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TURKEY AND THE EUROPEAN UNION: POSSIBLE INCIDENCE OF THE EU ACCESSION ON MIGRATION FLOWS

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Abstract:
This paper analyzes possible incidence of Turkish EU accession on the emigration from Turkey to the European Union. Panel data estimators are applied on the emigration data from EU-18 into Germany in order to construct possible future scenarios of Turkish migration to the EU. Eventual migration flows from Turkey into the EU are forecasted based on the estimated results.
We find that seemingly unrelated regressor is the most efficient estimator that can be applied in Turkey-EU migration framework. Our results reveal that both the network effect and target country labour market conditions represent the strongest determinants for migration, whilst the effect of *per capita* income is actually relatively low. In particular, Turkish *per capita* income does not have nearly any effect on migration, because it enters the model in two variables that work against each other. Furthermore, a very low importance of opening the German labour market for Turkish migrants is found. Estimated coefficients are used to predict migrations to Germany, and through appropriate extrapolations to the whole European Union (EU). Three scenarios of migration are created and the sensitivity of estimated coefficients on migration from Turkey into the Germany during next 25 years is further discussed in detail.

Keywords: economy of migration, Turkey, EU enlargement, panel data, seemingly unrelated regression

JEL Classification: C33, F15, F22, J11, J61

Introduction

The relationship of the European Union (EU) and Turkey nowadays is far more complicated than that between the EU and any other country seeking EU membership. Since the 12 September 1963, when Turkey signed an Association Agreement ("Ankara Treaty") with the European Communities (EC) and became an associate member of the EC, the EU has faced a tough dilemma: "What to do with Turkey?" (Miiftiiler-Bac, 1997).

Possible Turkish EU accession would have considerable economic, institutional and social implications both for Turkey and for the European Union. Many researchers analyzed EU-Turkish trade relations (see for example Völker, 1976; Marguiles, 1996;

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Sayek and Selover, 2002; Derviş, Gros, Öztrak, and Işık, 2004; Ulgen and Zahariadis, 2004) as well as possible consequences of Turkey joining the EC or/and the EU (see for example Lejour, de Mooij, and Capel, 2004; Flam, 2004; Quaisser and Wood, 2004; Lammers, 2006) and concluded that Turkish membership in the EU might clearly generate benefits for Turkey from entering the Common Market as well as bring about narrowing income differences and improving economic and trade relations. However, the most fundamental question in the debate about Turkish EU membership is the issue of Turkish migrations to the European Union and their side effects.

Although Turkey is a large country with the total population of over 70 million of people, Turkish GDP *per capita* in market prices is more than six times lower than that of the EU15 and almost two times lower than in EU10 (Eurostat, 2007). Despite the fact that Turkish economy was very dynamic in the last five years, the economic importance of Turkey in Europe remains low. Even if its rapid economic growth continues until 2015, Turkey will remain a "poor neighbour" for the majority of the EU27 states. According to Lammers (2006), Turkey's income *per capita* at market prices in 2015 will be just 20 % of the EU27 average.

On that economic background Turkish migration potentials might look quite grim for the EU Member States. Martin, Midgley and Teitelbaum (2001) remark that there are about 3.5 million Turks living abroad nowadays and of those 3 million reside in the EU (with 70 % of Turks in Germany). This high proximity to migration amongst relatively young and dynamic Turks (the average age is 27.7 for men and 28.8 for women) often brings fears that Turkish EU membership would trigger the wave of massive migration; estimates hold it that 20 to 30 % of Turkish youth would emigrate to seek higher wages in Europe if they could do so (Martin, Midgley and Teitelbaum, 2001).

These fears might never come true as far as admission to the EU might bring EU assistance and FDI that, in turn, would create jobs and push up the wages in Turkey making labour migration irrelevant. Thence, it seems worth exploring the predictions of Turkish migration to the EU after its possible accession.

The main purpose of this paper is to come with an overview of factors determining Turkish migrations. Based on the Sjaastad (1962), Harris and Todaro (1970) and Hatton (1995) human capital migration approach econometric tools described in Boeri, Brücker (2000) and Alvarez-Plata, Brücker, Siliverstovs (2003) are applied with an intention to estimate and predict future migrations from Turkey to Germany and to the EU. Apart from that, this paper elaborates on the following research questions: Which are the most important economic variables influencing Turkish migrations to the EU? How important is the development of those variables for migration itself and for the EU and Turkey separately? And finally: Are there any other than economic determinants influencing Turkish-EU migration flows?

1. Methodology and Literature Review

Turkish labour migration to Europe dates back to the early 1960s. The agreement between Turkey and West Germany signed in 1961 provided West Germany with low-skilled temporary workers on mutually beneficial conditions. Germany gained access to the vast pool of cheap labour force while Turkey benefited from decreasing

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its unemployment rate. Back then, guest-worker agreements were temporary and envisaged the return of Turkish workers who would come back home equipped with new knowledge and skills. Migrations were fuelled by the information about the economic and social benefits of employment in Europe that trickled back to Turkey (Sayari, 1996).

Apart from Germany, Turkey also signed agreement with Austria, Belgium, Holland, Sweden and France; however, most of the Turkish workers went to West Germany and Holland. Those guest workers settled down and brought their families with them. The other confusion was that instead of low-skilled labour, high-skilled workers emigrated from Turkey (see for example Güngör and Tansel, 2006).

The recruitment of Turkish labour came to a halt after the 1973 oil crises. However, Turkish emigration to Europe continued in the 1980s and 1990s thanks to family reunifications. Another wave of Turkish emigration started in the 1970s. Economic boom in the Middle East created a demand for Turkish workers in Iraq, Libya, and Saudi Arabia (SORT, 2007; Eurostat, 2007). Large migration outflows helped Turkish economy: since the 1960s remittances sent by immigrant workers abroad constituted the major currency input for Turkey (Kirisci, 2003).

The 1980s introduced asylum migrations. Asylum seekers from Turkey came to Europe due to increase of violence and political instability in Turkey (this was especially relevant for the Kurdish minority). This trend lasted until second half of the 1990s. The latest estimations showed that approximately 3.6 million Turkish nationals lived abroad, from which a significant part of 3.2 million resided in the EU (SORT, 2007).

1.1 Target Countries for Turkish Immigrants

At present, the Turkish emigration is low. Although officials do not report emigration figures, a considerable decrease in the Turkish asylum seekers can be observed: in 2004 it was 16,000 people (1/3 less than in the 2000) (SIS, 2007). This can be supported by the decreasing importance of remittances in the Turkish economy that began around 1998. In 2004, remittances by the Turkish expatriate community ranged at $800 million or 0.2 % of GNP, the lowest level since 1975 ($1.3 billion or 2.8 % of GNP) and a strong decline over 2003 ($1.7 billion or 0.7 % of GNP) (OECD, 2006).

In 2004, the stock of Turks living abroad decreased by 2% and reached approximately 3.5 million. This trend might be attributed to both to naturalization and return migrations to Turkey. Clearly, the biggest community of Turks in today's EU can be found in Germany (about 1,750 thousand people) which is about a half of all Turks living abroad. It is apparent that approximately 76% of Turks migrating to Europe are going to Germany (Table 1).

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Table 1
Stocks of Turks Residing in Selected EU and EEA Countries (thousands of inhabitants)

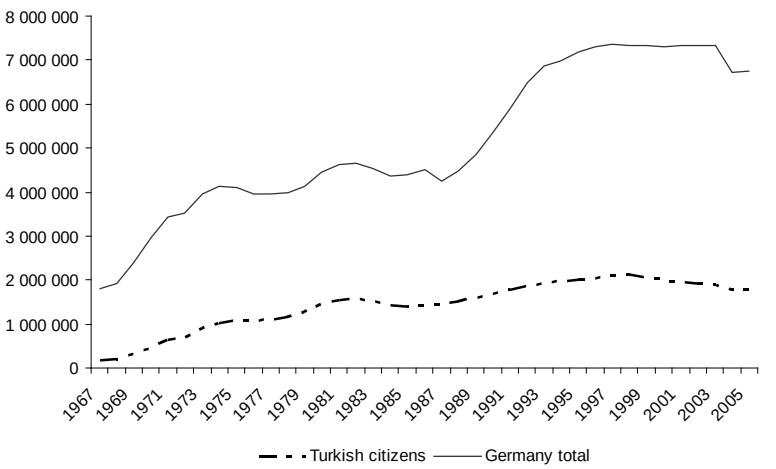
Country	2004	% of total	Rank **	Source
Austria	142	6	1	Labour Force Survey, Statistics Austria
Belgium	79	3	6	Population Register, National Statistical Office
Denmark	31	1	1	Statistics Denmark
Finland	3	0	10	Central Population Register, Statistics Finland
France	n.a.	n.a.	n.a.	Census, National Institute for Statistics and Economic Studies
Germany	1 764	76	1	Statistisches Bundesamt, Wiesbaden
Greece*	77	3	3	National Statistical Service of Greece
Netherlands	196	8	1	Register of Population, Central Bureau of Statistics (CBS)
Norway	9	0	11	Central Population Register, Statistics Norway
Sweden	35	1	10	Population Register, Statistics Sweden
Total	2 336	100		

* Data are from 2001; ** Ranking of minority size in each country.

1.2 Germany as a Major Target EU Country for Turkish Migrations

The Federal Republic of Germany is currently the largest target EU country for incoming Turkish migrations. Turks were not the only one ethnic that contributed to German economic growth: Italians, Spaniards and Portuguese also took part in boosting upheaval of West German economy that took place in the 1960s.

Figure 1
Foreign Citizens in Germany (1967–2005)



Source: Statistisches Bundesamt, Wiesbaden, 2006.

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Figure 1 shows the numbers of Turkish citizens in comparison with all foreigners residing in Germany. There was a steady growth in absolute numbers with its peak around 2000. Furthermore, it can be seen that in relative numbers the record has got its peak even earlier. In 1975 Turkish citizens constituted 26 % of all foreigners living in Germany (Statistisches Bundesamt, 2007) and by the 1987 they reached the position of the most numerous group of foreigners in Germany.

Between 1960s and 2000s Turkish migration underwent several stages. The statistics showed that it actually decreased since the beginning of the 21st century. This might be caused by either cyclic character of migration or by the economic situation in the EU and Turkey. Furthermore, the 2004 EU enlargement caused higher competition between immigrants within EU due to the increasing amounts of migrants from EU10 countries.

Therefore, in spite of high migration inflows from Turkey to the EU in the past, possible Turkish accession to the Union should not necessarily lead to the massive influx of immigrants. Most of the EU countries seem to be already saturated by the Turkish labour migrants who have a long tradition of living and working there. Even though, future migrations from Turkey to the EU might be caused by other than economic factors, it seems interesting to explore the recent trends and to build scenarios of migrations after Turkish EU accession: realistic, optimistic and pessimistic. This can be achieved by studying the data from recent Turkish migrations and extrapolating them in accordance with processes that might occur in the future.

2. Data

The most notorious problem with migration estimation is the lack of the data. Due to the non-existent historical data and different methodology in measuring migration stocks and flows in different countries, comparisons might be very complicated.
For the estimations used in this paper the data on inward migrations to Germany from 1967 until 2005, time series from OECD database (complemented by AMECO database) and Eurostat data were used. Migration data were compiled from the German Central Register of Foreign Nationals and the German Statistical Office. The sample is pooled for 18 European source countries. Former-USSR countries are excluded from the data sample.

The sample period of dependent variable (that is the share of migrants from home country living in Germany as a % of source country population) starts in 1967 when the foreign residence in Germany starts to be reported on annual basis.

According to the German Statistical Office, there are two breaks in migration stock data series. The first one happened in 1972 due to the change from paper-based to computer-based statistic. This transfer caused minor statistical break in some countries. In order to deal with that, the methodology used in Alvarez-Plata *et al.* (2003) is adapted. It appears that after including of dummy variable to control this break, the dummy variable is insignificant.

The second break in the data occurred during the period from 1987 to 1989 because of the revision of the statistics for foreigners that had to follow the directive of the population census of 1987. This had a consequence of significant reduction in foreign citizens stocks for the period of three years. However, after this period the statistics

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were again based on the former methodology. This break is solved by recalculating of foreign residence for affected three years.[1]

Dependent variables are normalized with the home countries population representing the difference in migration stocks as a % of the original home population. The difference could be in different population growth rates, *i.e.* of population in original home country (in our case Turkey) and of appropriate population of foreign citizens in receiving country (in our case Germany) and also in the rate of naturalization. Equation 1 below shows the relation between net migration and difference in migration stocks:

$$\Delta mst_{fht} = m_{fht} + \frac{g_f - g_h - \delta_f}{1 + g_h} mst_{fh,t-1} \tag{1}$$

where mst_{fh} denotes the ratio of the stock of foreign residence from country h in foreign country f to the original home population, m_{fh} is the ratio of actual net migration from country h into home country f to the original home population, g_h is the natural growth of population in the original home country, g_f is the growth of migrant population in receiving country, δ_f is the rate of naturalization of foreign population in receiving country. The index t denotes the time period. From the equation above it is clear that net migration equals the migration stock if the numerator of the fraction is equal to zero. It is assumed that population growth rates are equal and the naturalization rates are zero.

3. Empirical Model

The first part of the theoretical model is consistent with those models based on human capital approach (see Sjaastad, 1962; Harris and Todaro, 1970; or Hatton, 1995) and deals with investment in human capital and expected future income. The model applies the econometric methods used by Boeri and Brücker (2000) and Alvarez-Plata, Brücker and Siliverstovs (2003) in estimating migration from CEEC into the EU15.

3.1 Introduction to the Model

It is accepted that people make expectations regarding the future income in the target (host) country and source (home) country. The differences in the past values of those incomes are creating individuals' expectations about the future possible income. GDP *per capita* of a country is thus taken as a proxy for individuals' incomes both in source and target countries (the selection of GDP *per capita* can be justified by limited data sources available for other variables). The average employment rate in both target and source country is taken as a proxy for the labour market conditions. More precisely, individual probability of finding a job is rising with higher employment and vice versa. The lagged migration stocks serves as a proxy for network effects. If migration flows are based on expectations about past variables that mean present values are influenced

1 Dividing of the difference in the number of foreign residents between 1986 and 1989 by total net immigration in this time period, and multiplied this factor by annual net immigration in order to calculate the change in the number of foreign residents in each year. For more information on this methodology see Alvarez-Plata *et al.* (2003).

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by past values (Hatton, 1995) thus it should be first-order autoregressive process (AR (1)). Therefore, a simple error-correction model can be constructed in the following way:[2]

$$\begin{aligned}\Delta m_{fh,t} = {} & \beta_1 * \Delta \ln(\frac{w_{f,t}}{w_{h,t}}) + \beta_2 * \Delta \ln(w_{h,t-1}) + \beta_3 * \Delta \ln(e_{h,t}) + \beta_4 * \Delta \ln(e_{f,t}), \\ & + \beta_5 * \ln(\frac{w_{f,t-1}}{w_{h,t-1}}) + \beta_6 * \ln(w_{h,t-1}) + \beta_7 * \ln(e_{h,t-1}) + \beta_8 * \ln(e_{f,t-1}), \\ & + \beta_9 * (m_{fh,t-1}) + \beta_{10} * DummyF + \varepsilon_t\end{aligned} \tag{2}$$

where:

$m_{fh,t}$	the share of migrants from home country *h* living in country *f* (*i.e.* Germany) as a % of home population *h*
$w_{f,t}/w_{h,t}$	foreign to home country income difference
$w_{h,t}$	home country income
$e_{f,t}$	German employment rate
$e_{h,t}$	country of origin employment rate
$m_{fh,t-1}$	lagged migrants stock of home country h (Turkey) in country f (Germany)
DummyF	dummy variable for the free movement of labour
t, t-1	denotes time periods

Variables enter the Equation 2 both as steady levels and as variables' differences. Variables' differences show the short term reaction of migration to these fluctuations, on the other hand the levels of the variables determine the long-run relations between migration stocks and appropriate variables. The equilibrium stock of migrants can be thence derive from Equation 2 by setting all changes equal to nil and getting steady state for stock of migrants:[3]

$$\begin{aligned}\bar{m}_{fh} = {} & (\frac{\beta_5}{-\beta_9}) * \ln(\frac{w_f}{w_h}) + (\frac{\beta_6}{-\beta_9}) * \ln(w_h) + (\frac{\beta_7}{-\beta_9}) * \ln(e_h) + (\frac{\beta_8}{-\beta_9}) * \ln(e_f) \\ & + \frac{\beta_{10}}{-\beta_9} * DummyF + \varepsilon\end{aligned} \tag{3}$$

where $\bar{m}_{fh}$ is the steady state equilibrium rate of the foreign migrants to the source population. β in brackets are therefore semi-elasticities in the long-run equilibrium and denote the relation between stocks of migrants and explanatory variables. The coefficient β_9 is expected to be negative; hence the signs of the original coefficients

2 An error-correction model is a dynamic model in which the movement of the variables in any periods is related to the previous period's gap from long-run equilibrium. For more details see Baltagi (2005).

3 Variable *t* was left out from the equation in order to indicate the long-term equilibrium.

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will be not changed. Negative sign of the coefficient is expected due to assumption that migration follows AR(1) process. Hence $m_t = \eta m_{t-1}$ where η must be smaller than 1. If this condition does not hold, the whole population of the source country will migrate. The part of Equation 3 can be re-written in the following way:

$$\begin{aligned} \Delta m_t &= m_t - m_{t-1} = \beta_9 * (m_{t-1}), \\ m_t &= (1 + \beta_9) * (m_{t-1}). \end{aligned} \tag{4}$$

Thus, it appears that β_9 should be negative to assure the sustainability of migration. If the β_9 were even slightly positive, the coefficient before lagged migration would have been larger than one and this would have led to unsustainable migration explosion.

In order to formulate the error correction model shown in Equation 2, it has to be proved that all variables have to be cointegrated in order to form a dynamic long-term equilibrium (see Johnson, 2001). To achieve that a two-stage cointegration test was performed and it was proved that the available data constitute cointegrated set. This makes it possible to continue with testing the main model without any restrictions.

3.2 Model Estimations

A part of cointegration might involve further restrictions that may cause problems to the regression results. From the assumptions presented here it appeared that the most efficient estimator in this framework was the Seemingly Unrelated Regression (SUR). However, it also appeared relevant to estimate the model using classical panel data Least Squares (PLS) and General Method of Moments (GMM).

Furthermore, variable denoting the employment rate in country of origin (domestic income) had to be eliminated from Equation 3 due to the fact that it proved to be insignificant in all estimations (it appeared to be redundant due because the null hypothesis of insignificancy of beta was not rejected). The final model can be then presented in the following way:

$$\begin{aligned} m_{fht} = \alpha_h + \beta_1 \ln(w_{ft} / w_{ht}) + \beta_2 \ln(w_{ht}) + \beta_3 \ln(e_{ft}) + \beta_4 (m_{fh,t-1}) + \\ + \beta_5 (m_{fh,t-2}) + \beta_6 * DummyF + Z_{fh}\gamma + \varepsilon_t \end{aligned} \tag{5}$$

where

m_{fht} – the dependent variable representing the share of migrants from source country h living in target country f as a % of source country population h
w_{ht} – country of origin income level
w_{ft}/w_{ht} – foreign to home country income difference
e_{ft} – German employment rate
$m_{fh,t-1}$ – lagged migrants stock of home country h in country f (Germany)
$m_{fh,t-2}$ – lagged migrants stock of home country h in country f (Germany)
Z_{fh} – vector of time-invariant variables which affect the migration between two countries such as geographical proximity and language
dummy – Free mobility of labour

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3.2.1 Results and Stability Tests

The results of the estimations are shown in Table 2. Estimators reject the null hypothesis of insignificancy of all variables at the 1 % level, with the exception of income differential in PLS that is significant on the 5 % level and is insignificant in GMM estimator. The results confirm that SUR estimation is the most powerful one here due to the Hausman test that could not reject the null hypothesis.

The correlation of error terms across countries that could be caused by common shocks were tested by Wald test that rejected the null hypothesis about the errors being serially uncorrelated against the alternative one that they were correlated. Hence, the common shocks were present in the data. This finding was in line with the expectation that the variables used in the model fit into the global economic framework and therefore were not independent.

Table 2
Panel Data Estimation

	PLS	GMM	SUR
C	-4.5302 **		-4.2034 **
w_{ht}	0.0419 **	0.0331 **	0.0444 **
w_{ft}/w_{ht}	0.0533 *	0.0935	0.0422 *
e_{ft}	0.7610 **	0.698 **	0.7398 **
$m_{fh,t-1}$	1.5006 **	1.1233 **	1.3536 **
$m_{fh,t-2}$	-0.5083 **	-0.3558 **	-0.4929 **
Dummy	0.0113 **	0.0095 **	0.0152 **
**,* coefficients are significant at 1 and 5% level, respectively			
Cross section fixed effect (Turkey)			**0.28751**

Source: Own computations (using eViews 6®).

Table 3 specifies the model and shows different data adjustments that had to be made due to the assumptions applied on estimators.

Table 3
Models' Specifications

	PLS	GMM	SUR
Sample (adjusted)	**1969 2005**	**1970 2005**	**1969 2005**
Cross sections	18	18	18
Total panel observations (balanced)	666	648	666

Source**:** Own computations (using eViews 6®).

The estimated model is based on SUR regression due to the results of Hausman test with fixed cross section effects and it can be presented in the final form:

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$$m_{fht} = -4.2034 + 0.0422 * \ln(w_{ft} / w_{ht}) + 0.0444 * \ln(w_{ht}) + \\ +0.7398 * \ln(e_{ft}) + 1.3536 * (m_{fh,t-1}) - 0.4929 * (m_{fh,t-2}) \\ +0.0152 * DummyF + Z_{fh}\gamma. \tag{6}$$

where Z_{fh} for Turkey is equal to 0.2875. The redundancy of fixed effects and presence of random cross section effects were tested for. The likelihood ratio that uses sum-of-squares (F-statistic) was applied and the statistic value and an appropriate ρ-statistics strictly rejected the null hypothesis of redundancy of fixed effects. Stability of coefficients was also made by using a classical F-test with X^2 distribution. The main results of the model specified by Equation 5 can be summarized as follows:

- In accordance with preliminary expectations income differential has positive and significant impact on migration. 1 % increase in the income differentials leads to the 0.04 % increase in migration. Furthermore, the income in the source countries is also significant and has a positive impact on migration. The effect of 1 % increase in the source countries income will have a 0.04 % impact on migration.
- Employment rate in Germany (used as an indicator of the labour market conditions) also has the expected sign. The impact of employment rate is significant and positive. Percentage increase in the employment rate in Germany leads to the 0.74 % increase in migration.
- Lagged variables of migration have significant and positive impact on migration. That represents the crucial network effect that makes 0.86 % of former migration.
- The dummy variable has a positive sign and it is significant, however, its impact is rather small. It might be that migrants with the biggest incentives to move have already done so before introduction of free movement of labour. Hence, migration flows appear not to be much influenced by the free movement of labour.

A short notion should be made on the use of estimators: in this paper SUR estimator with the best forecasting performance was applied. This is in accord with the similar studies (see Alvarez-Plata, Brücker and Silverstovs, 2003).

3.3 Simulation of Migration: 2006–2030

In this sub-section migration from Turkey into Germany is simulated based on the results obtained from the main model. The projection has three scenarios that are described below. The estimated results as well as the exogenous variables might not exactly reflect the reality, thence they should be taken with care.

A short explanation of the cross-section variable, in other words of the country-specific effect, is needed before presenting the results of simulations. The country-specific effect captures the characteristics specific for each country that might affect migration. The most important examples of this variable are: distance, culture, language or education. Due to a short time horizon of each cross section these country-specific effects are not split into further segments. The most important issue is that Turkey is also incorporated in the sample countries, which means that the country-specific effect for Turkey was accounted for 0.2875. This effect is therefore used as a country-specific constant during the whole simulated period.

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3.3.1 Scenarios and Results

In this sub-section three different scenarios of what might happen to Turkish migration to Germany after EU accession are presented: realistic scenario, optimistic scenario and pessimistic scenario. The optimistic and pessimistic scenarios do not concern the number of migrants but are rather based on Turkish economic development and integration point of view.

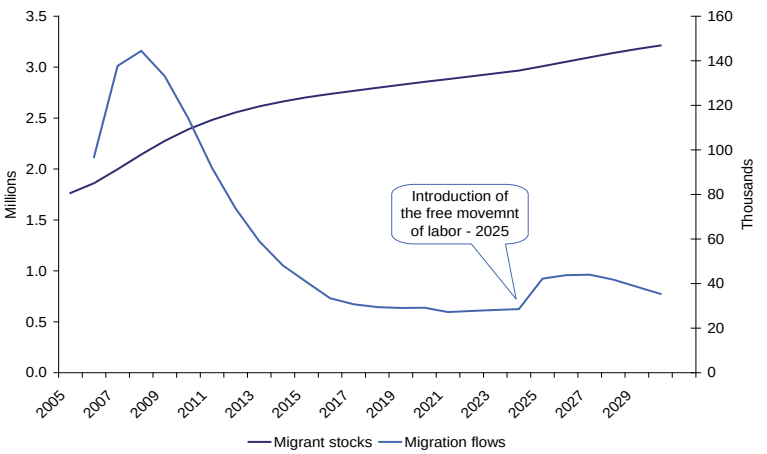
Realistic Scenario

In the realistic scenario employment rate remains unchanged and GDP in Germany and Turkey grows at rate 2 % and 4 % *p.a.* respectively. Moreover, dummy variable for free movement of labour from the year 2025 is employed because of the possible Turkey EU accession or similar agreements that would have the effect on free movement of labour. The results are reported in Figure 2 below.

In the realistic scenario the migration flow reaches its top in the 2009 and then decreases. A slight increase can be observed after simulated EU accession. The migration flows are marginal after 2030 onwards. This is mainly caused by ageing of Turkish population. The number of Turks living in Germany is stabilized at the 3.2 millions and the initial peak of migration flows in 2009 is caused by the gap that appears in the beginning of 21st century in a migration flows from Turkey. Thence, the model is trying to compensate it and get the migration to the standard level.

It should be noted that migration flows are average migrations over time intervals and that they are expected to change in the course of business cycles. Migration stocks remain stable from 2015 onwards, hence the forecasted migration stocks of Turks in Germany is approximately 3.2 million people. However, the percentage of Turkish migrants to the total Turkish population slightly decreases from 2015, perhaps due to the Turkish population projections. On the other hand, the percentage of Turkish migrants to the total German population increases.

Figure 2
Realistic Scenario – Turkish Immigrants: Migration Stocks and Migration Flows



Source: Own computations.

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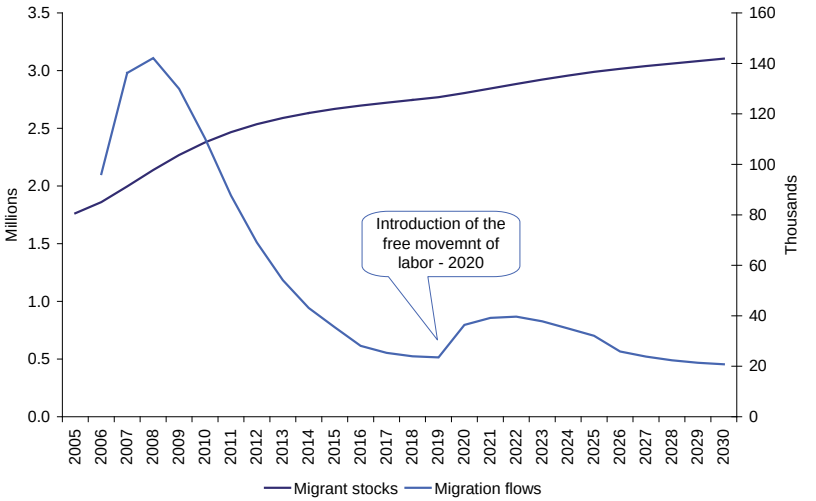
Optimistic Scenario

In the optimistic scenario faster convergence of Turkish economy to the German level is assumed. Moreover, the integration process of Turkey into the EU also happens earlier. GDP *per capita* of Turkey converges to the German GDP *per capita* in a rate of 4 % *p.a*. and free movement of labour is envisaged in 2020. The employment rates remain constant as in the realistic scenario. The results of the simulation are reported in Figure 3.

Figure 3
Optimistic Scenario – Turkish Immigrants: Migration Stocks and Migration Flows



Source: Own computations.

It can be seen that in the optimistic scenario the development of migration is similar to the realistic: migration decreases from 2009 and then raises slightly after the introduction of free movement of labour. However, the whole convergence process to the steady state is faster and the total amount of migrants residing in Germany in 2030 is approximately 3.1 million, *i.e*. 0.1 million lower.

Pessimistic Scenario

In the pessimistic scenario the GDP convergence does not exist at all. In other words, the German GDP *per capita* grows as fast as the Turkish GDP *per capita* for the whole simulated period.

Furthermore, it is assumed that the free movement of labour between Turkey and Germany is not introduced at all. The employment rate in Germany is set about 2 % higher compared to the base case and then remains stable.

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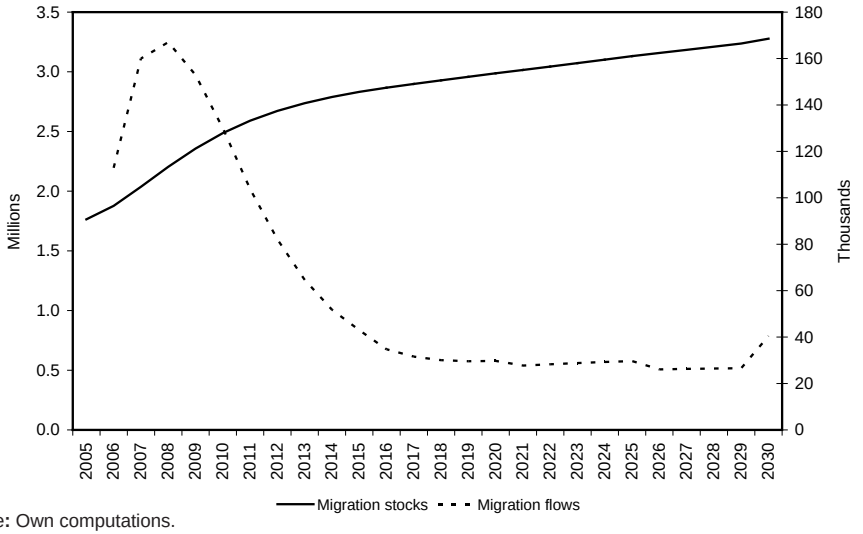
Figure 4
Pessimistic Scenario – Migration Stocks, Migration Flows



Source: Own computations.

In the pessimistic scenario, the faster increase of migrations from Turkey to Germany is observed (Figure 4). However, the increase after introduction of free movement of labour is missing, thus the final stock of migrants is not that pessimistic as one could have expected. The total amount of Turkish migrants in Germany in 2030 is about 3.3 million. That is 100 thousand more migrants compared to the realistic scenario.

Sensitivity

Sensitivity of estimated results should be accounted for. The impact of GDP *per capita* both in Turkey and Germany on the stocks of Turkish residents living in Germany is rather small in the long run. Thus, there exists relatively low elasticity between the migrant stock and GDP *per capita* in Turkey, as well as between the income differential.

It becomes clear that German GDP represents the strongest migration incentive. Turkish GDP growth is, on the other hand, irrelevant mostly because of the coefficients of the variables where the Turkish GDP is employed (Turkish GDP is presented also as a denominator of income difference variable). The other exogenous variables were taken from the realistic scenario (see Table 4). German employment rate (see Table 5) seems to have greater impact on migration stock. The percentage change in employment rate in Germany (used as a proxy for the German labour market conditions) affects the migration stock of Turks living in Germany stronger than a percentage change in German or Turkish GDP *per capita*. The other variables are taken from the base case.

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Table 4
GDP Growth Sensitivity Analysis

	GDP Growth		Stocks of residents (thousands)	
	Germany	Turkey	2020	2030
No growth	0%	0%	2,786	3,078
	0%	4%	2,793	3,091
	0%	8%	2,799	3,103
	2%	0%	2,849	3,200
Base case	2%	4%	2,855	3,213
	2%	8%	2,862	3,225
	4%	0%	2,910	3,320
	4%	4%	2,917	3,332
High growth	4%	8%	2,923	3,344

Source: Own computations.

Surely, the real migration figures may highly deviate from the obtained results and projections. Some factors might influence migration stocks stronger than the variables used in this model. Those might be country specific conditions, such as the issue of Northern Cyprus, Kurdish minority issues or unpredictable radicalization of Turkish political representation. All these issues, if triggered, might potentially lead to international isolation of Turkey which will, in its turn, cause higher migrations due to political refugees or asylum-seekers.

Table 5
Employment Rate Sensitivity Analysis

	Employment rate (%)	Stocks of residents (thousands)	
		2020	2030
Low Emp.	89	2,729	3,077
	90	2,779	3,131
	91	2,829	3,185
Base case	91.5	2,855	3,213
	92	2,878	3,237
	93	2,927	3,289
High Emp.	94	2,976	3,341

Source: Own computations.

On the contrary, there might migration might decrease significantly due to stronger migration barriers or nationality. Secondly, *per capita* income in Turkey is much lower than in most EU countries, thus the income gap is extreme and could also change abruptly. Third, the negotiation and agreements with the EU will be also crucial and Turkish cooperation with the EU might also have significant impacts on migration.

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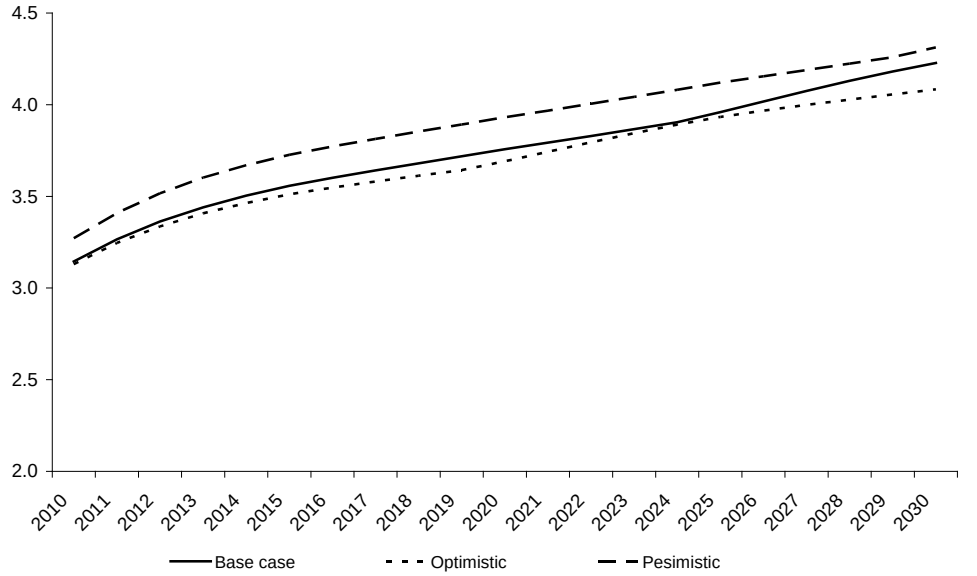
3.4 Extrapolation to the EU 15

The next step is the extrapolation of the results for the whole EU15. Taking into account that about 76 % of all Turkish immigrants in today's EU live in Germany, results from the scenarios above can be extrapolated for the EU15.

Figure 5
Extrapolation Results for Turkish Migration to the EU15 until 2030 (millions)



Source: Own computations.

In all scenarios a stock of some 3 million residents from Turkey is expected to live in the EU15 in 2010. As the time count reaches the 2020 the scenarios start to vary more significantly and by the 2030 there is expected to be from 4.0 to 4.4 million Turks living in the EU15.

Nevertheless, it has to be noted that the extrapolation shown in Figure 5 is subjected to one important restrictive assumption. This is that the distribution of Turkish migrants in 2004 across the EU15 countries might remain constant over the whole period included into the simulation (2010–2030). Indeed, current migration stocks and flows depend on underlying economic variables that can change over time, moreover institutional restrictions may also disappear. However, country specific reasons for migration seem to be relatively stable in the past. Therefore, the extrapolation of Turkish migration into Germany to the EU15 gives a reasonable picture of the possible development until the 2030.

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4. Conclusions

The major outcome of this paper is the following: in case of Turkish EU accession, the envisaged stocks of Turkish migrants in the EU15 should not increase dramatically. The results stemming from the estimations in this paper show that post-accession annual migration flows from Turkey to the EU15 might be as high as 40,000 people in the long run. The experience with former EU enlargements supports these findings.

It should be acknowledged that the EU cannot afford to have a "zero migration" policy under current institutional framework. Furthermore, a successful accession period with high growth and implementation of the reforms is actually leading to elimination of the migration pressures. There is no "*a priori"* reason why Turkey should go via different path. More precisely, the Turks with the strongest incentives to migrate had already settled in the EU.

This paper also suggests that Turkish convergence to the EU might be important for narrowing the income differences and improving of other economic and trade relations. However, the impact of economic convergence or introduction of free movement of labour on migration is not very significant (the network effects seem to prevail). On the other hand, factors such a minority rights or Kurdish question, can significantly change the character of migration and thus also the migrants flows.

There are also other implications from this paper. First of all, it should be reminded that the results presented here should be taken with great care. The uncertainty about migrations from Turkey after its formidable EU accession still prevails (similar to the case of massive migration from CEECs to the U.K. and ROI after the EU Eastern Enlargement of 2004 that were never accounted for). The simulation of possible Turkish migration presented in this paper is based on an empirical model that shows dependence of migration to Germany on income differential, employment rate and an institutional factor of free movement of labour across the EU. However, some issues that could have distorted the results (*i.e.* institutional reform in the EU and its migration policy, political crises in Turkey, a halt in Turkish economic convergence to the EU, major crisis involving Kurdish minority, women rights, Cyprus conflict or abortion of Turkey-EU accession process) were left out from the model. In addition, the model does not take into account another serious issue – possible transition periods for the free movement of labour that might be introduced by the EU once that Turkey will become its member. This problem, however, similar to our assumption that Turkey will join the EU in foreseeable future, was left aside in our model.

Second, the cross-section character of the regressions used in the paper did not allow for period adjustment which could play a key role in migrations flows. It also seems complicated to compare the data on Turkey and other emigration countries. On average, the income gap is significantly larger between Germany and Turkey than between Germany and most of the other source countries. With this in mind, it seems quite complicated to make predictions.

Third, results presented in this study might be biased due to a recent trend in Turkish migration stocks: the decrease in migration in recent years might not be fully captured in the model and the forecasted values might be overestimated. Nevertheless, if this is controlled for, migration inflows to the EU15 are stabilized: there are 32,000 to 50,000 Turks annually, depending on the presented scenario.

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