for national development through the large inflow of remittances (IOM, 2006; Diallo, 2004; Henderson and Tulloch, 2008; Forcier et al., 2004). In major nurse exporting countries, total recorded remittances constitute a significant proportion of the gross domestic product (GDP), e.g., 10% for the Philippines, 14% for Jamaica, 8.5% for Uganda and 2% of the GDPfor India (Kingma, 2007). In Ghana, returned health professionals from Europe strengthen health service development (Davies et al., 2011) and remittances were the third largest inflow of funds for Ghana (Padarath et al., 2003). In Malawi, migrated skilled health worker was considered a viable development strategy (Rutten, 2009). In the Pacific Islands of Tonga and Samoa the income from remittances is estimated to be about the same as total GDP, and remittances by migrant nurses not only exceed those made by other migrants, but are also said to outweigh the cost of additional human capital in nurse training (Rutten, 2009; Brown and Connell, 2004). In Kenya, the departure of skilled immigrants workers raise pay levels of those not immigrated, create vacancies in education institutions and activate skills improvement(IOM, 2006).The positive role of returning health care workers includes transfer of skills, knowledge and technology, codes of practice and bilateral agreementsAccording to (Connellaet al., 2007).

3. Jordan society Value of Education

Social life and identity in Jordan traditionally focus on the family, with family ties extending into the structure of clans and tribes. An individual's social identity and loyalty continues to be oriented to the extended patrilineal kin relations (Hamamy et al., 2007). The culture of migration which exists in Jordan stems from the fact that Jordanian society values education both for its intrinsic merit and as a means to improve one's quality of life. The token value of a degree is an important title that distinguishes a degree-holder from the multitudes not fortunate enough to have the means to obtain it. Due to its status value, there is an ever-increasing social demand for higher education in Jordan and this demand continues to grow (Ahlawat et al., 1996). Jordanian people value education and believe in it as a key for the future, and it is always the first priority for families in Jordan (Ahlawat et al., 1996).

The underlying features of Jordanian households imply that youth in Jordan potentially faces a lower risk of long-term unemployment, poverty and exclusion during an economic downturn when they are equipped with higher degrees. Most specifically, those with doctoral degrees are relatively highly esteemed in the Jordanian society and are on high demand. Therefore, higher education has been inculcated as a mean of social status and a key for the future. Moreover, parents enrol their children in higher education institutions even if it is at the expense of their basic needs, or if they have to borrow money, or sell the family properties (Bader, 1999). Hence, having a place in universities is of great worry for Jordanian parents towards their children. And there is an advantage for students from families with higher incomes with respect to university attendance, especially abroad. The level of encouragement to pursue education and the value placed on higher education by Jordanian families on their children has resulted in educational aspirations and expectations for individuals. Most Jordanians would sacrifice everything they have in order to send their children to schools and then to universities. Some families sell their assets to invest into their children education (MoPIC et al., 2004). Jordanian parents have placed the education of their children's at the first level of family priorities and shown during the last decade their sacrifice in sending their children to institutions of higher education (Hammad and Al-Basheer, 2000). Jordanian society recognized the importance of higher education when it is combined with migration and Jordanian parents consider English as the 'make or break' for their children's future (Khuwaileh and Al-Shoumali, 2001). Hence, higher education considered of high priority for Jordanian students across national boundaries, first, as it offers citizens an opportunity to increase their income and social mobility and second, it facilitates their advancement in an unstable world, especially in the Middle East where countries face the problem of massive immigration and refugees due to regional wars (Mazawi, 2004).

Jordan's first "study abroad" wave began in the 1960s, with doctors and engineers among the first group of emigrants. Several reasons for this development, in part, the influx of Palestinian refugees into Jordan, and the ability of many of them to obtain good paying positions or to establish new businesses, demonstrated that knowledge is a valuable capital asset which can't be expropriated and which one can take with him wherever one goes (Qubain, 1979). Whereas previously the urban or urbanized middle class generally thought of higher education as something restricted to people of wealth and status beyond the limit of horizons for their children, education fever by time has caught parents, children and every student who completed his secondary education and wishes to continue his studies. However, investment in higher education for children involves costs that poorer parents can seldom afford (MoPIC et al., 2004).

4. Data and Methodology

The study analyses the impact of physician source education on their daily earning controlled for experience and gender. Nine different regressions are performed based on the sample used. The first regression used pool sample that include 267 observations. The Second and third regressions are performed on average daily earning for gender segmented samples for males and females, knowing that our sample contains 76 female physicians and 191 male physicians. The fourth to ninth regression estimates the determinants of average daily earning for six different physician specialty. The basic descriptive statistics for the main quantitative variable used in the study are provided in table 1. The definition of these variables are as follow: the variable earning represents the daily earning for the physician, and it was calculated by multiplying number of visits in each day by the price of the first visit, the variable Lexp stands for the number of experience years inside Jordan. The number of experience year in Arab countries is characterized by variable Arbexp, and the number of year spent in eastern and western countries are signified by Estexp and Wstexp variables successively. The sum of all previous mentioned experienced are represented by variable named Exp.

The physician specialty are selected as follows: Cardiology (dealing with diseases of the heart and blood vessels), Dermatology (dealing with diseases of the skin, hair and nails), Otolaryngology (dealing with diseases of Ear, Nose and Throat), Ophthalmology (dealing with Eye surgery and Diseases), Obstetrics and Gynaecology (dealing with medical and surgical care to women, women pregnancy, childbirth, and disorders of the reproductive system), Paediatrics. In addition, we find eleven sources of education in our sample. We represent each of them by a dummy variable that take the value of one if the Jordanian physician get his Board (speciality) from that source, and take the value of zero otherwise.

Additionally, we name the gender dummy (Male) and it take the value of one if the Jordanian physician is male, and zero otherwise. In table 2, the sizes of different samples and the basic descriptive statistics for the above defined qualitative variable are provided.

5. Results

The variables included in the first model are represented in table (3), this model has the variable (Earn) as dependent variable. In the right hand side we have two sets of independent variables, the first set are qualitative independent variables that are represented by dummy variables, to measure the effect of speciality source of education on the average earning of the Jordanian physician. We include 10 sources in our first model and they are: United State of America (US), United Kingdom (UK), Germany (GR), France (FR), Italy (IT), Romania (RM), Russia (RS), Yugoslavia (YGS), Greece (GC), and Algeria (ALG) and we exclude Jordan since our aim is to measure the difference in average daily earning between Jordanian source of board and other sources. The second set of independent variables is quantitative variables that measure the effect of different location of experience on average earning of Jordanian physician. The symbols LEXP, ARBEXP, WSTEX and ESTEX represent the number of years a Jordanian physician spent working in Jordan, in Arabic countries, in Western countries and in Eastern countries consecutively.

The aim of the (Model 1) regression shown in table (2) was to test if the speciality source of education (Board Source) and experience has any effect on the physician average daily earning. The results show that the average daily earning for a Jordanian physician holding a Jordanian board was 179.293 Jordanian Dinar (JD). Physician holding a UK board has on average more daily earnings than a Jordanian board holder by 137.881 JD, and this make them the highest earning Jordanian physician with average daily earning equal 317.174 JD. Conversely, an Algerian board holder has the lowest daily earning that reach on average to 60.04 JD. The Italian board holder comes next with 74.304 JD daily, and then the Russian board holder with 86.343 JD. Even though the results show that US, German, French, Romanian and Yugoslavian board holder have more daily earnings on average than Jordanian board holder, and Greek board holder have less daily earning on average than Jordanian board holder, however these differences has no statistical significance. Additionally, the results show that experience acquired by Jordanians who work either in Jordan, Arab countries or eastern countries did not add any monetary effect to their average daily income. While the experience acquired in western country did add, that is each year the Jordanian physician spent acquiring western experiences add 10.974 JD on his average daily earning.

The second (Model 2) and third (Model 3) models of regressions shown in table (3) were performed in two collectively exhaustive and mutually exclusive samples of male and female separately. The purpose was to see if general results of the first model dose apply on male and female Jordanian physician samples. The results show that on average male Jordanian physician holding a Jordanian Board earn more daily income than a female Jordanian physician holding Jordanian Board by 44.422 JD, knowing that a female Jordanian board holder earn on average 145.851 JD per day. The male UK board holder proves to have more daily earning than male Jordanian board holder by 193.275 JD. As a result they are the highest earning male board holder with average earning equal to 383.548 JD per day. All other board holders have no statistical differences from each other. However, the sample shows no statistical differences between a UK and a Jordanian female board holder. From the other hand, a female French board holder is the highest earning females physician, they earn on average 379.459 JD per day. The lowest earning female's physicians were Russian, Italian and Algerian female board holder, with an average earning equal to 26.624, 30.096 and 35.058 JD respectively.

The effect of experience on average daily earning of male and female Jordanian physician was tested. Two main results were found. The first result shows that only male physicians are affected by experience. The second result explains that only western experience make differences on average daily earning of a Jordanian physician male. Both results demonstrate that as western experience increases by one year the daily earning of a male Jordanian physician increases on average by 11.639 JD. The daily earning differences across physician specialization were analysed in table (3). The results of the fourth model show that dermatologist with a German board have the highest average daily earning that reach 216.429 JD, followed by a Jordanian board holder with an average daily earning equal to 125.943 JD. In addition, the dermatologist with a board form US, UK, France and Algeria have an average daily earning that have not statistically shown any differences from the Jordanian board holder, However, the Russian and Italian dermatologist have the least average daily earnings that was equal to 42.206 JD and 66.479 JD consecutively.

Note that the sample did not have any Romanian, Yugoslavian or Greek dermatologist. Furthermore, an additional year of experience added 25.892 JD for the average daily earning for the dermatologist board holder. But, the other kind of experience showed no effect on average daily earning of dermatologist. The fifth model is presented in table (3); it discusses differences in daily earning of Otolaryngologist board holder. The sample includes 44 observations from all sources of board, except Yugoslavian and Greek Otolaryngologist. The results found that Otolaryngologist with a Jordanian board has an average daily earning equal to 108.804 JD. The Otolaryngologist with a Romanian and a UK board has more average daily earning than Jordanian board holder by 262.915 JD and 141.291 JD and with average daily earning equal to 371.719 JD and 250.095 JD sequentially. On the other hand, Otolaryngologist with US, German, French, Italian, Russian and Algerian board has insignificant average daily earning differences. In addition, the type of experience did not have any effect on average daily earning of an Otolaryngologist board holder.

A sample of 44 Ophthalmologist board holders was used in the sixth model in table (4). Several attempts were performed to explain variations on daily earnings for Ophthalmologist. The results prove that Jordanian, US, French, Italian, Russian and Romanian boards have on average a daily earnings that are not statistically different from 218.904 JD. The UK Ophthalmologist has a higher average daily income that equal to 644.6349 JD. The Ophthalmologist with an Algerian board, from the other hand, has the lowest daily earning that equal to 49.845 JD. No German, Greek or Yugoslavian Ophthalmologist found in this sample. In addition, places of experience were not found to have any importance in determining daily income of Ophthalmologist. Cardiologist daily earnings show no differences regard to country of board. However, western experience found to be significant, such that additional year of experience will increase daily earning for Cardiologist board holder by around 43.28 JD daily, on average. These results are expressed in model 7 in table (3).

The results in model 8 in table (4) show that Obstetrics and Gynaecology board holders earn on average 184.727 JD daily, regardless of the source of board. And that each year of experience in an Arabic country reduces daily earnings by 5.968 JD. These results were taken out of a sample consisting of 54 physicians holding Obstetrics and Gynaecology board from all sources of board as defined in the study except Greek. Two facts were extracted from model 9 that contain 44 observations, concerning paediatrics board holder. First: all source of board have a daily earning about 183.101 JD on average, except German, Greek, Romanian and Italian board holder. German and Greek Paediatrics board holders are not included in the sample. The Romanian and Italian board holder have average daily earning equal to 432.163 JD and 58.644 JD consecutively. Second, no effect was found for local or foreign experience.

Over all, the highest average daily earning for Jordanian board holder was equal to 218.904 JD for those who had Ophthalmologist speciality, while the lowest were equal to 108.804 JD for Otolaryngologist board holder. Same result for US, French and Greek board holder. However, UK board holder has an average daily earning as a Jordanian board holder except for Ophthalmology and Otolaryngology board holder were they have average daily earning that equal to 644.6349 JD and 250.095 JD sequentially. Similar results were found for German and Romanian board holder, in all samples that they were part of it as they score as a Jordanian board holder except for Dermatology board holder, German score average daily income that equal to 216.429 JD. And for Otolaryngologist and Paediatrics, the Romanian board holders have average daily earning equal 371.719 JD and 432.163 JD sequentially. The average daily earning for Italian, Russian and Algerian board holder was at most as Jordanian board holder. The Italian board holder had less average daily earning in Dermatology and Paediatrics. The Russian had less average daily earning in Dermatology and the Algerian had less average daily earning in Ophthalmology. This means that only UK, German and Romanian board holder support the case of brain gain. The US, France and Greek boards' holder did not add any brain gain. The case of Italian, Russian and Algerian board holder supports the idea of brain drain. In addition, the positive sign of Western experience in the fourth and seventh model, for Dermatology and Cardiology support the idea of brain gain too. Furthermore, additional year of experience added 25.892 JD for the average daily earning for the dermatologist board holder.

6. Conclusion

The main conclusion of this paper emphasize on the common literature on labour migration association with only brain drain is highly questionable; we have verified that brain gain may take place through the return of highly skilled migrants from developed country to developing countries. This result was extracted from analysing a sample of 267 Jordanian physicians.

The study analyses the impact of physician source education on daily earning controlled for experience and gender. We found that source of education add significant income to some board holder. As for Physician holding a UK board, they have on average more daily earnings than a Jordanian board holder by 137.881 JD. In addition, the result show that each year spent in western country adds around 11 JD to average daily income of Jordanian physicians. The effect of brain on gender is also tested, the result proves that a male UK board holder have more daily earning than male Jordanian board holder by 193.275 JD. A female French board holder earns on average more daily income than female Jordanian board holder by 233.6 JD per day Furthermore, if western experience increases by one year the daily earning of a male Jordanian physician increases on average by 11.639 JD consecutively. The result also comes across the effect of speciality on daily earning. We verify that The Otolaryngologist with a Romanian and a UK board has more average daily earning than Jordanian board holder by 262.915 JD and 141.291 JD. And The UK board holder Ophthalmologist has more average daily income than Jordanian Ophthalmologist by 425.7 JD and 43.281 JD daily for Cardiologist board holder.

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Table 1: Distribution of quantitative variables in the analysis

| | N | Max | Min | Mean | Std. Dev |
|---------|-----|------|-----|---------|----------|
| Earning | 267 | 2500 | 20 | 196.596 | 208.326 |
| Exp | 267 | 60 | 1 | 22.948 | 11.739 |
| Lexp | 267 | 45 | 1 | 19.805 | 10.896 |
| Wstex | 267 | 20 | 0 | 0.768 | 2.571 |
| Estexp | 267 | 20 | 0 | 0.258 | 1.320 |
| Arbexp | 267 | 20 | 0 | 2.116 | 4.257 |

Table 2: Distribution of qualitative variables in the analysis

| | | Frequency | Mean | Std. Dev |
|----------------------|----------------------------|-----------|-------|----------|
| Board specialty | Cardiology | 48 | 0.180 | 0.385 |
| | Dermatology | 33 | 0.124 | 0.330 |
| | Otolaryngology | 44 | 0.165 | 0.372 |
| | Ophthalmology | 44 | 0.165 | 0.372 |
| | Obstetrics and Gynaecology | 54 | 0.202 | 0.402 |
| | Paediatrics | 44 | 0.165 | 0.372 |
| Destination of Board | Jordan (JR) | 80 | 0.300 | 0.459 |
| | USA (US) | 28 | 0.105 | 0.307 |
| | UK (UK) | 37 | 0.139 | 0.346 |
| | Germany (GR) | 7 | 0.026 | 0.160 |
| | France (FR) | 23 | 0.086 | 0.281 |
| | Italy (IT) | 24 | 0.100 | 0.287 |
| | Russia (RS) | 21 | 0.079 | 0.270 |
| | Yugoslavia (YGS) | 4 | 0.015 | 0.122 |
| | Romania (RM) | 22 | 0.082 | 0.275 |
| | Algeria (ALG) | 20 | 0.075 | 0.264 |
| | Greece (GC) | 1 | 0.004 | 0.061 |
| | Total | 267 | | |
| | Gender | Female | 76 | 0.285 |
| Male | | 191 | 0.715 | 0.452 |
| Total | | 267 | | |

Table 3: Dependent variable is daily earnings

| | Model 1 all | Model 2 male | Model 3 female |
|-------------|------------------------|-------------------------|---------------------------|
| Const. | 179.293 (31.396)*** | 190.273 (49.723)*** | 145.851 (26.923)*** |
| US | 8.147 (42.097) | 13.142 (57.106) | 17.398 (43.721) |
| UK | 137.881 (41.962)*** | 193.275 (60.121)*** | 29.319 (33.273) |
| GR | 13.359 (72.822) | -28.218 (107.059) | 52.578 (58.555) |
| FR | 28.749 (55.175) | 14.135 (70.942) | 233.608 (70.976)*** |
| IT | -104.989 (52.35)** | -101.011 (68.800) | -115.755 (58.555)* |
| RS | -92.950 (56.454)* | -80.585 (75.482) | -119.227 (51.135)** |
| RM | 47.104 (57.284) | 49.301 (76.846) | 22.020 (57.800) |
| YGS | 38.162 (97.857) | 54.366 (113.805) | |
| GC | -83.091 (194.252) | -72.4808 (220.765) | |
| ALG | -119.253 (58.571)** | -104.397 (83.579) | -110.793 (46.494)** |
| LEXP | 0.436 (1.139) | -0.251 (1.468) | 2.402 (1.544) |
| ARBEXP | 0.374 (2.845) | 0.526 (3.546) | -1.356 (4.391) |
| ESTEX | -3.848 (9.864) | -6.747 (13.161) | 1.664 (9.646) |
| WSTEX | 10.974 (4.655)** | 11.639 (5.584)** | 1.555 (9.569) |
| Observation | 266 | 190 | 76 |
| F-stat. | 4.951*** | 4.0825*** | 4.155*** |

Note: standard error in parentheses.

* 10% significant level.

** 5% significant level.

***1% significant level.

Table 4: Dependent variable is daily earnings

| | Model 4 Dermatology | Model 5 Otolaryngology | Model 6 Ophthalmology | Model 7 Cardiology | Model 8 O&G | Model 9 Paediatrics |
|-------------|--------------------------------|-----------------------------------|----------------------------------|-------------------------------|----------------------------|--------------------------------|
| Const. | 125.943 (21.590)*** | 108.804 (64.741)* | 218.904 (70.969)*** | 219.350 (475.186) | 184.727 (36.249)*** | 183.101 (47.551)*** |
| US | 1.062 (38.508) | 99.943 (65.588) | -6.340 (91.568) | -33.618 (129.895) | 48.0558 (86.849) | 31.594 (85.115) |
| UK | 17.475 (32.676) | 141.291 (76.970)* | 425.704 (117.736)*** | -205.635 (202.100) | 44.613 (52.807) | 63.665 (68.612) |
| GR | 90.486 (43.820)* | 44.572 (143.525) | | 21.500 (194.067) | -2.215 (68.483) | |
| FR | 45.962 (60.243) | 104.121 (77.903) | 60.371 (111.488) | 181.624 (202.100) | 22.517 (63.052) | 0.330 (128.079) |
| IT | -59.464 (29.469)* | -94.335 (76.325) | -107.618 (142.008) | -57.531 (1584.852) | -88.014 (68.999) | -124.457 (75.437)* |
| RS | -83.737 (36.903)** | -53.028 (93.187) | -150.219 (107.348) | -13.601 (1094.602) | -53.074 (57.038) | -102.357 (110.555) |
| RM | | 262.915 (101.566)** | -56.805 (189.620) | -152.068 (1094.602) | -20.570 (63.763) | 249.062 (92.819)** |
| YGS | | | | | -36.735 (57.727) | 199.367 (154.256) |
| GC | | | | -20.605 (264.252) | | |
| ALG | -15.308 (58.254) | -109.595 (85.148) | -169.100 (96.519)* | | -87.085 (83.006) | -74.808 (83.202) |
| LEXP | 0.937 (0.941) | 2.590 (2.119) | -0.285 (3.417) | 1.189 (3.484) | 0.789 (1.485) | -0.191 (2.586) |
| ARBEXP | 1.922 (3.658) | -0.211 (4.869) | 8.694 (9.054) | -3.327 (6.967) | -5.968 (2.971)** | -5.819 (8.739) |
| ESTEX | | -20.952 (16.606) | -1.495 (33.727) | -0.022 (26.454) | 7.166 (10.288) | -22.292 (20.051) |
| WSTEX | 25.892 (5.972)*** | -7.591 (12.513) | -3.166 (9.132) | 43.282 (12.703)*** | -3.924 (5.144) | 10.949 (10.462) |
| Observation | 33 | 44 | 44 | 47 | 54 | 44 |
| F-stat. | 4.641*** | 1.900* | 3.203*** | 40178*** | 3.383*** | 2.071* |

Note: standard error in parentheses.

* 10% significant level.

** 5% significant level.

***1% significant level.

O&G: is Obstetrics and Gynaecology