

An Outline of Skilled Emigration from Turkey to OECD Countries: A Panel Data Analysis

Elif Öznur ACAR¹

ABSTRACT: Turkey provides rich evidence for the current international migration trends given its economic and demographic dynamics. The number of people moving overseas to settle permanently has been following an increasing trend in the recent decades, particularly remarkable for skilled and female groups. However, given the micro-level data limitations the migration outlook of Turkey is still quite bleak. The aim of this paper is to fill this gap and analyze the relationship between migration and human capital in the context of Turkish immigrants. First, aggregate trends of the Turkish emigrants in the 20 OECD destination countries by gender and educational level over the 1980-2010 period are examined using the IAB Brain Drain dataset. Next, a random effects panel estimation is applied to scrutinize the underlying dynamics of observed migration patterns adopting economic size, unemployment, demographic profile, urbanization and proximity as explanatory variables. The results reveal that gender, time and education are found as significantly related to international mobility trends, and the substantially left-skewedness of the distribution of Turkish emigrants along educational level is gradually fading away over time.

Keywords: International migration, Emigrants, Skill, Turkey, Random effects

JEL Codes: F22, J61, O15

Türkiye'den OECD Ülkelerine Nitelikli İşgücü Göçü: Bir Panel Veri Analizi

ÖZ: Türkiye, sahip olduğu iktisadi ve demografik dinamikleri paralelinde uluslararası göç trendlerinin oldukça zengin bir şekilde gözlemlenebileceği bir ülkedir. Yurtdışına göç eden insan sayısı geçtiğimiz on yıllık dönemlerde sürekli artış eğiliminde olmuştur. Bu eğilim kadın ve nitelikli gruplarda çok daha da belirgin olarak gözlenmiştir. Öte yandan, mikro verilerin yetersizliği ülkenin göç dinamiklerinin detaylı bir şekilde incelenmesine engel olmuştur. Bu çalışmanın amacı söz konusu boşluğu doldurmak adına, Türkiye'den göç eden bireyler üzerinden göç ve insan sermayesi arasındaki ilişkiyi irdelemektir. Bu doğrultuda, ilk olarak IAB'nin Brain Drain Veritabanı kullanılarak, 1980-2010 yılları arasında Türkiye'den 20 OECD ülkesine yönelik gerçekleşen göçün boyut ve niteliği, cinsiyet ve eğitim seviyesi ayrımlarında analiz edilmektedir. Bu toplamcı analizi takiben, gözlemlenen göç trendlerinin altında yatan dinamikler rassal etkili panel veri modeli ile incelenmektedir. Tahmin sonuçları, cinsiyet, zaman ve eğitim değişkenlerinin uluslararası işgücü hareketliliği ile yakından ilişkili olduğuna, ve Türkiye çıkışlı göçmenlerin eğitim seviyesi dağılımındaki belirgin sola çarpıklığın zaman içerisinde kaybolduğuna işaret etmektedir.

Anahtar Kelimeler: Uluslararası göç, Göçmen, Nitelik, Türkiye, Rassal Etkiler

JEL Kodları: F22, J61, O15

Geliş Tarihi / Received: 05.10.2016

Kabul Tarihi / Accepted: 07.12.2016

¹ Asst. Prof. Dr., Cankaya University, Faculty of Economics and Administrative Sciences, Department of Banking and Finance, E-mail: elifoznurkan@cankaya.edu.tr

1. Introduction

The sheer number of international migrants worldwide continues to rise, yet the percentage of the world's people living outside of their birth countries has remained steady at around 3 percent over the past 50 years. Nonetheless, there has been a remarkable change in the migration patterns in terms of demographic and skill profiles, origin and destination countries. Most notably, middle-income to high-income country mobility has grown, geographical outreach has increased, and last but not least education/skill levels of immigrants have risen to a remarkable extent. Several international migration statistics reveal that migrants are increasingly more likely to have higher education levels. Deefort (2008) estimates that the share of immigrants with tertiary or higher education in the six largest OECD (The Organisation for Economic Co-operation and Development) countries –Australia, Canada, France, Germany, the United Kingdom and the United States- quadrupled between 1975 and 2000.

Following the statistical evidence, transfer of skilled-labor has come under a particular scrutiny in the recent development and policy agendas worldwide, and lead to a major paradigm shift in the migration literature in terms of its causes, consequences, and policy implications. Against this background, this paper examines the skilled-labor migration trends for Turkish emigrants. There are three main channels through which Turkey integrates with the rest of the world: foreign trade/finance, financial fund flows and migration. The first two can be diagnosed to a great extent given the data availability, whereas the migration outlook is still quite a black box. Yet, Turkey provides rich evidence for the current international migration trends given its economic and demographic dynamics. The number of people moving overseas to settle permanently has been following an increasing trend in the recent decades. This finding is even more apparent for those with higher educational levels. Turkey has the 8th largest diaspora network in the twenty OECD countries, following Mexico, the United Kingdom, India, Germany, China, Philippines and Italy. The stock of Turkish emigrants, those born in Turkey and moved to other countries, aged 25 years and older has climbed from 1.5 million in 1980 up to 2.1 million in 2010. Moreover, the share of emigrants who hold a tertiary degree and above has nearly tripled from 4.4 percent in 1980 to 12.4 percent in 2010.

The aim of this paper is to examine the relationship between migration and human capital in the context of Turkish immigrants. For this purpose, the ideal methodology would be to adopt a micro approach using individual level information. Unfortunately, there is still no nationally representative individual level external migration data for Turkey. One of the best approximations can be made through a macro approach taking advantage of the recent publication of the Brain Drain Database of the Institute for Employment Research (IAB) which sheds some interesting light on the human capital aspects of international migration, providing emigrant data for twenty OECD destination countries and

195 source countries by gender, country of origin and educational level, for five year intervals between 1980-2010. The contributions of the paper are mainly twofold: First, we analyze the aggregate trends of the Turkish migrants in the 20 OECD destination countries by gender and educational level over the 1980-2010 period. This analysis, however, is mostly descriptive in nature and falls short of explaining the underlying dynamics of observed migration trends. In order to examine the extent of emigration patterns in more detail, we next estimate Random Effects Panel Regression models of the total Turkish emigrant stock by adopting economic size, unemployment, demographic profile, urbanization and proximity as explanatory variables. We apply the estimation to six alternative gender-skill groups to examine emigration dynamics along gender and education divides. The results reveal that the substantially left-skewedness of the distribution of Turkish emigrants along educational level is gradually fading away over time. Gender, time and education are found as significantly related to international mobility trends. To the best of our knowledge, this study offers the first such exclusive analysis in the context of the Turkish emigrant stock.

The remainder of the paper is organized as follows: Section 1 provides a summary of Turkey's history of migration as a source country. Next, Section 2 presents the data in detail, providing a multidimensional descriptive analysis and a number of stylized facts on Turkish emigration trends over time. Section 3 presents the review of literature. Section 4 outlines the econometric model and presents the main empirical evidence. The last section concludes.

2. A Brief Account of Turkish Migration

Turkey's long history of emigration dates back to the IInd World War, after when several Western European countries starved for manpower given the large male population losses and driving force of subsequent economic growth. This excessive demand has well found its supply in the Turkish economy, which at the time was undergoing a deep structural transformation. In particular, masses of low skill rural labor that became idle during the course of urbanization, modernization of agriculture and capital-intensive industrialization over the 1950s and 1960s, found their way to the international markets. For that matter, the government adopted an emigration policy and promoted migration of these excess labor force hoping to secure a more efficient and productive allocation of its resources, expand its remittances and knowledge/skill/technology transfer channels.

The global economic crisis following the oil price spikes in the 1970s, compelled host countries to block/downsize immigrant flows, through revoking bilateral contracts, imposing more stringent residency laws, and encouraging return migration. However, despite all these efforts, the number of Turkish emigrants in Europe kept on increasing throughout the 1970s and 1980s. In particular, the low skilled labor continued to flee using alternative and mostly illegal channels of

migration given the political and economic volatility and uncertainty in the home country.

In the wake of the economic globalization during the 1990s, international flows of capital, trade and labor soared at an unprecedented level. Concurrently, the quantity, quality and geographical distribution of Turkish immigrants worldwide ascended. A particularly notable migration pattern over the course of this new era has been the uprising in the migration of high-skilled workers. More specifically, the share of Turkish emigrants living in 20 OECD countries who hold a tertiary degree and above has nearly tripled from 4.4 percent in 1980 to 12.4 percent in 2010.

A single average migrant is estimated to correspond to around 90 thousand USD worth of foreign direct investment and 250 thousand USD for high skilled workers (Bahar and Rapoport, 2014). Applying a simple calculation using this framework, Turkey's emigrant stock in the twenty OECD countries corresponds approximately to 230 billion dollars of outward direct investment. Departing from this view, emigration can be considered as harmful for a country. In the economic literature, the term 'brain drain' is coined for the emigration of highly educated/skilled individuals, where the consequences are considered as detrimental for the origin country. The seminal work of Bhagwati and Hamada (1976) and following traditional models of brain drain treat education as exogenous, and considers emigration as an erosion of human capital, which is a fundamental input for economic and social development.

However, contrary to early models, a newer strand of literature argues that international migration may equally well be beneficial to the source country. The reverse phenomenon, referred as 'brain gain' may occur through four main channels: human capital channel, productivity channel, transfer channel and institutional channel (Bansak et al., 2015). The human capital channel is related to the incentive that better migration prospects comes with higher educational attainments, thereby motivating people in the source country to invest in their human capital. Using data for 127 developing countries, Beine et al. (2008) report that doubling of the number of highly educated emigrants is indeed associated with an increase in the proportion of the population with tertiary education by 5 percent in the short run, and 22.5 percent in the long run. The productivity channel comprises highly educated emigrants' transfers of funds, investment, technology, information, knowledge that they acquired in the receiving country either through network externalities or returning back home. The resulting growth in productivity levels of the source country is well documented in many studies. The transfer channel refers to remittances, which constitute a large share of the GDP in many developing countries, and the institutional channel, which refers to the positive externalities of highly skilled emigrants in the political, economic and social institutions in the source country.

3. Literature Review

Migration has been one of the most widely studied subjects in the theoretical and empirical economics literature. Using the Roy (1951) income maximization framework as the basis, most studies employ an empirical model where individuals choose to migrate to another country based on their utility function, which depends on a number of push and pull factors with specific migration costs and benefits. Among these factors, actual income differences (i.e. GDP per capita, income per capita, unemployment rate) are considered to be the most important in most studies (Ortega and Peri, 2009). The agglomeration economies which depend on levels of urbanization, industrialization and economic development, have also been adopted in several empirical research (Duranton and Puga, 2004; Royuela, 2015). In the determinants of migration literature, the mainstream approach focused mostly on long-run factors such as economic, demographic, cultural and geographic nature. Following Mayda (2010), however, empirical studies started to adopt a broader approach, incorporating several other dimensions to the models such as role of education (Chiquar and Hanson, 2005), skill prices (Rosenzweig, 2006), business cycles and wages (Grogger and Hanson, 2011), network (McKenzie and Rapoport, 2010; Beine et al., 2011), distance (Clark et al, 2007), push factors like climatic shocks and natural disasters (Beine and Parsons, 2012), and bilateral migration policies (Bertoli and Fernandez-Huerta Moraga, 2012).

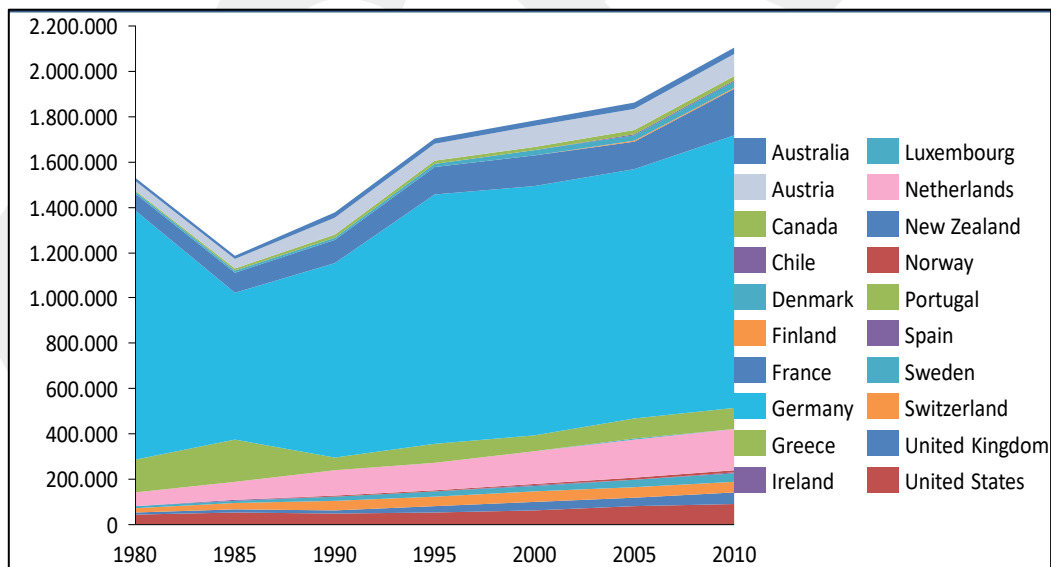
4. Data and Descriptive Analysis of Turkish Emigrant Patterns

This section aims to review the aggregate patterns and trends of Turkish migration using the IAB Brain Drain Database of Brücker et al (2013). The IAB dataset on international migration covers information for 20 OECD destination countries by gender, country of origin and educational level, for the years 1980-2010 (5 years intervals). It contains three major files: (i) Total number of foreign-born individuals aged 25 years and older, living in each of the 20 considered OECD destination countries, by year, country of origin and educational level; (ii) Migration by gender: Total number of foreign-born individual (all age groups as a whole), living in each of the 20 considered OECD destination countries, by gender and country of origin; (iii) Emigration rates: Proportion of migrants over the pre-migration population (defined as the sum of residents and migrants in each source country), by gender, skill level and year. The countries include Germany, Australia, Austria, Denmark, Finland, France, Netherlands, UK, USA, Ireland, Spain, Sweden, Switzerland, Canada, Luxembourg, Norway, Portugal, Chile, New Zealand and Greece, which altogether host around 70 percent of the total global emigrant stock. Education is distinguished at three levels: primary (low skilled: includes lower secondary, primary and no schooling); secondary (medium-skilled: high-school leaving certificate or equivalent) and tertiary education (high-skilled: higher than high-school leaving certificate or equivalent). The dataset is built by harmonizing national censuses and population registers statistics of the

host countries. The countries that did not exist in the initial years are standardized using estimated migration statistics.

In the following section, first we diagnose the aggregate trends of the Turkish emigrants in the sample of destination countries by gender and educational level over the 1980-2010 period. Figure 1 presents the total stock of Turkish immigrants in each of the twenty OECD countries. Except for the 1980-1985 period, total immigrant stock in all receiving countries exhibit an increasing trend over time. Yet, the five-year intervals between 1990-1995 and 2005-2010 display a particularly steeper uprising. Germany remains as the largest emigrant receiving country throughout the whole period, followed by France, Netherlands and Austria. Among these countries, Germany and Greece are the only two countries for which the share of emigrants in total emigrant stock decreased between 1980 and 2010. In particular, the fall of Germany's total market share from 72 percent to 56 percent, has been translated into rises in the market shares of Austria, Canada, France, UK, Netherlands, and USA. This shifting trend reveals a particularly important transformation in the structure of Turkish migration from 1980 onwards. To further scrutinize the underlying dynamics, we next decompose the same analysis across the three educational levels to uncover the changing trends in the last decades.

Figure 1: Distribution of Turkish emigrant stock by destination country



Source: Own calculations from IAB Brain Drain Database.

Figure 2 displays the distribution of Turkish emigrant stock across countries by education level for the years 1980 and 2010. The picture clearly changes for all skill levels, but most particularly for the high skilled. Nonetheless, Germany still emerges as the primary destination country for Turkish migrants of all educational backgrounds. Yet, its weight in immigrant inflows decreases along the skills

distribution, from 72 percent for the low skilled to 51 percent for the high skilled in 1980. Germany captured around half of the high skilled Turkish emigrant stock at the time, followed by USA hosting 17 percent of high skilled migration. Coming to the year 2010, however, USA takes the top share of the high skilled Turkish emigrant stock, holding around 23 percent of the total. Germany and the Netherlands are close followers with shares of 22 and 18 percent, respectively. The second tier destination countries for the high skilled Turkish emigrants are UK, Greece, France and Canada, all of which have shares of around 5-6 percent in the total high skilled stock. Moreover, when we trace the disposition of the medium skilled, we do not observe a noticeable difference with the low skilled for much of the distribution. The only difference, which stands out from Figure 2, is that Greece leaves its 2nd highest share in 1980 to the Netherlands in 2010. Thus, we can conveniently argue that the Netherlands has evolved into an appealing destination country for the Turkish medium and high skilled emigrants from 1980 onwards. The same pattern, though slightly less evident, applies to Austria as well.

Overall, the analysis provides two major take-aways. First, the substantially left-skewedness of the distribution of Turkish emigrants along educational level is gradually fading away over time. Second, Germany has lost much of its appeal as a destination country for the high skilled Turkish emigrants, and been replaced by USA as the top destination country.

Having examined the distribution of Turkish emigrant stock across the countries over time, next we extend the analysis one step further and include a gender breakdown. Figure 3 and Table 1 display the distribution of Turkish emigrant stock living in the sample destination countries by education level and gender. Confirming the previous analyses, one first notes the significant rise in the share of well-educated migrants from 1980 onwards. More specifically, the share of Turkish emigrants who hold a tertiary degree and above has nearly doubled from 4.4 percent in 1980 to 12.4 percent in 2010 (Table 1). At first glance, this finding implies that Turkish migrants have become much more educated than before, even if the most numerous group remains to be the low skilled. One may argue that this could also be the result of the rise in the number of university graduates in the country. However, the share of university graduate emigrants, or the ratio of the number of university graduate emigrants to the total number of university graduates within and outside the country has risen from 4.2 percent in 2000 to 6.7 percent in 2010. In other words, the uprising in the number of university graduates has remained above that in the number of university graduates.

Table 1 illustrates that the pattern is even more prevalent for female workers. The proportion of university graduate female emigrants in Turkey's total female emigrant stock has increased from 2.7 percent in 1980 to 10.8 percent in 2010. As per the distribution of highly educated emigrants, the share of women climbed up from 24 to 41 percent between 1980-2010. Given the large male-female social and

economic gaps in the country, the fact that many highly educated women flee to wealthier OECD countries instead of staying is not surprising.

Figure 2: Distribution of Turkish emigrant stock by destination country and education (1980-2010)

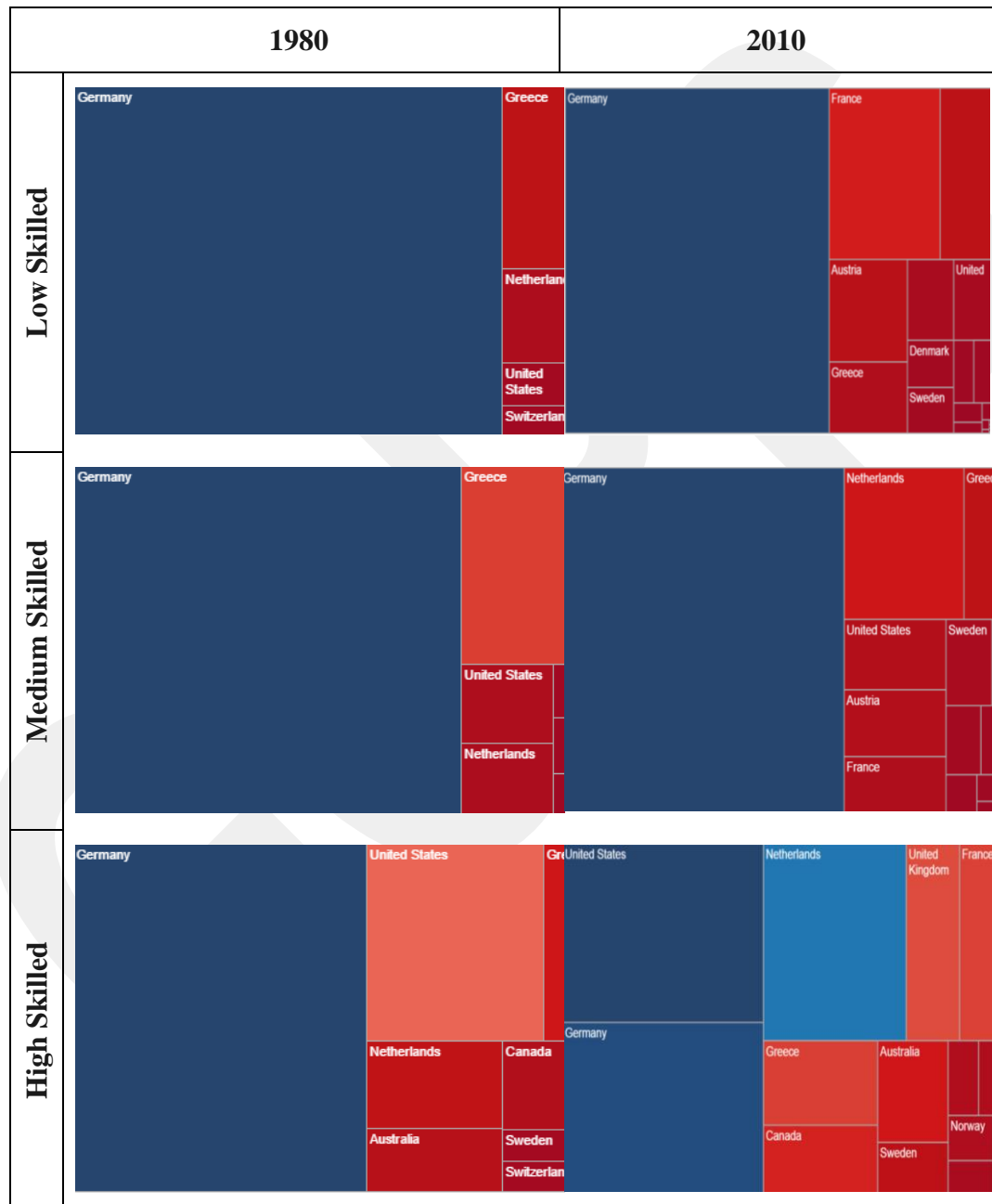
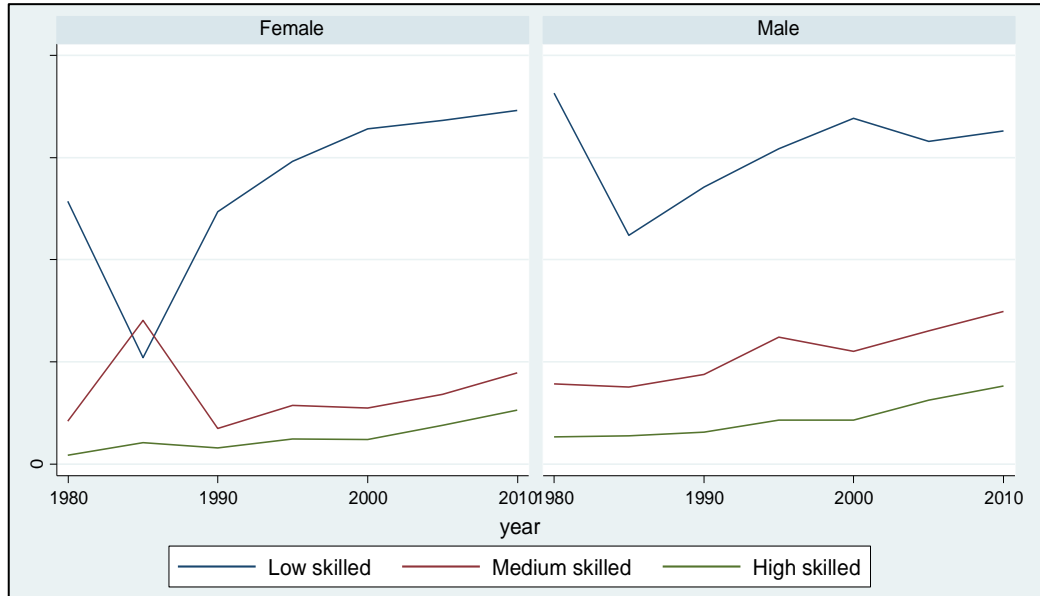


Figure 3: Turkish stock of emigrants in OECD countries by gender and education level

Source: Own calculations form the IAB Brain Drain Database.

Table 1: Turkish stock of emigrants in OECD countries by gender and education level (%)

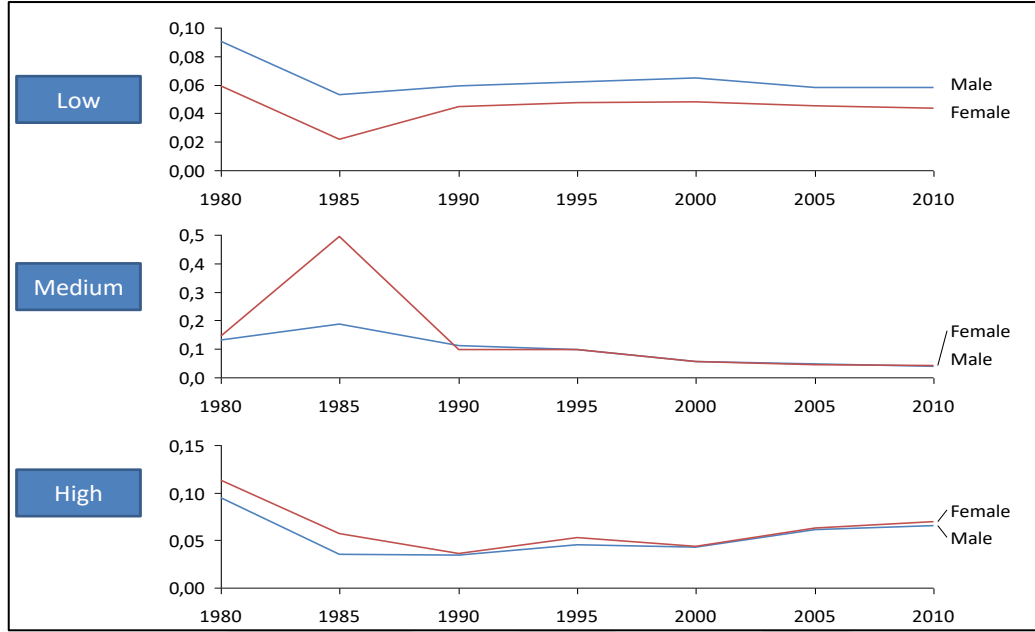
	1980	1985	1990	1995	2000	2005	2010
Low	80	55.36	75.39	70.82	74.20	68.61	64.61
Male	77.62	68.44	69.56	64.84	68.80	62.11	59.07
Female	83.62	39.26	83.02	78.35	80.75	76.08	70.87
Med	15.53	36.42	17.79	21.24	18.36	20.86	22.97
Male	16.76	23.07	22.46	26.09	22.43	25.63	27.11
Female	13.65	52.86	11.69	15.14	13.43	15.37	18.29
High	4.47	8.22	6.81	7.94	7.44	10.53	12.42
Male	5.62	8.49	7.98	9.07	8.76	12.26	13.82
Female	2.73	7.88	5.29	6.51	5.83	8.54	10.84

Source: Own calculations form the IAB Brain Drain Database.

Figure 4 displays emigration rates, defined as the proportion of migrants over the pre-migration population (defined as the sum of residents and migrants in each source country), by gender, skill level and year. The first thing to notice in the graphs is the highly correlated emigration rates among men and women for the medium and high skilled groups. Whereas, for the low skilled male emigration rate is significantly higher throughout the whole period. Second, emigration rates for both genders follow a discernibly increasing pattern after 1990, while the rate

for the low skill group remains more or less constant and that of medium skilled decreases.

Figure 4: Emigration rate by gender and educational category (%)



Source: IAB Brain Drain Database.

Despite providing an evident first step picture, this analysis is mostly descriptive in nature and falls short of explaining the underlying dynamics of observed migration trends. As a matter of fact, the factors driving the change in international migration patterns, and in particular how their effects vary across different skill/educational levels have drawn considerable interest in the empirical literature. In the following section, we build on this extensive literature and apply it to the Turkish migration using a random effects panel data estimation methodology.

5. Empirical Analysis

Following Beine et al. (2013), we model log of emigrants as a function of the differential between origin (Turkey) and destination countries (20 OECD countries) in terms of income, unemployment, demographic profile and urbanization rate. The empirical specification is as follows:

$$\ln(m_{jt}) = \beta_0 + \beta_1 [\ln(gdppc)_{jt} - \ln(gdppc)_{TURt}] + \beta_2 [unemp_{jt} - unemp_{TURt}] + \beta_3 \ln(dist_{TUR-j}) + \beta_4 (urban_{jt}) + \beta_5 (pop0 - 14_{jt}) + \beta_6 (pop65plus) + \delta_t + \theta_j + \varepsilon_{jt} \quad (1)$$

Equation (1) allows us to identify the main components of the log of emigrants ($\ln(m_{jt})$): (i) the log GDP per capita differential PPP-adjusted [$\ln(gdppc)_{jt} - \ln(gdppc)_{TURt}$], (ii) differential in unemployment rates at destination and Turkey ($unemp_{jt} - unemp_{TURt}$), (iii) log kilometer distance between Turkey and destination ($dist_{TUR-j}$), (iv) urbanization rate at destination ($urban_{jt}$), (v) population between 0-14 age at destination ($pop0 - 14_{jt}$), (vi) population above 65 years at destination ($pop65plus$), and finally (vii) year specific effects (δ_t) and (viii) random effects (θ_j) to control for destination and year specific characteristics. It should be noted that the model does not include wages, which is one of the key factors used to explain migration flows between countries. However, finding comparable measures of wages is a problematic issue, particularly for a large sample of countries. To overcome this issue, a number of solutions are proposed in the empirical literature. Grogger and Hanson (2011) recover wages by educational level from the observed wage distribution for 13 countries, some studies use GDP per capita as proxies, and some capture wage effect through fixed effects estimation. In this analysis, we rely on the last method. The term δ_t is used to account for year specific effects, and θ_j for the time-invariant destination specific factors that are not included in the model. Running a Hausman (1978) test for the choice of panel estimation technique, we find that random effects specification is adopted. In this way, the random effects panel regression is applied separately to each gender-skill group, and results are presented in Table 2.

The first thing to notice in the random effects estimates of these parsimonious models is the year effect. In particular, year dummies are highly significantly negative, though only for medium and high skill levels. In terms of the magnitude, time-specific effects are relatively larger for high skilled and for women. These estimates altogether point out that high skilled emigration follows an increasing trend over time for both gender groups, confirming our previous descriptive analysis results. As for the medium-skilled, we observe a time positive statistically significant relationship, though at a slighter pace than the high skilled. The year specific effects are all statistically insignificant for the low skilled men and women.

Second, we can see that Turkish migrants are not sensitive to differentials in income and unemployment rates between destination and home country. The $gdppc$ coefficient is only statistically significant for the high skilled male workers, and insignificant for all gender-skill groups. This finding stands in sharp contrast to that of Ramos and Royuela (2015) who find that Spanish emigrants of all skill levels are statistically significantly responsive to income differentials. Despite being a parsimonious model, the results show that Turkish migration has some other stronger underlying motives than pure economic differentials.

Table 2: Random effects regression estimates - Turkish stock of emigrants (1990-2010)

	Low Skilled		Medium Skilled		High Skilled	
	Male	Female	Male	Female	Male	Female
ln(GDPPC)	1.369 (1.93)	0.625 (0.80)	0.956 (1.21)	0.791 (0.85)	1.602* (2.40)	0.600 (0.78)
unemp	0.00276 (0.15)	-0.00576 (-0.29)	0.00675 (0.31)	0.0123 (0.46)	0.0207 (1.18)	-0.0102 (-0.50)
dist	-1.182 (-1.43)	-1.314 (-1.43)	-0.882 (-1.10)	-1.212 (-1.43)	-0.304 (-0.42)	-0.679 (-0.84)
urban	0.00547 (0.24)	0.00407 (0.16)	0.0470 (1.75)	0.0408 (1.24)	0.00122 (0.05)	-0.0224 (-0.87)
pop0 – 14	-0.0613 (-1.22)	-0.0319 (-0.58)	-0.131* (-2.24)	0.00151 (0.02)	-0.0482 (-1.00)	0.0386 (0.69)
pop65plus	0.0107 (0.18)	0.0552 (0.84)	-0.0868 (-1.23)	-0.0560 (-0.64)	-0.110 (-1.90)	-0.116 (-1.72)
1990	-0.541* (-2.31)	-0.410 (-1.60)	-0.920*** (-3.38)	-1.286*** (-3.83)	-1.553*** (-6.94)	-2.127*** (-8.16)
1995	-0.374 (-1.70)	-0.246 (-1.02)	-0.703** (-2.74)	-1.045*** (-3.30)	-1.228*** (-5.82)	-1.464*** (-5.96)
2000	-0.256 (-1.26)	-0.115 (-0.52)	-0.481* (-2.05)	-0.690* (-2.40)	-1.030*** (-5.33)	-1.175*** (-5.23)
2005	-0.116 (-0.85)	-0.0382 (-0.26)	-0.232 (-1.45)	-0.309 (-1.55)	-0.379** (-2.88)	-0.557*** (-3.63)
Constant	16.10* (2.19)	16.80* (2.06)	13.35 (1.83)	13.43 (1.69)	10.15 (1.56)	14.46* (1.98)
Countries	20	20	20	20	20	20
Observations	100	100	100	100	100	100
R²	0.4229	0.3256	0.6224	0.514	0.7249	0.7356
Prob > chi²	0.000	0.000	0.000	0.000	0.000	0.000

Note: Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Almost all of the other coefficient estimates for the random effects models are statistically insignificant. Yet, they offer some insight in terms of how they affect the relationship between total emigrant stock and the relevant variable. For instance, the differential between the unemployment rates of source and destination countries is positive for males at all skill levels. However, it turns out negative for both low and high skilled women. Distance between destination country and Turkey, despite being statistically insignificant, is negative for all

gender-skill models, which conforms to the expectations. The farther away a destination country is, the less Turkish nationals migrate. Regarding the level of urbanization in the destination country, we observe a positive relationship with total emigrant stock for all models (except for the high skilled female sample), implying the more urban a country is, the more emigrants it receives. Demographics, which are established to have some explanatory power in international migration, do not also yield a statistically significant migration pattern. Yet, the signs of the coefficient estimates for *pop0-14* and *pop 65plus* variables provide some insights for reference. In particular, *pop0-14* variable is negative for all male sample estimations. Moreover, it turns out as statistically significantly negative for medium skilled male emigration. Therefore, one can infer that the more left-skewed a destination country's population age distribution is, the less male emigrants it receives. For female emigrants, however, the coefficient estimate is found to be positive for the medium and high skill groups. Lastly, the effects of proportion of population above 65 years is positive for low skilled emigration of both genders, and negative for medium and high skilled emigration.

In sum, we can argue that the adjustment of the models seem to be far higher for high skilled migrants, which shows that skilled population is more elastic to economic conditions in foreign destinations.

6. Conclusion

Turkey has the 8th largest diaspora network in the twenty OECD countries, following Mexico, the United Kingdom, India, Germany, China, Philippines and Italy. The number of people moving overseas to settle permanently has been following an increasing trend in the recent decades, particularly remarkable for skilled and female groups. However, given the micro-level data limitations the migration outlook of Turkey is still quite bleak. This paper aims to fill this gap and analyze the relationship between migration and human capital in the context of Turkish immigrants.

The analysis on aggregate patterns and trends of Turkish migration using the IAB Brain Drain Database reveals three important stylized facts. First, the substantially left-skewedness of the distribution of Turkish emigrants along educational level is gradually fading away over time. Second, Germany has lost much of its appeal as a destination country for the high skilled Turkish emigrants, and been replaced by USA as the top destination country. Third, this new pattern is even more prevalent for female workers. The proportion of university graduate female emigrants in Turkey's total female emigrant stock has increased from 2.7 percent in 1980 to 10.8 percent in 2010. As per the distribution of highly educated emigrants, the share of women climbed up from 24 to 41 percent between 1980-2010. Given the large male-female social and economic gaps in the country, the fact that many highly educated women flee to wealthier OECD countries instead of staying is not surprising.

The underlying factors of why a person leaves his/her homeland has been subject to several studies in the economics literature. The economic factors stand at the top of the list. Known as economic migrants, those who are unable to find a job in their own country outflow to other countries for work. The second factor considers family related issues, as migrants typically bring their spouses and children with them when moving out. The quality of governance constitutes the third important element underlying the migration dynamics. Individuals, particularly those in the creative class, flee from countries where rule of law, freedom of thought and tolerance are weak, in order to provide a better and more secure future for themselves and their families. In order to be assess the driving forces of international migration, one should reconcile both macroeconomic and individual level variables. Unfortunately, there is still no nationally representative individual level external migration data for Turkey. One of the best approximations can be made through a macro approach taking advantage of the recent publication of the Brain Drain Database of the IAB. Followingly, I estimate Random Effects Panel Regression models of the total Turkish emigrant stock by adopting economic size, unemployment, demographic profile, urbanization and proximity as explanatory variables. The estimation is applied to six alternative gender-skill groups to examine emigration dynamics along gender and education divides. The results reveal that gender, time and education are significantly related to international mobility trends.

References

Bahar, D. and Rapoport, H. (2016), "Migration, Knowledge Diffusion and the Comparative Advantage of Nations", *IZA Discussion Papers 9788*, Institute for the Study of Labor (IZA).

Beine, M., Bourgeon, P. and Bricongne, J. C. (2013), "Aggregate Fluctuations and International Migration", *CESifo Working Paper No. 4379*.

Beine M., Docquier F. Oden-Defoort, C. (2011), "A panel data analysis of the brain gain" *World Development*, 39(4), 523-532. <http://dx.doi.org/10.1016/j.worlddev.2010.03.009>

Beine, M., Docquier, F. and Ozden, C. (2011), "Diasporas", *Journal of Development Economics*, 95(3), 30-42. <http://dx.doi.org/10.1016/j.jdeveco.2009.11.004>

Beine, M., Docquier, F., and Rapoport, H. (2008), "Brain drain and human capital formation in developing countries: Winners and losers", *The Economic Journal*, 118 (528), 631–652. <http://dx.doi.org/10.1111/j.1468-0297.2008.02135.x>

Beine M., Docquier F. and Rapoport H. (2001), "Brain drain and economic growth: theory and evidence", *Journal of Development Economics*, 64(1), 275–89. [http://dx.doi.org/10.1016/S0304-3878\(00\)00133-4](http://dx.doi.org/10.1016/S0304-3878(00)00133-4)

Beine, M. and Parsons, C. (2012), "Climatic Factors as Determinants of International Migration", CES-IFO Working paper no. 3747.

Bertoli, S., and Fernandez-Huerta Moraga, J. (2012), „Visas Policies, Networks and the Cliff at the Border”, *IZA Discussion Paper No. 7094*.

Bhagwati, J. and Hamada, K. (1974), "The brain drain, international integration of markets for professionals and unemployment: a theoretical analysis", *Journal of Development Economics*, 1(1), 19-42. [http://dx.doi.org/10.1016/0304-3878\(74\)90020-0](http://dx.doi.org/10.1016/0304-3878(74)90020-0)

Brücker H., Capuano, S. and Marfouk, A. (2013), "Education, gender and international migration: insights from a panel-dataset 1980-2010", Norface Research Programme on Migration, mimeo, IAB, Nuremberg.

Chiquiar, D. and Hanson, G. (2005), "International Migration, Self-Selection, and the Distribution of Wages: Evidence from Mexico and the United States", *Journal of Political Economy*, 113(2), 239-281. <http://dx.doi.org/10.1086/427464>

Clark, X., Hatton, T. and Williamson, J. (2007), "Explaining US immigration, 1971-1998", *The Review of Economics and Statistics*, 89(2), 359–373. <http://dx.doi.org/10.1162/rest.89.2.359>

Defoort, C. (2008), "Long-term trends in international migration: an analysis of the six main receiving countries", *Population*, 63(2), 317-352. <http://dx.doi.org/10.3917/pope.802.0285>

Docquier F. and Marfouk A. (2004), "Measuring the international mobility of skilled workers (1900–2000)", *Policy Research Working Paper No. 3381*, World Bank.

Docquier F. and Rapoport, H. (2009), "Skilled migration: The perspective of developing countries", In Bhagwati J. and Hanson G. (eds), *Skilled immigration: Problems, prospects and policies*. Oxford: Oxford University Press.

Docquier, F. and Rapoport, H. (2012), "Globalization, brain drain, and development", *Journal of Economic Literature*, 50(3), 681–730. <http://dx.doi.org/10.1257/jel.50.3.681>

Grogger, J. and Hanson, G.H. (2011), "Income Maximization and the selection and sorting of international Migrants", *Journal of Development Economics*, 95(1), 42-54. <http://dx.doi.org/10.1016/j.jdeveco.2010.06.003>

Hatton, T. J. and Williamson, J. G. (2002), "What Fundamentals Drive World Migration?", *NBER Working Paper Series*, w9159, 2002.

Hausman, J. A. (1978), "Specification tests in econometrics", *Econometrica*, 46, 1251-1271. <http://dx.doi.org/10.2307/1913827>

Mahroum, S. (2001), “Europe and the immigration of highly skilled labour”, *International Migration*, 39 (5), 27–43. <http://dx.doi.org/10.1111/1468-2435.00170>

Mayda, A. M. (2010), “International migration: A panel data analysis of the determinants of bilateral flows”, *Journal of Population Economics*, 23(4), 1249-1274. <http://dx.doi.org/10.1007/s00148-009-0251-x>

McKenzie, D. and Rapoport, H. (2010), “Self-selection patterns in Mexico-US migration: the role of migration networks”, *Review of Economics and Statistics*, 92(4), 811-821. http://dx.doi.org/10.1162/REST_a_00032

OECD (2013). *International migration outlook 2013*. OECD Publishing. http://dx.doi.org/10.1787/migr_outlook-2013-en

Ortega, F. and Peri, G. (2009), “The causes and effects of international migrations: evidence from OECD countries 1980-2005”, Working Paper No. 14883, National Bureau of Economic Research, NBERC, Cambridge, MA. <http://www.nber.org/papers/w14833>

Ramos, R. and Royuela, V. (2015), “Graduate migration in Spain: the impact of the great recession on a low mobility country”, mimeo. http://aeet-jel.es/sites/default/files/comunicaciones/ramos_royuela_2015.pdf

Rosenzweig, M. R. (2006), “The Circulation Migration of the Skilled and Economic Development”, Federal Reserve Bank of Dallas, *Proceedings*, 147-170. <http://dallasfed.org/assets/documents/research/pubs/migration/rosenzweig.pdf>

Roy, A.D. (1951), “Some thoughts on the distribution of earnings”, *Oxford Economic Papers*, 3(2), 135-146. <http://www.jstor.org/stable/2662082>

Royuela, V. (2015), “The role of urbanization on international migrations: a case study of EU and ENP countries”, *International Journal of Manpower*, 36 (4), 469 – 490. <http://dx.doi.org/10.1108/IJM-11-2013-0262>