Migration Issues:
Turkey and The European Union

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ABSTRACT

The purpose of this study is to clarify issues surrounding migration from Turkey to the European Union (EU). After 1960s, Turkey was one of those developing countries sending temporary workers to the developed countries in Europe, mostly to Germany. There is a fear that if Turkey were given admission to the EU there will be a massive migration flow from Turkey to the other member countries of the EU, especially to Germany because of strong network effects already existing.

Both empirical and theoretical research methodologies were utilised in this study. The emprical part of the study consists of two different applications. One is the application of a rationality approach to explain migrant's decision based on exploitation of all known information affecting the future net present value of the earnings. Second is the application of a simple time series model developed by Hatton. The aim is to capture the effects of both short and long term variables on migration flows from Turkey to Germany. The theoretical part of the study develops a theoretical framework for the migration decision that takes into consideration the impact on uncertainty of some of the important economic and social variables that are addressed by the EU membership and institutions. It emphasizes future expectations of living conditions and the level of uncertainty associated with them as a key variable in making migration decisions.

The recommendations which are developed in this thesis suggest that not the accession of Turkey to the EU but the rejection of Turkey's EU membership will

increase uncertainty for the future economic and social prospects in Turkey stimulating the current level of migration.

Keywords: Accession, European Union, Germany, Migration, Turkey.

ÖZ

Bu çalışmamanın amacı Türkiye'den Avrupa Birliği'ne (AB) olan göçle ilgili bazı konuları incelemektir. Türkiye 1960'lardan sonra gelişmiş ülkelere, özellikle Almanya'ya, geçici işçi gönderen gelişmekte olan ülkelerden biri olumuştur. Bugün Türkiye'nin Avrupa Birliğine girmesi durumunda Türkiye'den diğer AB ülkelerine, özellikle güçlü sosyal ağların etkisinden dolayı Almanya, oluşabilecek önemli bir göç akışından korkulmaktadır.

Bu çalışma göç olgusunu hem ampirik hem de teorik modeller çerçevesinde incelemektedir. Çalışmanın ampirik kısmı iki farklı uygulamadan oluşmaktadır. Birinci kısım göç edenelerin kararlarını açıklamak için Rasyonel Beklentiler Yaklaşımının uygulanmasını içermektedir. Rasyonel Beklentiler Yaklaşımına göre göç edenlerin kararlarını şekillendiren gelecekteki gelirlerinin net bugünkü değerlerini etkileyen mevcut tüm bilginin kullanılmasıdır. İkinci kısımın amacı temel belirleyici değişkenlerin hem kısa hem de uzun dönemde Türkiye'den Almanya'ya doğru olan göç akımlarını nasıl etkilediğini açıklamak olup Hatton (1995) tarafından geliştirilen zaman serisi modelinin uygulanmasını içermektedir. Çalışmanın teorik kısmı, göç kararı verilmesine etkide bulunan bazı ekonomik ve sosyal değişkenlerin belirsizlik etkisini içeren kuramsal çerçevede bir model oluşturulmasını kapsamaktadır. Bu bölümde yaşam koşulları ile ilgili gelecekteki beklentiler ve buna bağlı belirsizlik derecesinin göç kararının verilmesinde anahtar değişken olduğunun önemi vurgulanmıştır.

Çalışmada elde edilen bulgular Türkiye'nin Avrupa Birliği'ne girmesinin değil, aksine üyeliğinin reddedilmesinin, ekonomik ve sosyal durum ile ilgili belirsizlikleri artırarak Türkiye'den AB ülkelerine olan göçü artıracağını ortaya koymaktadır.

Anahtar Kelimeler: Avrupa Birliği, Almanya, Göç, Türkiye

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I owe a lot to my friends and my family for their endless support throughout my studies. I would like to dedicate this study to them as an indication of their significance in this study.

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LIST OF SYMBOLS

m_t	aggregate migration rate at time t
t	time
β_0	intercept
$\beta_{1,\ldots,n}$	unknown parameters
h	home/sending country
f	foreign/receiving/host country
g	Germany
ε	unpredictable white noise error
X	observable time-varying characteristics
$X_{h,t}$	observable time-varying characteristics of the sending country at time t
w	per capita income
ue	unemployment rate
MST	the previous period's stock of migrants
D_{hg}	the geographical distance between the capitals of sending and receiving countries
i	individual
d	difference between expected utility of staying in home country versus moving to host country
z	cost of migration

e	employment rate
FM	dummy variable for free movements of workers
FZ	country specific fixed effect for each country
P	labour force
mg	net migration from Turkey to Germany
$popT$	population in Turkey
W	Wealth
NPV_m	Net Present Value of Migration
PVc^m	Present Value of the Direct Costs of Migration
U	Utility
E	Expected
PV	Present Value
μ	mean/expected value
σ	standard deviation
σ^2	variance
A	a cost of risk term
π	probability
ρ	probability

ABBREVIATIONS

AC-10	Accession Countries; Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.
BLNEG	logarithmic form of employment rate in Germany
BLNEGS	logarithmic form of employment rate in Germany adjusted by standardizing data
BLNET	logarithmic form of employment rate in Turkey
BLNETS	logarithmic form of employment rate in Turkey adjusted by standardizing data
BCLNEG	the change in the logarithmic form of employment rate in Germany
BCLNEGS	the change in the logarithmic form of employment rate in Germany adjusted by standardizing data
BCLNET	the change in the logarithmic form of employment rate in Turkey
BCLNETS	the change in the logarithmic form of employment rate in Turkey adjusted by standardizing data
CEEC-2	Bulgaria and Romania
CEEC-4	Czech Republic, Estonia, Hungary and Poland
CEEC-8	Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia
CEEC-10	Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.
CEECs	Central and Eastern European Countries

CLNWGDT	the change in the logarithmic form of the relative wage rates of Germany and Turkey
CLNWGDTS	the change in the logarithmic form of the relative wage rates of Germany and Turkey adjusted by standardizing data
CM	the change in net migration rate
EACE	European Energy Community
EC	European Community
ECSC	European Coal and Steel Community
EEC	European Economic Community
ENPV	Expected Net Present Value
EU	European Union
EU-15	France, Germany, Italy, Belgium, Luxembourg, Netherlands, UK, Ireland, Denmark, Greece, Portugal, Spain, Austria, Finland, Sweden.
f	foreign country
GDP	Gross Domestic Product
h	home country
LNWGDT	logarithmic form of the relative wage rates of Germany and Turkey
LNWGDTS	logarithmic form of the relative wage rates of Germany and Turkey adjusted by standardizing data
M	annual net migration rate
MG	Net Migration rate from Turkey to Germany
MGS	Net Migration rate from Turkey to Germany adjusted by standardizing data
MO	Net Migration flow from Turkey to other countries

MOS	Net Migration flow from Turkey to other countries adjusted by standardizing data
MST	the annual number of Turkish migrant stocks in Germany
MSTS	the annual number of Turkish migrant stocks in Germany adjusted by standardizing data
NAFTA	North American Free Trade Agreement
NPV	Net Present Value
NPV_m	Net Present value of Migration
OECD	Organization for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
PPP	Purchasing Power Parity
PV	Present Value
RA	Rationality Approach/Rational Expectations Approach
RE	Rational Expectations
SUR	Seemingly Unrelated Regressions
TISK	Türkiye İşveren Sendikaları Konfederasyonu
UK	United Kingdom
US	United States
USA	United States of America
USSR	The Union of Soviet Socialist Republics
W	Wealth
WAP	Working Age Population

Chapter 1

INTRODUCTION

1.1 The Context of the Research

The main purpose of this study is to investigate how the migration flows from Turkey to European Union (EU), especially to Germany, will change if Turkey gets accession or cannot become a member state of the European Union. The main reason for focusing on migration studies is to model expectations as a function of recent experience.

There have been a series of studies concerned with the prediction of the potential migration flows to the EU member states before and after the EU enlargements (Bauer and Zimmermann, 1999; Pijpers, 2004). Some of these studies are focused in the second chapter of the thesis. The models used in these studies and the results obtained are summarized in Appendix B. Those studies gained importance before the last enlargement of the EU in 2004 and 2007, based on the reason that this was the largest enlargement and also because the new members[1], except Cyprus and Malta, are economically poorer than the previous entrants[2] (Dustmann et. al., 2003).

[1] Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia.
[2] EU-15 or former EU members; France, Germany, Italy, Belgium, Luxembourg, Netherlands, UK, Ireland, Denmark, Greece, Portugal, Spain, Austria, Finland, Sweden.

The thesis is based on the theory that if Turkey is accepted as a member state of EU, the migration flows from Turkey to EU will decrease, because the targets to be able to join EU such as the economic requirements which are viewed as being the main factors forcing out migration from Turkey will be achieved.

1.2 Objective of the Research

The acceptance of Turkey as a member state of EU has been debated since 1963 when Turkey has became an associated member of EU (Avci, 2002; Dahlmann, 2004). One of the main reasons that Turkey has not been accepted as a member state till today is the size of the population in Turkey and the fear of increase in possible migration flows from Turkey to EU member states (Avci, 2002; Chislett, 2004), mostly to Germany. Germany is accepted to be the main destination country since strong networks were created in the past. The most important reason of migration from Turkey to Germany is the individual's expectations about future. Expectations of individuals mostly depend on economic reasons, such as the income gap between Turkey and old members of EU (Avci, 2002; Aydinli and Waxman, 2001; Dahlmann, 2004; Flam, 2003). For the acceptance of Turkey as a member state the solution of these problems is required.

The study deals with the issue of the economic and political development of the relationship between Turkey and EU, suggesting that perhaps less migration to EU member states will be realized than has often been predicted with the acceptance of Turkey as a member state. The main reason is that as a member of the EU a number of serious economic and political developments in Turkey will be mitigated.

1.2.1 Historical background of EU and the relations with Turkey

The idea of creating the European Union gained importance after the Second World War in order to be able to provide long lasting peace in Europe and to create a third super power in the world. On 18 April 1951, six European countries, France, Germany, Italy, Belgium, Luxembourg and Netherlands agreed on establishing the European Coal and Steel Community (ECSC) under the administration of High Authority with the Treaty of Paris. In 1957, with the Treaty of Rome, the European Economic Community (EEC) and the European Energy Community (EACE or Euratom) was created by these six countries. In 1967, those three communities came together under one community called the European Community (EC). The first enlargement was completed by the acceptance of United Kingdom (UK), Denmark and Ireland as member states of EC in 1973. A second enlargement followed in 1981 by the membership of Greece and in 1986 Spain and Portugal became members of EU. The third enlargement was completed by the acceptance of Austria, Finland and Sweden in 1995. The member states of EU increased to 27 on May 1, 2004 with the inclusion of a number of Central and Eastern European Countries. Finally Bulgaria and Romania were accepted as member states on January 1, 2007 (EUROPEA, 2010).

Turkey applied for membership of the EU and EEC[3] in 1959 (in the same year as Greece applied). This application lead to the acceptance of Turkey as an associate member in 1963. That was the first step towards creating a customs union, which was regarded as a step for full membership between Turkey and EU to be finalised latest in 1995. Financial assistance and preferential tariffs are usually granted by EU

[3] European Economic Community.

but because of the political and economic conditions in Turkey during 1970s and 1980s, tariff reductions and non-tariff barriers were delayed. Turkey applied for the full membership of EU in 1987. The accesion negotiations could not started in 1990, due to major internal changes in EU and because of the transition of Eastern Europe and Soviet Union, but the full membership was not rejected. The time period was extended for the preparation of Turkey to fulfill the required conditions. Turkey joined the Customs Union in 1996, allowing for the duty free circulation of all industrial products between Turkey and EU, except the products of ECSC. In the same year a Free Trade Agreement was signed between Turkey and EU to decide which products of ECSC could be traded duty free after 1999. With the Helsinki meeting of the European Council in 1999, Turkey became a candidate for membership of the EU. Candidate of membership of Turkey lead to the cooperation of Turkey and EU for Turkey to fulfill the required conditions for membership, in other words, to enable Turkey to adopt the *acquis communitaire*[4] (Togan, 2003; Grabbe, 2004)(See Appendix A).

Although the membership negotiations opened on 3rd October 2005, it seems that full membership will not be accepted in less than in ten years, even though Turkey has been an associated member of EU since 1963 and an official candidate since 1999. The possible earliest acceptance of Turkey as a full member of EU seems to be in 2014 (Casanova, 2006; Dahlman, 2004). One of the main reasons that it has been difficult for Turkey to gain acceptance as a member state, is the relative size of its population combined with the fear of possible massive migration flows from Turkey to EU member states (Martin et. al., 2001; Kaya, 2004; EurActive, 2010).

[4] Legal framework of EU, the complete body of EU legistlation. http://en.euabc.com/word/12

The relations between Turkey and EU and important dates for Turkey's EU accession process are summarized in Appendix E.

1.3 Relevance of the Thesis

Studies concerned with the prediction of the potential migration flows to the EU member states before and after the EU enlargement gained importance before the last two enlargements of the EU in 2004 and in 2007. The reason was that this was the greatest enlargement and also because the new members, except Cyprus and Malta, are economically poorer than were the previous entrants.

Since EU membership negotiations were opened with Turkey, migration concerns from Turkey to EU has gained interest. This is particularly true for Germany because of the large stock of Turkish migrants already living in Germany. The main purpose of this study is to analyze the determinants of the migration flows from Turkey to Germany if Turkey is accepted as a member state of the EU.

1.4 Main Research Question

One of the central factors in the negotiations of Turkey's entering the EU has been the concern that its entry would trigger a large flow of immigrants into the higher income countries of the EU (Chislett, 2004; Flam, 2003). Various studies have been undertaken under the auspices of the EU and others (Erzan, Kuzubas, Yildiz, 2006; Huges, 2004; Lejour, Mooij, Capel, 2004) tried to forecast the impact on migration of Turkey's entry into EU. Some estimates showed that approximately more than 2 million people would immigrate to EU-15 if Turkey were not brought into the EU (Erzan, Kuzubas, Yildiz, 2006).

While this is the view of some analysts studying European migration, it is important to recall that prior to the entry of Greece (1981), Portugal and Spain (1986) into the EU a similar situation existed, with similar dire predictions made (Dustmann, Kasanova, Fertig, Preston, Schmidt, 2003; Chammartin and Cantu-Bazaldua, 2004).

To the surprise of most, massive flow of immigrants from Greece, Portugal and Spain did not occur after they joined EU. In fact, the historical pattern of net immigration from these countries to previous EU states was reversed.

To forecast possible migration flows from new members of EU to the core EU countries, different variables are considered in different studies as the main factors affecting migration decisions of individuals. In more recent studies a combination of the theories based on this subject is used. But there are other factors effecting the migration decision of individuals. In this study the possible migration flows from Turkey to EU member states is analyzed considering the possible EU membership of Turkey, using a combination of these theories and including the political effects, such as the way that member countries decide on whether or not to approve Turkey's membership.

1.5 Methodological Approach of the Thesis

From a methodological point of view, the empirical studies used to evaluate future migration flows from Eastern and Southern Europe to Western Europe can be divided into two distinct groups. One of these groups of studies focuses on migration flows from a macroeconomic view by using macro analytical based estimations. The other group examines migration flows from a microeconomic perspective by using the information results obtained through surveys. The methodology used in this study

is a combination of theoretical and empirical analysis using macroeconomic analytical estimations.

An explanation of the macroeconomic determinants of migration is the focus of the following section since macroeconomic analytical estimation methods are applied in two empirical chapters of this thesis.

1.5.1 Macro Determinants of Migration

1.5.1.1 The Neoclassical Approach

The basic assumption of neoclassical approach to determine migration flows is based on the differences in factor endowments leading to differences in labour supply and demand in two different regions. The basic assumption is based on the utility maximization of individuals subject to a budget constraint (Bauer & Zimmermann, 1999). So the main variable affecting the migration flows is considered to be the wage differences in home and host countries. The equilibrium wage rate in a country tends to be high if the supply of labour relative to the stock of capital is low, and low if the supply of labour relative to the stock of capital is high. In other words, migration arises because of the differences in the equilibrium wage rates between two labour markets. Migration flows out of a country having a low equilibrium wage rate to the countries having high equilibrium wage rates. Thus, the supply of labour relative to capital increases in the region having higher equilibrium wage rate, which leads to a decrease in the equilibrium wage rate. On the other hand, the supply of labour relative to capital decreases in the region having lower equilibrium wage rate, which leads to an increase in the equilibrium wage rate. According to the Neoclassical Approach, migration flows end when differences in equilibrium wage rates in two regions are eliminated. In short, the Neoclassical Approach explaining

migration flows is based on the differences in actual wages between two different regions (Salvatore, 2007).

Harris and Todaro (1970) extended the Neoclassical Approach of migration in order to explain rural-urban migration. The main difference of their model is that a full labour market equilibrium is not assumed and the probability of not finding a job in the destination region is included into their assumption. The main idea is that the migration flows depend on expected earnings rather than actual earnings.

In most of the recent studies on forecasting the potential migration flows from new members of EU to the core EU countries probability of finding a job is used as one of the key factors determining migration flows (Fertig & Schmidt, 2000; Hille & Straubhaar, 2001; Fertig, 2001; Bruder, 2003; Zeiceva, 2003; Alvarez-Platza, Brucker & Siliverstoves, 2003; Dustmann et. al., 2003; Brucker & Siliverstoves, 2004; Erzan, Kuzubas & Yildiz, 2006). In those studies, real wages are calculated usingper capita Gross Domestic Product (GDP) as a money. It is in turn transformed by the relative purchasing power parities of the currencies in the two countries in order to ensure comparability between the sending and the receiving country.

1.5.1.2 Human Capital Approach

The Human Capital Approach for modelling migration flows was first developed by Sjaastad (1962). In his work, migration is treated as an investment decision by an individual. According to the Human Capital Approach, depending on their own skills, individuals calculate the net present value of the returns from migrating to another region and the net present value of the returns staying in their home country. If the net present value of the return in the destination country is larger than the net

present value of the returns in the home country, the individual would prefer to migrate. The net present value of returns of migration to human capital is calculated by subtracting the costs of migration from the returns of migration, while the reverse is applied in the case of calculating the net present value of returns of staying in home country. These costs and returns of migration include both money and non money measures. The money costs are the costs of transportation, lodging, increased expenditure on food, etc., while the non-money costs include the foregone earnings while travelling between home and host country, earnings foregone while searching for a job (that is a function of employment opportunities in the host country), learning a job (a function of individual skills), and the psychic costs of changing the environment such as missing friends and relatives. Hence, the net present value of investing in human capital is different for each individual since each individual has different age, gender, skills, schooling, etc..

One of the main assumptions of the Human Capital Approach is that the possibility of migration decreases as age increases. The reason is that the older individuals' expected lifetime gains to be smaller from moving than the young individuals'. Second, the probability of migration of high educated individuals' is greater than the probability of migration of lower educated individuals'. The reason is that the higher educated individuals have a greater ability to collect information which decreases the risk of migration. Another assumption is that as the distance between the sending and the receiving country increases, the risk and costs of migration also increase, hence decreasing the expected potential migration. It is easier to obtain accurate information about the labour market of the receiving country as the distance decreases between the sending and receiving countries.

In short, the main feature of the human capital approach is that the estimations of expected migration flows from the sending country to the receiving country should consider the heterogeneity of individuals rather than only the expected incomes both in the home country and the host country. The socioeconomic characteristics of the migrants should also be included in the framework of the estimations of migration flows.

In some of the recent studies on forecasting the potential migration flows from new members of EU to the core EU countries, the distance between the sending and the receiving countries is used as an estimator, in addition to the expected wage rates in those countries (Hille & Straubhaar, 2001). Fertig (2001) and Brucker & Siliverstoves (2004) also included the cost of migration in their estimations following the human capital approach to explaining migration. The country specific fixed effects are included in some estimations considering the cultural differences of the migrants from different countries, again following the idea of Human Capital Approach to explaining migration (Fertig & Schmidt, 2000; Fertig, 2001; Bruder, 2003; Zeiceva, 2003; Alvarez-Platza, Brucker & Siliverstoves, 2003; Dustmann et. al., 2003; Brucker & Siliverstoves, 2004).

1.5.1.3 Network Migration

A dynamic view of migration is developed by Massey (1990) where he consider the network impacts on migration. This approach suggests that immigration is much a more dynamic phenomena than the economic analyses of migration alone would indicate. The reason is that immigration feeds back on itself through social channels becoming progressively independent of the economic conditions, such as differences in the expected wage rates, in the sending and receiving countries.

Network formation is the most important social-structural mechanism that the feedback of immigration on itself relies on. The network theory of migration is based on the assumption that the cost of migration decreases as the stock of migrant population in the receiving country from a specific sending country increases. Migrant networks are set by interpersonal ties between the migrants in the receiving country and the non migrants in the sending country through friendship, family membership and relative membership. This network is based on the common culture, common language, common religion, common history, etc. Social networks increase migration since they decrease the cost of migration, thus they increase the net return of migration.

The cost of migration includes the direct cost of transportation, the foregone earnings while travelling depending on the distance between home and host country, earnings foregone while searching for a job which is a function of employment opportunities in the host country, learning a job which is a function of individual skills, and the psychic costs of changing the environment such as missing friends and relatives. The cost of migration is highest for the first migrants. As the stock of migrants from the sending country increases, migration becomes a self-perpetuating process, because costs and risks of migration decreases leading to higher net returns from migration. In short, the main feature of the network approach is that the estimations of expected migration flows from the sending country to the receiving country should consider the stock of migrants from sending country already living in the receiving country.

In some of the recent studies on forecasting the potential migration flows from new members of EU to the core EU countries, the stock of migrants from sending country

already living in the receiving country is also included in the estimations to cover the network effects of migration following the Network Approach (Hille & Straubhaar 2001; Fertig, 2001; Bruder, 2003; Zeiceva, 2003; Alvarez-Platza, Brucker & Siliverstoves, 2003; Dustmann et. al., 2003; Brucker & Siliverstoves, 2004).

According to the Network Approach of migration the social network effect is assumed to be a positive effect to stimulate migration (Hille & Straubhaar, 2001; Bruder, 2003; Zeiceva, 2003; Brucker & Siliverstoves, 2004), but in some studies it is assumed that migration flows decrease as the stock of previous migrant increase in the receiving country since they decrease the employment opportunities for the new migrants (Fertig, 2001; Alvarez-Platza, Brucker & Siliverstoves, 2003), but the relationship between the network effects and migration is found to be insignificant in Fertig's estimations.

1.5.1.4 Push and Pull-Migration

Push and pull model of migration integrates all the above models and identifies various factors effecting migration. Push factors of migration are the negative factors of the origin country leading to migration outflows or negative factors of host country making individuals better off in home country. Pull factors are the positive factors attracting migration to the host country or the factors making individuals better off in home country. Differences in income levels, employment rates, network effects, age distribution of the sending and the receiving countries, cultural differences, geographical distance, restrictions on labour mobility or migration, social and individual characteristics are some of the examples which are considered as push and pull factors of migration.

In empirical studies, the differences in income levels between the sending and receiving countries, employment rates both in the sending and receiving counties and network effects can be easily quantified. On the other hand, the other factors cannot be as easily quantified. To solve this problem, usually the country specific fixed effects are included in the estimation models as an explanatory variable (Fertig & Schmidt, 2000; Fertig, 2001; Zeiceva, 2003; Alvarez-Platza, Brucker & Siliverstoves, 2003; Dustmann et. al., 2003). Hille & Straubhaar (2001) tried to solve this problem by including a variable that reflects the geographic distance between the sending and receiving countries. The country specific fixed effects variable is constant over time.

In this study both empirical and theoretical research methodologies were utilised. The empirical part consists of two different applications and presented in chapter three and chapter four. In both chapters the models are estimated by using differences in income levels between the home and host countries, employment rates and network effects as explanatory variables indicating that macroeconomic analytical estimations are applied. The empirical applications of those two chapters present a synthesis of all four approaches of migration that were summarized above.

1.6 Structure of the Thesis

This thesis consists of six main chapters and a conclusion at the end.

The study starts with the introduction chapter. Introduction chapter describes the aim of the study, explains the main objectives of the study, gives a brief historical background about the relationship between Turkey and EU, investigates the main research question and lightens the methodological approach of the thesis.

Chapter two follows with a literature review of the studies predicting potential migration flows from less developed countries to more developed countries based on economic, social, cultural etc. factors in both sending and receiving countries. The studies are focused on the question of what are the expected migration flows from the new entry countries of the EU to the old members. These include the case of the membership of Greece, Portugal and Spain, and in the case of the last enlargements of the EU in 2004 and 2007. The aim of this chapter is to explain the main methods used in order to make more realistic expectations about the potential migration flows that might take place if Turkey were to become a member state of the EU.

Chapter three of the thesis tests for rationality in the flows of Turkish migration. The aim of this chapter is to develop a Rational Expectations Approach (RA) to examine the external migration flows from Turkey. This chapter starts with an introduction and follows by a very brief explanation of the Rational Expectations Approach. Then the rational expectations approach to migration is used to identify the key assumptions to specify the statement of the empirical strategy for the empirical analysis. Then the chapter continues with the empirical analysis that consists of the description of the data and the tests of the likelihood of external migration from Turkey. The results of the empirical test are summarized in the concluding remarks at the end of the chapter.

The fourth chapter of the thesis is an empirical estimation of Hatton's model for the Turkish migration case. In this chapter of the thesis the determinants of migration flows from Turkey to Germany is analyzed based on a theoretical framework resting on a model developed by Hatton (1995) to investigate UK emigration. This chapter

starts with an introduction describing Hatton's model. Introduction is followed by the description of the data used for the estimations. The data used in empirical analysis and their graphical illustrations are presented in Appendix C. The regressions are applied in a time series cross section framework to estimate determinants of migration from Turkey to Germany both in long and short run. This chapter is concluded by summarizing the estimation results and predicting the shape of potential migration flows from Turkey to Germany.

The fifth chapter is the last chapter before the conclusion. This chapter is focused on migration from Turkey in the context of the accession of Turkey to the EU. This chapter develops a theoretical framework for the migration decision that takes into consideration the impact on uncertainty of some of the important economic and social variables that are addressed by the EU membership and its institutions. In the first part of this a cost benefit model of migration is developed that includes uncertainty. Then the Turkish migration to the EU is considered. Before concluding this chapter, the expected potential migration from Turkey during the accession period is discussed.

The sixth chapter finally summarizes the objectives of each chapter and provides the results obtained at the end of each chapter.

Chapter 2

LITERATURE REVIEW

Since the last EU enlargement in 2004 came on to the agenda of the EU, there has been an increase in the number of studies concerned with the prediction of the potential migration flows to the EU member states. As it was mentioned in the first chapter, the increase in number of those studies was a result of the proposed enlargement of EU and also the economic conditions of the new members (Krieger, 2004; Chammartin and Bazaldua, 2004; Bijak et. al., 2004).

This research is also particularly relevant for answering the central questions of this thesis, which are to identify the main determinants of migration flows to the current EU countries that are likely to arise as Turkey prepares itself for entry into the EU.

The studies concerning the expectation of potential migration flows can be divided into two broad groups (Fassmann and Munz, 2002; Alecke et. al., 2001; Karras and Chiswick, 2002). There are those examining the economy under migration flows and employing macroeconomic explanatory variables, and those looking at the micro variables that affect individual decisions concerning migration. Macro based estimations of expected migration studies use econometric analysis of the relationship between the dependent variable, which is either the net or gross migration flow from home country to the destination country, and independent

variables which reflect the macro-economic conditions in the home country and prospective host countries. Such variables include the unemployment rates in both sending and receiving countries, per capita GDP in both sending and receiving countries, the economic growth rates of both the sending and receiving countries and other indicators of macro-economic conditions. On the other hand, micro analytical based estimations employ data on individual behaviour that are usually obtained through surveys of individuals. In this chapter of the thesis the macroeconomic based studies are focused since these macro analytical estimation methods are applied in this thesis.

In most of the macro analysis that addressing the question of the expected potential migration from Central and Eastern European Countries (CEECs)[5] to the former EU countries, the experiences of EU's South enlargement[6] have been examined (Zaiceva, 2003; Hille and Straubhaar, 2001; Erzan et. al., 2006; Dustmann et. al., 2003; Bruder, 2003). In these studies the patterns of migration flows from Greece, Portugal and Spain to the core EU countries have been examined using econometric analysis. Although, the Southern enlargement was not the latest enlargement before 2004, the coefficients of this enlargement were thought to be more relevant since the economic structure of the new members were closer to those of Greece, Portugal and Spain, and also they faced a transition period during which the labour mobility was restricted that was similar to the one imposed on eight of the countries involved in the 2004 enlargement (Zaiceva, 2003; Boeri and Brucker, 2001; Dustmann et.al., 2003).

[5] Central and Eastern European Countries: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia.
[6] Greece in 1981, Portugal and Spain in 1986.

Fertig and Schmidt (2000) in their paper applied different econometric models and different sets of explanatory variables to forecast the expected potential migration flows from CEEC-4[7] to Germany between the years 1998 and 2017 under the assumption that these four countries were able to enter the EU in 1998. The analysis of migration flows in their paper started by using a general model of migration, which can be expressed as follows;

$$m_t = \beta_0 + \beta_1 X_{h,t} + \beta_2 m_{t-1} + \varepsilon_t \tag{2.1}$$

where, m_t denotes the aggregate migration rate[8] from the sending country h at time t. β_0 is the intercept, capturing all unobservable aspects of the process that are specific to the sending country and constant over time. $X_{h,t}$ denotes the observable time-varying characteristics of the sending country at time t, while β_1 and β_2 are the unknown parameters which are estimated and used in the forecast scenarios of expected migration flows after the EU enlargement. m_{t-1} is the lagged dependent variable. ε_t is the unpredictable white noise error. In contrast to the other studies demographic factors are also taken into account to estimate expected future migration flows. There are two main reasons for introducing such explanatory variables. First, most of the immigrants to Germany were young male adults, which was an important characteristic of the migration flows during the period that the guest-workers agreements were applied in Germany. Second, the life expectation of young immigrants was longer than the older German population. Hence, the proportion of network effects was also considered by Fertig and Schmidt (2000). In their estimations they used a variance- components model, which can be expressed as follows;

[7] Czech Republic, Estonia, Hungary and Poland.
[8] It is measured as the actual migration as a proportion of potential migrants at the origin.

$$m_t = \beta_0 + \varepsilon_h + \varepsilon_{hg} + \varepsilon_t \tag{2.2}$$

where, m_t is the dependent variable demonstrating the net rate of migration in the relevant age range for country h to country g at time t. The independent variables are ε_h[9], ε_{hg} and ε_t. ε_h denotes the origin country-specific component that captures all the aspects of the process, determining migration from h to g, Germany, which tends to persist over time. ε_{hg} is the component specific to time periods and relevant for all origin countries at each point in time, in other words, ε_{hg} reflects all determinants of migration activity which vary over time but operate in all origin countries identically during the same period. β_0 denotes the intercept while ε_t is the unpredictable white noise error. Method of Moments technique is used to estimate the overall net migration rate between sending countries and Germany. The first estimation uses a specification of the model that is based on the analysis of the historical relationship between migration to Germany and its aggregate level demographic determinants. In the second specification, only migration from the population of less than 39 years of the age is taken under consideration. In last specification of the model, the time-varying age structure in the various origin countries is used as an explanatory variable. The data[10] consists of migration of informational 17 origin countries[11] covering the years between 1960 and 1997. There are two different dependent variables used in their study. In the first set of

[9] Such as a common history, climate and distance, a common language or border but also persistent economic differences.

[10] Migration date sets are obtained from the German Federal Statistical Office. Population data for sample countries and CEEC-4 obtained from Demographic Yearbook published annually by the United Nations.

[11] Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Greece, Italy, Yugoslavia, Netherlands, Norway, Portugal, Sweden, Turkey, United Kingdom and USA.

estimations the dependent variable is the net migration rate[12]. In the second set of estimations the dependent variable used is the age adjusted net migration rate[13]. The coefficients obtained from those estimations are used to forecast the likely migration flows from the CEEC-4 countries to Germany. Six different scenarios are considered. According to the first scenario, the standard rate of average annual inflow into Germany is predicted to be 17,964 for the years between 1998 and 2017 with an accumulated inflow of 359,285 in 2017. The second scenario gives the age- adjusted rates of migration, where the age- adjusted average annual inflow to Germany from the CEEC-4 countries is expected to be 14,656 for the time period considered with an accumulated inflow of 293,122 by 2017. In the third scenario, age-share is used as an explanatory variable and average annual inflow is expected to be 15,079 between 1998 and 2017, while the accumulated inflow would be 301,122 in 2017. The forth set of forecasted values is created by adding the value of one standard deviation of the estimates to the estimated mean rates. It is estimated that the average annual inflow would be 62,656 per year during the considered of migration time period while the accumulated inflow will be 1,253,129 in 2017. According to the fifth scenario, where one standard deviation is taken in addition to age-adjusted rates, the average annual inflow is estimated to be 48,551 and accumulated inflow is estimated to be 971,011 in 2017. For the last scenario, one standard deviation and age share is taken as a regressor and it is found that the average annual inflow from CEEC-4 to Germany will be 57,377 between 1998 and 2017 and the accumulated inflow expected to be 1,147,533 in 2017.

[12] Net migration from country h in time t divided by the stock of population in the respective country and year.
[13] The flow of migrants from h at time t in the core age group (0 to 39 years of age) divided by the population in h at time t in this age group.

Hille and Straubhaar (2001) estimated a pooled time series cross sectional model of bilateral migration flows from Southern EU countries, Greece, Portugal and Spain, to the seven EU member countries, Belgium, Denmark, France, Germany, Luxembourg, Netherlands and UK for the period covering the years after free labour mobility for those southern countries were applied[14]. By using the coefficients obtained from the estimation results, the potential migration from CEEC-10[15] to the EU member states are forecasted for the year the labour mobility is freed, which is the year that their study is completed. The empirical model used is as follows;

$$m_t = \beta_0 + \beta_1 \log\left[1 - \frac{w_h}{w_g}\right] + \beta_2 \log\left[1 - \frac{ue_h}{ue_g}\right]_{t-1} + \beta_3 \log(MST)_{t-1} + \beta_4 \log(D_{hg}) + \varepsilon_t \quad (2.3)$$

where, m_t is the dependent variable indicating the bilateral migration rate taking place from the sending country h to the receiving country g at the time period t. The bilateral migration rate is measured as the percentage of the absolute number of the migrants on to the total population in the sending country. w_h and w_g are the per capita incomes in the sending and receiving countries respectively. The first explanatory variable, $\left[1 - \frac{w_h}{w_g}\right]_{t-1}$ in the estimation equation determines the difference of relative incomes in the sending and receiving countries of the previous period. This implies that a reduction of the gap in income between the sending and the receiving countries reduces the flow of migrants. ue_h and ue_g are the unemployment rates in sending and receiving countries, respectively. *MST* denotes

[14] For Greece from 1988 and for Portugal and Spain from 1993 onwards.
[15] Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

the previous period's stock of migrants, taken as the stock of foreign or foreign-born population, from the sending country where living in the receiving country. The last explanatory variable used in model is D_{hg}, determining the geographical distance between the capitals of the sending and receiving countries. It is included in the regression to be able to find the effect of the transportation and transaction costs incurred to move from the sending to the receiving country. β_0 is the intercept, β_1, β_2, β_3 and β_4 are coefficients of the explanatory variables and ε_t is the white noise error term. The estimation results are used to predict the migration flows from CEEC-10 to the core EU member states after the enlargement. To make the set of forecasts using the results of equation (2.3) the average unemployment rate in EU members is taken as 10.5% and 15% for CEEC-10. The stock of citizens of CEEC-10 living in EU is assumed to be 1 million, and the distance between the capitals is assumed to be 1500 km by taken the centre points of both the EU and CEEC-10. Four different scenarios are considered for the estimation of the potential migration flows from CEEC-10 to EU members. It is assumed that no restriction is applied on the free movement of workers. These scenarios are differentiated according to the income differences assumed persist between CEEC-10 and EU members. According to the first scenario the income difference is assumed to be 40%, hence, it is estimated that potential migration flows from CEEC-10 to EU members would be 188,100 in the accession year. The second forecast scenario is made by assuming the income differences as 50% and the potential migration flows forecasted to be 267,300. The third scenario assumes 60% income difference between CEEC-10 and EU members, hence, the potential migration flows from CEEC-10 is estimated to be 336,600 in that year. The last scenario assumes that the income difference will be

70%, hence, the potential migration from CEEC-10 to EU members during the year after accession is expected to be 396,000.

Fertig (2001), aimed to analyse the determinants of immigration flows to Germany by using a time-series cross section framework covering the years from 1960 to 1994. Estimations are made using data for a sample of 17 sending countries[16]. The estimation results were then used to forecast the immigration flows from CEEC-10 and CEEC-4 to Germany after the EU enlargement. He uses a model of migration behaviour developed by Hatton in which migration decisions are formulated in the context of an individual of an investment in human capital. This is the approach initially developed by Sjaastad (1962). Pooled cross section time series data are also used to distinguish the short term and long term impact of factors on migration and derive the long term coefficients in order to forecast the potential migration flows from CEEC-10 to Germany after their entry to EU. To drive the model the migration of individual i is assumed to depend on the differences, d , between expected utility of staying in the home country h versus moving to host country g , Germany, minus the costs of migration for individual i, z_i. It is also emphasized that the migration decision depends not only the difference of utilities at time t but also on all expected future differences. d_{it}^{*} denotes the net present value of utility streams from $t+1$ on, at the time t. So the probability of individual i to migrate at time t is driven as;

$$\Pr(m_{it}=1)=\Pr(d_{it}^{*}+d_{it}\rangle 0) \tag{2.4}$$

Assuming that migrants give larger weight to the closest past and that weight decreases over time;

[16] Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Greece, Italy, Yugoslavia, Netherlands, Norway, Portugal, Sweden, Turkey, United Kingdom, USA.

$$d_{it}^{*} = \lambda d_t + d_{t-1}^{*} \tag{2.5}$$

Then,

$$m_t = \beta\left(d_t^{*} + \alpha d_t\right) = \beta d_t^{*} + \beta\alpha d_t \tag{2.6}$$

where, m_t is the dependent variable indicating the aggregate migration rate from h to g. β is the parameter measuring the impact of d_t^{*} and d_t on migration and α is the parameter of extra weight given to d_t. Because the utility streams from each country depend on the log of expected incomes;

$$\begin{aligned} m_t = {} & \beta(\alpha+\lambda)\left[\ln\left(w_g\right)_t + \frac{3}{2}\ln\left(e_g\right)_t - \left(w_h\right)_t + \gamma\left(e_h\right)_t + \bar{z}_t\right] - \\ & \lambda\beta\alpha\left[\ln\left(w_g\right)_{t-1} + \frac{3}{2}\ln\left(e_g\right)_{t-1} - \ln\left(w_h\right)_{t-1} + \gamma\ln\left(e_h\right)_{t-1} + \bar{z}_{t-1}\right] - \lambda m_{t-1} \end{aligned} \tag{2.7}$$

where, w_g is the per capita income in Germany and w_h is the per capita income in home country both in purchasing power parities[17], while e_g is the employment rate in Germany and e_h is the employment rate in home country[18]. $\bar{z}$ denotes the mean of the cost of migration for all individuals determined by the stock of previous immigrants from home country living in Germany at time t.

$$\bar{z} = \varepsilon_0 + \varepsilon_1 MST_{t\,t} \tag{2.8}$$

where MST_t denotes the stock of previous immigrants from home country living in Germany at time t. MST is assumed to decrease by $1-\delta$ due to remigration and deaths and increase due to immigrants.

$$MST_t = \delta MST_{t-1} + m_{t-1} \tag{2.9}$$

[17] Obtained from Maddison (1995), used to determine the difference between living costs in Germany and sending country.

[18] Data for employment rates are calculated as 1 minus unemployment rate, unemployment rates are obtained from OECD and National Year Books.

The estimation equation for time-series cross section data is obtained by substituting (2.8) and (2.9) into (2.7);

$$\begin{aligned}\Delta m_t &= \beta(\alpha+\lambda-\lambda\alpha)\varepsilon_0 + \beta(\alpha+\lambda)\Delta\ln\left(\frac{w_g}{w_h}\right)_t + \beta(\alpha+\lambda)\frac{3}{2}\ln\Delta(e_g)_t - \\ &(w_h)_t + \beta(\alpha+\lambda)\gamma\Delta(e_h)_t + \beta(\alpha+\lambda-\lambda\alpha)\ln\left(\frac{w_g}{w_h}\right)_{t-1} + \\ &\beta(\alpha+\lambda-\lambda\alpha)\frac{3}{2}\ln(e_g)_{t-1} + \beta(\alpha+\lambda-\lambda\alpha)\ln\gamma(e_h)_{t-1} + \\ &\left[\beta(\alpha+\lambda)\varepsilon_1 - \frac{\lambda\beta\alpha}{\delta}\varepsilon_1\right]MST_t + \left[\lambda+\frac{\lambda\beta\alpha}{\delta}\varepsilon_1 - 1\right]m_{t-1}\end{aligned} \tag{2.10}$$

The reason of including the changes and levels of explanatory variables both in sending and receiving country at the same time is to be able to distinguish both the short run and long run determinants of migration decision. The dependent variable is calculated by dividing the net migration flows (inflows-outflows) from sending country to Germany by the population stock of the sending country. By setting the $\Delta s = 0$, the model determining the long run relationship is driven as follows;

$$\begin{aligned}\overline{M} &= \frac{\beta(\alpha+\lambda-\lambda\alpha)}{\eta}\left[\ln\left(\frac{w_g}{w_h}\right) + \frac{3}{2}\ln(e_g) - \frac{\gamma}{2}\ln(e_h) + \varepsilon_0\right] + \\ &\frac{\beta(\alpha+\lambda)\varepsilon_1 - \varepsilon_1\lambda\beta\alpha/\delta}{\eta}MST\end{aligned} \tag{2.11}$$

where,

$$\eta = 1 - \lambda - \frac{\lambda\beta\alpha}{\delta}\varepsilon_1 \tag{2.12}$$

The model was applied to data[19] of the sample of migration from 17 sending countries to Germany, between the years 1960 and 1994[20]. There are two dummy variables included into the model, first one accounting for free movements of

[19] Purchasing power parities to calculate the per capita incomes of the sending countries and Germany are obtained from Maddison (1995) and unemployment rates are obtained from OECD and National Year Books.

[20] The migration data is obtained from the German Federal Statistical Office.

workers agreement and the second one for guest workers agreement within the EU. The free movements of workers dummy variable is set to be equal to 1 for the year and following years that the agreement is signed between Germany and the country under consideration, and to 0 otherwise. The guest workers dummy variable is set to be equal to 1 for the years that the treaty exists between Germany and the country it is signed and to 0 otherwise. The long-run coefficients obtained are extrapolated to forecast the possible migration flows from CEEC-10 to Germany for the years from 1996 to 2015. The prediction of migration flows from CEEC-10 follow two steps. In the first step CEEC-10 and in the second step CEEC-4 are taken under consideration. The fertility and mortality rates are assumed to be equal to each other, $\delta = 1$. There are three main scenarios used for forecasting migration flows to Germany both from CEEC-10 and CEEC-4. Per capita income growth in Germany is taken as 2% per annum[21] and also the difference is assumed to decline at a rate of 2% per annum. The unemployment rate in Germany is assumed to be 8.6% per annum. According to the forecast results of the average immigration from the CEEC-10 to Germany per annum, found to be 72, 827 in 1996 and 61,269 in 2015 under the consideration of medium convergence without free movements of workers, 76,770 in 1996 and 64,768 in 2015 under the consideration of medium convergence with free movements of workers, and 78,430 in 1996 and 69,306 in 2015 when no convergence with free movements of workers considered. So the increase in the accumulated migrant stock from CEECs in Germany till the end of 2014 will be 1,409,119 with free movements of workers and 1,334,807 when free movement of workers is restricted. Then the migration potential from the First-Round Candidates to Germany forecasted. According to the results obtained, it is found that the

[21] Calculated on the basis of GNP per capita in purchasing power parities provided by the World Bank.

migration potential from those countries to Germany will be 35,804 in 1996 and 29,291 in 2015 under the consideration of medium convergence without free movements of workers, 38,150 in 1996 and 31,334 in 2015 under the consideration of medium convergence with free movements of workers, and 39,138 in 1996 and 33,828 in 2015 when no convergence with free movements of workers considered. So the increase in the accumulated migrant stock from First Round Candidates in Germany till the end of 2014 will be 1,409,119 without free movements of workers and 1,334,807 when free movement of workers is restricted when medium convergence is considered. With no convergence and restrictions on free movements of workers, the stock of migrants in Germany from CEECs is expected to increase by 1,471,666 and from First Round Candidates is expected to increase by 726,186 residents.

Jana Bruder (2003), aimed to forecast the possible migration flows from CEECs to old members for the years between 2004 and 2015 by focusing on the migration flows after the south enlargement and using those coefficients obtained from the analysis of migration flows following southern enlargement. The data used in his estimations were obtained from Eurostat[22]. There are two different regressions done in this study. First one is the regression of immigration from Southern to the Western EU member states, while the second one is the regression of emigration from EU countries to the accession candidate counties. The model used in both regressions is as follows;

$$\ln m_t = \beta_0 + \beta_1 \ln\left(w_g\right)_{t-1} + \beta_2 \ln\left(w_h\right)_{t-1} + \beta_3 \ln\left(ue_h\right)_{t-1} + \beta_4 \ln MST_{t-1} + \beta_5 \ln FM_t^{hg} + \varepsilon_t \tag{2.13}$$

[22]Data for migration figures and data for the stock of migrants were obtained from the 'New Cronos' database of Eurostat (2002)

m_t is the gross migration between country h and country g, which is the dependent variable. The independent variables used in regression are, w_g and w_h, income per capita of receiving country, and sending country in purchasing power parities, respectively, unemployment rate of sending country, ue_h, stock of migrants from sending country already living in receiving country, MST, and FM as a dummy variable for the free movements of workers, being equal to 1 for the year and after the introduction of free movement of workers[23]. The reason that the one-period lags are used for the exogenous variables is to avoid the short run effects, since rational expectations are considered. The model is used for the estimation of the regressions is the log-linear model because the change in independent variables changing the dependent variable are determined by the level of both variables. The model is estimated by Ordinary Least Squares for immigration but estimation results indicated the problem of autocorrelation. After correction of the regression for autocorrelation, the estimation results are obtained. It is found out that the free movements of workers into the EU after the period of restrictions had no significant effect on migration patterns. A second regression was used to test remigration from EU member states to the candidate countries. According to the estimation results there is no relationship was found between the economic indicators and remigration. The coefficients obtained from the estimation results of the first regression were used to forecast the possible migration flows from CEECs[24] to EU member states[25]. The values of the

[23] FZ is equal to one after 1988 for Greece and after 1991 for Spain and Portugal.
[24] Czech Republic, Slovenia, Slovac Republic, Poland, Hungary, Lithuania, Latvia, Estonia. Malta and Cyprus are not included since they are small in size and their economic conditions are significantly better than the other CEECs and also because the transition period is not applied for these two countries.
[25] Germany, Belgium, Netherlands, Great Britain, Ireland, France, Denmark, Italy, Spain, Greece and Portugal. Austria, Finland and Sweden included since 1995. Luxembourg is not included because of the lack of available data.

independent variables used in the forecast were based on the data of year 2000[26]. Two different scenarios were constructed depending on assumptions used concerning the GDP growth rates of the CEECs while the growth rate of EU member states are taken as 2% per year. On the other hand, for the first scenario the growth rate of the CEECs is taken as 4% considering low convergence while for the second scenario it is taken as 5.5% considering high convergence of the CEECs'. To avoid forecast biases, Latvia, Lithuania and Estonia are excluded from the forecast estimations since their per capita incomes are too low and unemployment rates are too high compared to the other CEECs countries. According to the forecast results under the consideration of the first scenario, the possible number of the stock of migrants from CEECs in Germany are expected to be 798,000 in 2015, and under the second scenario, it is expected to be 677,000, while it was 398,000 in 2000.

Anzelika Zaiceva(2003) also has made a forecast of the possible migration flows from CEECs[27] to the EU member states by obtaining the coefficient from the estimation results of the previous migration flows from Greece, Portugal and Spain after the Southern Enlargement of EU. The data[28] used covers the time period between 1985 and 1997. To be able to control the country specific fixed effect panel fixed estimations are done. The independent variable, m_t, used in the model is net immigration rate, which is calculated by taking the ratio of the change in the stock of

[26] The stock of migrant data for Denmark, France and UK is for the year 1999, for Greece is for the year 1998 from Eurostat and for Austria is for the year 1991 from SOS-Menschenrechte (2002).
[27] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, and also Bulgaria and Romania even they are not included in the last enlargement. Cyprus and Malta are not included because of their size and economic conditions.
[28] The original dataset of T. Bauer's was augmented by geographical distance taken from Bali Online distance calculator and Human Development Index, published by United Nations (2002). For extrapolations GDPs per capita in PPP, unemployment rates and population in the CEECs as well as EU15 in the year 2000 were taken from Eurostat (2002) and World Bank's World Indicators database. The stock of migrants from CEECs is extracted from Eurostat's New Cronos database (Zeiceva, 2003).

Greek, Portuguese and Spanish population in the other EU member states to the population of their own countries. The model used is as follows;

$$\ln(m_t) = \beta_0 + \beta_1 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_2 \ln\left(\frac{ue_g}{ue_h}\right)_t + \beta_3 \ln(MST_t) + \beta_4 FM + \beta_5 FM \ln\left(\frac{w_j}{w_i}\right)_t + \beta_6 FM \ln\left(\frac{ue_g}{ue_h}\right)_t + \beta_7 \ln(MST_t) + \sum_{g=1}^{14} \lambda_g FZ + \delta_t + \varepsilon_t \quad (2.14)$$

where, m_t demonstrates the immigration rate from country h to country g at time t, since h is the sending country and g is the receiving country, and t implies the time. w is per capita income at Purchasing Power Parity (PPP) as a proxy for real wages in concerned country. eu is unemployment rate as a proxy for employment opportunities in the concerned country. MST demonstrates the stock of migrants from sending country already living in receiving country, at time t. FM is the dummy which is equal to 1 after the introduction of the free movements of workers in each country[29]. FZ demonstrates the country specific fixed effect[30], which are time-invariant. δt are the year dummies, ε_t is the disturbance term, $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \lambda_g$ are parameters and $h = 1,.....,3$; $g = 1,.....,15$; $t = 1986 - 1997$. The model is estimated by using fixed-effects least squares dummy variables panel estimation technique. Then the time dummies are omitted from the regression since there was no correlation found between migration inflows and time dummies, even after the introduction of free movements of workers. The coefficients obtained from the estimation results are then used to forecast potential migration flows from CEECs to EU member states. Two steps are followed. In the first step all the dummy variables are included in regression without a constant, to be able to use the coefficients in the second step. So the model turned out to be as follows;

[29] *FM* is equal to 1 after 1988 for Greece and after 1991 for Spain and Portugal.
[30] Such as availability of local infrastructure, access to social security, amenities and climate etc..

$$\ln(m)_t = \beta_1 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_2 \ln\left(\frac{ue_g}{ue_h}\right)_t + \beta_3 \ln(MST)_t + \beta_4 FM + \beta_5 FM \ln\left(\frac{w_g}{w_h}\right)_t + \beta_6 FM \ln\left(\frac{ue_g}{ue_h}\right) + \beta_7 \ln(MST_t) + \beta_8 \ln FZ + \delta_t + \varepsilon_t \quad (2.15)$$

FZ is the country specific fixed effect for each country. There was no relationship found between time and migration rate, so the time and interaction with time dummies are excluded from the regression. Also, there is no relationship found with the migration rate and introduction of free movements of workers. As a result according to the forecasting estimation results, at the time of accession, when receiving country specific fixed effects are included in the model, it is found that the migration flows from CEECs will be 254,888 under the pessimistic growth scenario[31] and 233,440 under the optimistic growth scenario. Including both the receiving and sending countries' specific fixed effect in to the model, immigration flows increase to 343,144 when pessimistic growth scenario is considered and to 330,244 when optimistic growth scenario is taken under consideration, while the current migration flows from CEECs to EU members was varying between 300,000 and 400,000. When 2014 is forecasted, which is after the introduction of the free movements of workers which is taken as the year 2011, it is found that the migration flows from CEECs to EU member states decrease to 172,830 under pessimistic growth scenario and 127,436 under optimistic growth scenario. Including only the receiving country's specific effect into the model increases migration flows to 239,620 under pessimistic growth scenario, and to 209,538 under optimistic growth scenario.

[31] Economic growth rate of CEECs' is taken as

The main aim of the report prepared for the European Commission by Alvarez-Plata, Herbert Brucker and Boriss Silverstove in 2003 is to find the best estimation method to forecast the possible migration flows from CEEC-10 and CEEC-8[32] to Germany and by using the best estimation coefficients to forecast the possible migration flows for the years between 2004 and 2030 from those countries to Germany. To find the best estimation results that can be used they applied different estimators[33]. There are two different samples used to forecast the potential migration flows from CEECs to the old member states of EU. The first sample used was the German sample and the other one was the European sample. The German sample based on a panel data consisting of 19 countries[34] and capturing the years starting from 1967 and ending 2001. The reason for them to use panel data is to be able to exploit the variations between countries (cross-sections), between different time periods, and both. The European sample derived from European Labour Force Survey, consists of the population of foreign workers in EU-15 and captures the years between 1993 and 2001, having low response rates and numerous missing observations, thus, only the estimations done by using German sample is focused in this study. For the German sample among the estimations applied the most appropriate one is found to be the Seemingly Unrelated Regressions (SUR) estimators for forecasting scenarios with dynamic panel data used in long time dimension. The empirical model used is based on human capital approach and the traditional Harris Todaro model of migration and the migration is modelled as a function of wage rates both in receiving and sending

[32] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.

[33] The estimators applied can be grouped as follows;

1- Traditional estimators
2- Instrumental variable estimator
3- GMM estimators

(See; Alvarez-Plata, P., Brucker, H. and Silverstoves, B. (2003), Potential Migration from Central and Eastern Europe into the EU- 15 – An update, DIW, Berlin.)

[34] Austria, Belgium, Denmark, Finland, France, Greece, Holland, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Sweden, Switzerland, Spain, Turkey, UK, and (former) Yugoslavia.

countries, employment rates both in receiving and sending countries, population in the home country and the country specific fixed effects. They assumed the adjustment process to be specified in form of a simple habit-persistence model, as follows;

$$m_t - m_{t-1} = \beta\left(m_t^* - m_t\right) + \varepsilon_t \tag{2.16}$$

where m_t demonstrates the share of migrants from h residing in country g, in this case Germany, obtained from the Federal Statistical Office of Germany, in per cent of the home population, while m_t^* demonstrates the share of the population who are willing to migrate, ε_t is the disturbance term while β is the parameter. The data for population obtained from World Bank (2002).

$$\begin{aligned} m_t^* &= \beta_0^* + \beta_1^* \ln\left(\frac{w_g}{w_h}\right)_t + \beta_2^* \ln\left(w_h\right)_t + \beta_3^*\left(e_g\right)_t + \\ &\beta_4^*\left(e_h\right)_t + \beta_5^* \ln\left(P_g\right)_t + \beta_6^* \ln FZ \end{aligned} \tag{2.17}$$

where $\beta_0^*, \beta_1^*, \beta_2^*, \beta_3^*, \beta_4^*, \beta_5^*$ and β_6^* are the parameters, $\left(\frac{w_g}{w_h}\right)_t$ indicates the income differences between home and host countries which is the material return to migration, since w is the wage rate. FZ is the time variant invariables which affect the migration between sending and receiving countries such as geographical proximity and language. For the determination of the wage rates, per capita GDP at current exchange rates obtained from OECD Historical Statistics and OECD Main Economic Indicators and are complemented by national sources for countries not covered by the OECD series are used. The per capita GDP at purchasing power parity series is taken from Maddison (1995). g demonstrates foreign country where it is equal to 1 in German sample denoting Germany as a foreign country and h indicates home country where $h = 1,.....,19$ in German sample, at time t, e implies

the employment rate and obtained from OECD and national statistical sources. P_g indicates labour force in host country which is included to the model in order to control the absorptive capacity of the receiving country. The model used in estimations obtained by substituting (2.17) into (2.16).

$$m_t = \beta_0 + (1-\delta)m_{t-1} + \beta_1 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_2 \ln(w_h)_t + \beta_3 \ln(e_g)_t + \beta_4 \ln(e_h)_t + \beta_5 \ln(P_g)_t + \beta_6 \ln FZ + \varepsilon_t \quad (2.18)$$

where $\beta_j = \delta$ and β_j^* for $j = 0,.....,6$ and

$$\varepsilon_t = \mu_{gh} + \upsilon_{ght} \quad (2.19)$$

where μ_{gh} is the country specific effect since there is no country specific dummy variable is included in the model and υ_{ght} is white noise. By using the coefficients obtained from estimations results of German sample the potential migration flows from CEECs to EU-15[35] are forecasted according to three different scenarios. The first scenario, which is the baseline scenario, considers a convergence rate of 2% of the GDP and PPP-GDP per capita with unemployment rate of 11.6 % for CEEC-10, while for Germany an annual growth rate is assumed to be 2% and annual unemployment rate is considered to be 8.4%.

According to the second scenario, which is the optimistic scenario, the convergence rate is assumed to be 1% of the GDP and PPP-GDP per capita, with unemployment rate of 15.5 % for CEEC-10, while for Germany an annual growth rate is assumed to be 2% and annual unemployment rate is considered to be 5.5%. The last scenario, which is assumed to be pessimistic, considers a convergence rate of 3% of the GDP

[35] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Holland, Ireland, Italy, Luxembourg, Portugal, Sweden, Spain and UK.

and PPP-GDP per capita, with unemployment rate of 7.7 % for CEEC-10, while for Germany an annual growth rate is assumed to be 2% and annual unemployment rate is considered to be 11.2%. Under the SUR model all country specific effect are assumed to be fixed. In the first part of the predictions free movements of workers assumed to be introduced in 2004. According to the high scenario, the CEEC-10 population in Germany is predicted to be 2,496,246 in 2015 and 2,783,974 in 2030. Because in CEEC-10 data Bulgaria and Romania are also included and because they are expected to join EU in 2007, the predictions are also made for CEEC-8[36] by excluding Romania and Bulgaria. CEEC-8 population in Germany is predicted to be 1,940,633 in 2015 and 2,115,447 in 2030. According to the baseline scenario, the CEEC-10 population in Germany is predicted to be 2,138,397 in 2015 and 2,332,446 in 2030 and CEEC-8 population in Germany is predicted to be 1,678,115 in 2015 and 1,803,908 in 2030. According to the low scenario, the CEEC-10 population in Germany is predicted to be 1,887,476 in 2015 and 2,011,484 in 2030 and the CEEC-8 population in Germany is predicted to be 1,499,493 in 2015 and 1,588,557 in 2030. The predictions are followed also considering the impact of the transitional periods restricting the labour mobility from CEECs to EU-15. The transition period impact of migration is predicted by taking three different years as benchmark. First 2, then 5 and lastly 7 years after enlargement are considered to predict the impact of restriction on labour mobility on migration from CEEC-10 and CEEC-8 to Germany respectively considering the baseline scenario. Assuming 2 years transition period, CEEC-8 population in Germany predicted to be 1,630,368 in 2015 and 1,803,311 in 2030, and CEEC-10 population predicted to 2,049,527 in 2015 and 2,325,828 in 2030. When 5 years transition period is considered, CEEC-8 population in Germany

[36] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia.

predicted to be 1,476,628 in 2015 and 1,801,765 in 2030, and CEEC-10 population predicted to 1,770,622 in 2015 and 2,308,247 in 2030. According to the restrictions on labour mobility for 7 years, CEEC-8 population in Germany predicted to be 1,279,364 in 2015 and 1,799,799 in 2030, and CEEC-10 population predicted to 1,494,609 in 2015 and 2,296,652 in 2030.

In the report prepared by C. Dustmann, M. Casanova, M. Fertig, I. Preston and C. M. Schmidt (2003) the main aim was to forecast the possible migration flows from AC-10[37] to Germany and UK. To be able to compare the forecasting migration results from CEECs to Germany only the model and estimations made in case of Germany will be focused. By using the coefficients obtained from the estimation results of migration flows from 17 destination countries[38] to Germany for the time period between 1960 and 1999, the potential migration flows from CEECs to Germany between 2000 and 2010 are forecasted. The data used in the estimations were obtained from German Federal Statistical Office for 17 countries and Germany. Variance components model used to estimate the aggregate migration rates, which is defined as follows;

$$m_t = \beta_0 + \varepsilon_h + \varepsilon_{hg} + \varepsilon_t \tag{2.20}$$

where, m_t is the dependent variable demonstrating the net migration rate from country sending country, h, to receiving country, g, at time t. The independent variables are ε_h, ε_{hg} and ε_t. ε_h denotes the origin country-specific component that captures all aspects of process, determining migration from h to g, Germany,

[37] Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.
[38] Austria, Belgium, Switzerland, Denmark, Spain, Finland, France, Greece, Italy, Yugoslavia, Netherlands, Norway, Portugal, Sweden, Turkey, UK and US.

which tends to persist over time[39]. ε_{hg} is the component specific to time periods and relevant for all origin countries at each point in time, in other words, ε_{hg} reflects all determinants of migration activity which vary over time but operate in all origin countries identically during the same period. β_0 denotes the intercept while ε_t is the unpredictable white noise error. Method of Moments technique is used to estimate the over all net migration rate[40] between sending countries and Germany. In the first step, the variance–components formulation is used including only the error components, while in the second step, the per capita incomes of the Germany relative to those of the origin countries are included into the estimations as an additional explanatory variable. Then the coefficients obtained from those estimations used to forecast possible migration flows from CEECs to Germany. Because of the lack of data, the population and demographic structure of AC-10 is taken according to CEEC-4. The net migration flows from AC-10 to Germany forecasted considering 2 different specifications[41] creating 7 different forecasting scenarios[42]. For the development process of AC-10, the scenarios are created based on the different

[39] Such as common history, distance, a common language or a border and persistent economic differences.

[40] The yearly net immigration flow relative to the population at the origin.

[41] 1st specification; variance-components model without and additional explanatory variable,
2nd specification; variance-components model including GDP per capita in destination country relative to that of Germany as an additional explanatory variable in the regression model.

[42] Baseline 1 (typical sending countries); estimated parameters of specification 1, with the country specific random effects set to zero.

Baseline 2 (high-emigration sending countries); estimated parameters of specification 1, with the country specific random effects set to one estimated standard error of the distribution of the country-specific random effects.

Economic 1 (typical sending countries - under the consideration of medium convergence); estimated parameters of specification 2, with the country specific random effects set to zero.

Economic 2 (typical sending countries - under the consideration of no convergence); estimated parameters of specification 2, with the country specific random effects set to zero.

Economic 3 (high-emigration sending countries - under the consideration of medium convergence); estimated parameters of specification 2, with the country specific random effects set to one estimated standard error of the distribution of the country-specific random effects.

Economic 4 (high-emigration sending countries - under the consideration of no convergence); estimated parameters of specification 2, with the country specific random effects set to one estimated standard error of the distribution of the country-specific random effects.

Economic 5 (fixed effect – under the consideration of medium convergence); estimated parameters of specification 2, with country-specific fixed effects.

economic growth rates of the sending countries. The average annual economic growth rate of Germany is considered to be 2%, while the average annual economic growth rate for AC-10 is considered to be 4% according to the medium convergence regime. The average annual net immigration flows from AC-10 are also forecasted under the assumption of without convergence, where the average annual economic growth rate of is considered to be 2% for both AC-10 and Germany. All scenarios are based on high growth rate of population in the AC-10 to be able to create an upper bound for the average annual net immigration flows from AC-10 to Germany. According to the estimation results the average annual net immigration flows from AC-10 to Germany between 2000 and 2010, according to the Baseline 1 will be 20,459, according to the Baseline 2 will be 73, 446, according to Economic 1 will be 48,849, according to Economic 2 will be 55,118, according to Economic 3 will be 96,859, according to Economic 4 will be 103,128 and according to Economic 5 will be 209,651.

The study of Brucker and Silverstovs (2004) analyses the macro-determinants of migration in Europe to assess the consequences of the current integration process. The main aim is to estimate the eventual immigration flows from CEEC-10, CEEC-8 and CEEC-2[43] to the Germany after the enlargement by using the coefficients obtained from the estimation results of migration flows from 18 European source countries to Germany for the time period between 1967 and 2001. The data on migration stocks is obtained from Federal Statistical Office in Germany capturing 25 years. Dummy variables are used to control the breaks in years 1972 and 1987[44]. The potential migration flows from CEEC-10, CEEC-8 and CEEC-2 to Germany are

[43] Bulgaria, Romania
[44] The figures for the stock of residents has been revised in these two years.

forecasted for the time period capturing 2004 and 2030. In this paper it is assumed that an equilibrium relationship exists between migration stocks and macro-economic variables. To be able to analyse the long-run equilibrium relationship, the migration models are tested for co-integration. The model used is as follows;

$$\Delta m_t = \gamma' \Delta x_{ht} - (1-\lambda_h)\left[m_{t-1} - \mu_h^* - \beta' x_{h,t-1}\right] + \varepsilon_t \tag{2.21}$$

where, m_t is the dependent variable determining the gross (net) migration rate as a percentage of the population in sending country at time t and the data for migration stocks is obtained from Federal Statistical Office of Germany and the data for population indicators is obtained from World Bank Development Indicators (2000) and OECD sources. x_{ht} is a vector of explanatory variables for country h with the coefficient of γ. μ_h^* determines the long-run value for the country specific effect, $\mu_h^* = \frac{\mu_h}{(1-\lambda_h)}$. $\left[m_{t-1} - \mu_h^* - \beta' x_{h,t-1}\right]$ is the error correction term which is equal to zero in equilibrium, where its coefficient, $(1-\lambda_h)$ determines the speed of the adjustment process. Substituting the explanatory variables with x_{ht} and adding their lags into the equation;

$$\begin{aligned}\Delta m_t = {} & \beta_1 m_{t-1} + \beta_2 \ln\left(\frac{w_g}{w_h}\right)_{t-1} + \beta_3 \ln(w_h)_{t-1} + \beta_4 \ln(e_g)_{t-1} + \\ & \beta_5 \ln(e_h)_{t-1} + \beta_6 \Delta \ln\left(\frac{w_g}{w_h}\right)_t + \beta_7 \Delta \ln(w_h)_t + \beta_8 \Delta \ln(e_g)_t + \\ & \beta_9 \Delta \ln(e_h)_t + \sum_{j=0}^{\gamma} \delta_{kj} \Delta mst_{h,t-1-j} + \eta' z_t + \mu_h + \varepsilon_t\end{aligned} \tag{2.22}$$

where, w_g and w_h are the wage rates in the receiving and the sending countries respectively, while e_g and e_h are the employment rates in receiving and sending countries respectively. Wage rates are calculated as average GDP per capita

measured at purchasing power parities of the eight candidate countries and the data for per capita GDPs and unemployment rates are collected from Eurostat (2003) and OECD Main Economic Indicators. Z_{ht} denotes the vector of institutional variables having a coefficient vector of η. mst is the stock of migrants as a percentage of the population in the sending country. There are four dummy variables used in the model for estimations capturing different institutional conditions for migration[45]. The coefficients obtained from the estimation results are used to forecast future migration flows from CEECs to Germany. The dummy variables used in the forecasting estimations are for geographic proximity, for a location in eastern part of Europe and a dummy variable for common language. It is assumed that the German GDP growth rate is 2% and the convergence rate of the CEECs to Germany and other EU members assumed to be 2%. (Un-) employment rates both in Germany and CEECs assumed to be constant over time. According to the forecasting estimation results, the CEEC-10 population in Germany is predicted to be 2,158,985 in 2015 and 2,383,958 in 2030. Because in CEECs-10 data Bulgaria and Romania are also included and because they are expected to join EU in 2007, the predictions are also made for CEEC-8 by excluding Romania and Bulgaria. CEEC-8 population in Germany is predicted to be 1,527,200 in 2015 and 1,704,652 in 2030. The net migration flows are also forecasted. It is estimated that the net migration flows from CEEC-10 to Germany will be 29,379 in 2015 and 10,449 in 2030, while the net migration flows from CEEC-8 to Germany will be 23,551 in 2015 and 7,197 in 2030.

[45] Guest-worker agreements between the sending country and Germany, free movement between sending country and Germany and for the dictatorship in sending country.

Erzan, Kuzubas and Yildiz (2006) aimed to estimate the eventual immigration flows from Turkey to the EU when Turkey becomes a full member and restrictions are removed for the years between 2004 and 2030 under different economic scenarios. The population data they used in their study was obtained from World Development Indicators (2003), the migrant stock data from the Federal German Statistical Office, per capita GDP from Maddison (2002) and Groningen Growth and Development Centre and employment rates were obtained from OECD Economic Outlook. The host country of the analysis was taken as Germany because Germany was the country which receives largest migration inflows among other EU members and also because of the availability of time series data for the years between 1967 and 2001. The model used in their study can be summarized as follows;

$$m_t = \beta_0 + \beta_1 m_{t-1} + \beta_2 m_{t-2} + \beta_3 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_4 \ln(w_h)_t + \beta_5 \ln(e_g)_t + \beta_6 \ln(e_h)_t + u_t \quad (2.23)$$

m_t is the dependent variable demonstrating the share of migrants from sending country h, such as Spain, Portugal and Greece residing in receiving country g, which is considered as Germany in this study, at time period t. The independent variables are m_{t-1} and m_{t-2}, which are the lagged migration stocks[46], $\left(\frac{w_g}{w_h}\right)$ indicates the per capita income differences between home and host countries which is the material return to migration, (e_g) and (e_h) are the employment rates in host and home countries respectively, showing the opportunity to find a job in the host country, and (w_h) is per capita income level in home country, which will forgone with migration indicating the cost of migration. The dummy variables used in the

[46] Included to the regression to be able to measure the network effects.

model as additional explanatory variables are FREE, capturing the introduction of free movements of workers, GUEST, capturing guest workers agreements between the years 1967 and 1973, and INTERVENTION (1980 military), INSURGENCY (1990-94 terror) for Turkey and WAR (former) Yugoslavia are used capturing the jumps in immigration due to refugees and asylum seekers. Their study consists of three main parts. In the first part of the analysis, the reference group is takes as all of the immigration from all Europe[47] between 1967 and 2001 by following the method used by Brucker, Alvarez-Plata and Silverstoves (2003). The main reason for the analysis in the first part was to be able to compare the estimation results of the report of Brucker, Alvarez-Plata and Silverstoves's. The growth rate of Germany is taken as 2% annually. Two different scenarios were considered to forecast the possible migration flows from Turkey to EU. First, a successful accession to EU with sustained high growth rate and low unemployment rate are considered with introduction of free movements of workers in 2015[48] to be able to forecast the lower bound of migration potential and under the second scenario a guest workers agreement between Turkey and the EU members for 1973[49] to be able to forecast the upper bound of migration potential to Germany. As a result it was found that, under the first scenario the net change in the Turkish migrant stock was 1,073,000 between 2004 and 2030, while under the second scenario, the net change in the Turkish migrant stock was 1,838,000 for the same years. In the second part of the analysis, the reference group is takes as the immigrants from Spain, Greece and Portugal to Germany between 1967 and 2001. The reason for the second part of the analysis was needed because it was not seemed reasonable to consider all the rich countries and

[47] Austria, Belgium, Denmark, Finland, France, Greece, Holland, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Sweden, Switzerland, Spain, Turkey, UK, and (former) Yugoslavia.
[48] By including the FREE dummy variable into the model.
[49] By including the GUEST dummy variable into the model.

include them into the estimation, so that the more reasonable countries which had close economic structure were taken under consideration. Assuming that Turkey was experiencing a high economic growth rate and by considering the same scenarios again, it was found that under the first scenario the net change in the Turkish migrant stock was 960,000, while under the second scenario, the net change in the Turkish migrant stock was 1,920,000 between 2004 and 2030. In the last part, because Turkey cannot seen to be as a south European country, own experiences of Turkey between 1967 and 2001 were taken as a reference to forecast the potential migration flows. In this case, under the first scenario, EU membership and free movement of labour, it was found that, the net change in the Turkish migrant stock between 2004 and 2030 would be 2,134,000, while considering high economic growth rate but no EU membership and no free movement of workers, the net change in the Turkish migrant stock would be 2,734,000 for the same years[50].

There have been several studies concerning the future potential migration flows to EU after the EU enlargement. The estimation results of those studies differ from each other. The different results arise not because of the differences in the estimation models used but mostly because of the differences in the data sets and explanatory variables used. The differences of the data sets are the years covered. In most analysis wage rates and unemployment rates are used as main explanatory variables for migration. But because of the lack of data for the wage rates, per capita GDP is used as explanatory variable obtained from different data sources. But the main reason for different results depends on the differences in the dummy variables used in the estimations and also depends on the different scenarios considered set

[50] See Erzan, R., Kuzubas, U. and Yildiz, N. (2004), Growth and Immigration Scenarios: Turkey – EU. Research Paper, Bogazici University, Istanbul. [online] Available from: www.econ.boun.edu.tr/cee/index_files/migrationerzan.pdf

differently in each study considering future economic and also politic situations of both the candidate and EU countries. It should also be mentioned that in some of the studies the experiences during and after the Southern Enlargement is used and extrapolated in case of the CEECs and in some studies the previous migration flows into EU from all countries are considered and extrapolated to forecast the future potential migration flows from CEECs to EU. Another reason is the differences in the estimation methods used which lead to different forecasts for potential future migration flows. In general, all the studies surveyed here forecast a decreasing pattern of future potential migration flows from new members to EU-15 in the long run.

Chapter 3

TESTING FOR RATIONALITY IN TURKISH MIGRATION

3.1 Introduction

Concerns have been raised about the introduction of free movement (lifting of visa requirement) from an acceding Turkey into the EU (Erzan, et. al., 2006). Similar worries had also been expressed about potential labor migration from the 10 new acceding EU countries [51] in the previous round of enlargement in 2004 (Bauer and Zimmerman, 1999; Boeri and Brucker et al, 2001; Fertig, 2000; Hille and Straubhaar, 2001; Honekop, 2000; Lundborg, 1998; McCormick et al, 2002; Orlowski and Zienkowski, 1999). As the threat of massive migration frequently cited as a potential destabilizing element to the economies in the old block of 15[52], it is worth investigating past Turkish migration patterns and extrapolating possible policy implications. A Rationality Approach (RA) is developed to examine external migration, comprising job placements (skilled and unskilled) originated from the Labor Placement Office in Ankara to the major EU destination countries. The empirical results show that external Turkish migration to the EU has been largely rational. This will help allay certain fears regarding Turkey's potential post EU

[51] Malta, Cyprus, Slovenia, Hungary, The Czech Republic, The Slovak Republic, Poland, Latvia, Estonia and Lithuania.
[52] The UK, Spain, Portugal, France, Germany, Austria, Italy, Ireland, Sweden, Denmark, Greece, Luxemburg, Holland, Belgiumand |Finland. Luxembourg, Holland, Belgium and Finland.

accession population movement patterns. There are also related issues involving the expectations gap, transitory versus permanent migrants, effects of a veto on Turkish accession, and circular migration. The second section of the chapter begins by giving a brief description of Rational Expectations Approach. 3rd section is carried by deriving RA from existing literature. Section 4 states our identifying assumptions and empirical strategy. The empirical work is carried out section 5. Finally, Section 6 summarizes findings, discusses policy implications and draws conclusions.

3.2 Rational Expectations Approach

The Rational Expectations Approach (RA) is defined as a popular theoretical vehicle in assessing the sophistication with which people process information when making judgements about the real world, Krause (2000). RA accepts the utilization of all available and relevant information by the individuals or agents with the purpose of avoiding systematic errors of judgement about forecasting future conditions. In other words, expectations about conditions of an economic variable are shaped both by the historical values of the variable and the current knowledge about future values of the variable. In short, expectations are based on all available information. In real life, neither, people and agents are perfectly informed nor perfectly certainty exists. Thus, what RA implies is that the people or agents will not make systematic errors when formulating expectations in an uncertain world by the efficient use of the available information to enhance their forecasting accuracy.

Before starting to use RA in economic analysis, the mostly used forecasting model of economic conditions was the one of adaptive expectations. Adaptive expectations are shaped by using the past information of a particular variable of interest. For example, the expected future price level is adjusted to reflect the deviation between today's

price level and the price level expected earlier. In other words, the expected price level is an average of past price levels. According to adaptive expectations, changes in expectations occur slowly as the past data change over time. In fact, in addition to using more information than just one data on a single variable to form their expectations of that variable, people and agents often change their expectations quickly as the information they have. To overcome with the shortcomings of adaptive expectations, an alternative expectation theory was developed. RA is shaped by constantly updating and reinterpreting all available information without making systematic mistakes. According to the RA, because people utilize all relevant and available information when forming expectations about future conditions without making systematic errors, their expectations will be unbiased and efficient, so that, current expectation formation is a sufficient statistic for future. Errors might occur between current and expected future values of a given variable as a result of unforeseen events, thus the errors are random. If it is assumed that these unforeseen events are systematically correlated with known factors, then they can be incorporated into expectation formation changed (Sachs and Larrain, 1993).

RA was first proposed by John F. Muth in 1960s to describe the economic situations in which the outcome depends partly upon what people expect to happen. But RA gained importance when extended to the models of the aggregate economy by Robert E. Lucas in 1970s (Colling et.al., 1992)

3.3 The Rationality Approach (RA) to Migration

Broadly speaking, if migrants are rational, the current migration levels would have reflected all known information affecting the migrants' expected net present value (ENPV) of lifetime earnings (e.g., job availability, migrant network, higher wages,

cultural/language preferences, etc.). Depending on whether Turkey successfully accedes to the EU, potential migrants' ENPV will change and it affects their migration behavior. For example, if the ease of labor movement to other EU members upon accession increases their job opportunities, education/training potential and an overall lifestyle enjoyment, then their ENPV will rise by migration and this causes out-flows from Turkey. If, on the other hand, they perceive an acceding Turkey will provide better opportunities internally through, e.g., structural reforms, productivity improvement, foreign direct investment, etc, then their ENPV will rise by staying put and this causes out-flows to drop. There could even be in-flows from EU members, other developing countries and Turks returning home from their adopted EU states. Either way, migrants are rational and they would have fully exploited all known information to their advantage. Therefore current migration levels are a sufficient statistic for predicting future migration levels. Errors between current and future migration are due to random unforeseen events. Consequently, migration over time follows a random walk. If we assume these unforeseen events are systematically correlated with known factors, then these can also be incorporated into the RA model[53].

In general, the known factors that enter into the migrants' calculus of ENPV can be summarized as follows:

a. Economic factors – these include the per capita income difference in purchasing power parity between host and origin, employment opportunities in host countries[54],

[53] This is an interpretation of the rational expectations (RE) approach developed by Muth (1961), Lucas (1972), Sargent and Wallace (1976), and more recently Benitez-Silva and Dwyer (2006).
[54] Germany, the main host, was a magnet for migrants after the fall of the Berlin Wall. It suffered significant economic deteriorations in 1993 and 2001, when net migration inflows declined sharply.

conditions for economic growth, convergence[55] (between hosts and acceding countries) of long term assumptions regarding growth and employment, and productivity in the tradable sectors. We also have to consider the host's labor supply adjustment (due to international migration) and its fluctuating effect in the host's economic activity (e.g., migrant competition in Germany from Northern Africa and South-eastern Europe). All these will affect the potential migrant's expected income in the host country, which must be considered together with his risk preference and formation of expectations under uncertainty (Todaro, 2000).

b. Migration restrictions - There may be transitional measures including postponing the introduction of free movement by several years, safeguard clauses or quotas. These are designed to ease the adjustment process such that introducing free movement at a later stage will yield only a moderate influx instead of a migration hump.

c. Country-specific effects - These include geography[56], language, culture, social and political environment, and education. Furthermore, bona fide labor migrants (non-black market or temporary workers) typically have higher education level (completed secondary and tertiary qualifications) than the native population in the host countries. However, they suffer from lower activity rate (labor force/working age population or WAP) and participation rate (employees/WAP) and higher unemployment rate. They

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The German economy currently suffers from both structural imbalance and fluctuations in the business cycle.

[55] Most acceding countries' transitional process on structural change and job turnover is typically not yet complete.

[56] 70% of migrants from the 10 acceding countries originated from neighboring EU countries which share long borders with them (Austria, Germany, Finland, Sweden and Greece). However, the border regional towns generally have lower wages and per capita GDP and are less attractive to potential migrants.

also have higher share of less-skilled work such as construction and private household chores, etc.

d. Migrant network effects - These are responsible for the highly persistent regional migration patterns. For example, the migrant networks established by East Europeans in Germany are expected to attract the lion's share of new migrants from the 10 acceding countries (Brucker et al, 2003).

3.4 Identifying Assumptions and The Empirical Strategy

Rationality in migration assumes all available information up to the current period t about factors affecting the migration decision has already been fully exploited. Migration in $t+1$ can only be affected by unexpected information that comes about after t. Furthermore, the effect on migration of such unexpected information can last for only 1 period. After $t+1$ this information, i.e., the information now contained in the lagged values of the dependent variable, is already fully exploited (loses its informational content)[57]. Consequently, rational migration can be modeled as a pooled (panel) data random walk:

$$X_{t+1,hg} = \alpha_{hg} + \beta Y_{th} + \gamma Y_{tg} + X_{thg} + \varepsilon_{thg} \tag{3.1}$$

where $X_{t+1,hg}$ is the out migration in period $t+1$ from country h into country g. h refers to Turkey alone in this application which is the home country. α_{hg} denotes the

[57] Information available at time t may only be acted upon at t + k, not t. Then rationality predicts that there will be an instantaneous movement in t and a corresponding instantaneous movement in t + k. Since the occurrence of such information is random, these instantaneous movements are also random. Migration level at t remains an unbiased predictor for t + 1. For example, suppose people know that in 2008, Turkey will join the EU and the transactional cost of migration will be much lower at that time. Then this information will reduce migration now and increase it in 2008. However, the availability of this information is random and further random information before 2008 could reverse this trend. For instance, a general election before 2008 might return a more conservative Turkish government, putting its EU accession on hold.

country-specific fixed effects. In the *strong rationality* case, there are factors such as economic indicators Y_{th} for country h and Y_{tg} for country g at time t (e.g., GDP growth, unemployment rate), which had not fully manifested their effects on a potential migrant's decision making but gradually lost its informational content and effectiveness over time as the migrant learned more about them. The Null Hypothesis for the strong rationality test requires that the regression parameters are equal to 0, $\beta = \gamma = 0$. ε_{thg} are independent and identically normally distributed random errors (unexplained by the economic indicators), that account for the migrant number difference between $t+1$ and t. The errors vary: last-minute unexpected financial problems, delay of visa approval, children getting sick, train or airplane not arriving on schedule, etc. However, they average out (zero), meaning migrant number at t is an unbiased predictor of migrant number at $t+1$. Furthermore, the conditional distribution of these errors is also correctly predicted at time t (not just the zero mean). Note that errors in the estimation of the migration equation are assumed to be not systematically correlated with the economic indicators known at time t.

The form of the *Weak rationality* turns out to be expressed as follows;

$$X_{t+1,hg} = \alpha_{hg} + X_{thg} + \varepsilon_{thg} \tag{3.2}$$

The Null Hypothesis for the test of the weak rationality indicating a random walk requires a coefficient of zero for α_{hg} and 1 for X_{thg}. In other words, testing for weak rationality requires a test for non-stationarity of the explanatory and explained variables by performing a unit root test.

The aim of this chapter is not to ask how migration decisions and the factors affecting them came about, but rather test for rationality of these decisions, since

testing for rationality in migration implies testing whether past migrant number is a sufficient statistic for current migrant number[58]. This is a growing literature on dynamic modeling that relies on a rationality assumption to estimate the parameters of a behavioral model.

3.5 Empirical Analysis

3.5.1 The Data[59]

Our Turkish external migration data are available from the Statistical Yearbook of Turkey (State Institute of Statistic, 2004). For external migration, we take the number of job placements overseas as an indicator of out-migrants. This excludes other categories such as marriage and family reunion. Job placements are screened by the Labor Placement Office in Ankara which are directed at both skilled and unskilled workers for overseas postings.

The most popular destinations include the EU (Germany, France, Switzerland, Holland and Austria), the Mid-East (Saudi Arabia, Iraq and Libya) and the republics of the former USSR. The main reasons for migrants to target these countries are networking, wage levels and home economic conditions. The panel we constructed uses job placements in Germany, France, Switzerland, Holland and Austria as dependent variables from 1969 (when reliable statistics began) up to 2002 (the latest available). The common explanatory variables (to all dependent variables) include the Turkish GDP growth rate (based on GDP at 1987 prices in Turkish Lira),

[58] Benitez and Dwyer (2006) have shown that testing whether the past value of the expectation variable is a sufficient statistic for its current value is indeed a test for rational expectations.

[59] Data on migration in EU countries are lacking and unreliable (except Germany where stocks and flows from various source countries are recorded since 1967 (Brucker et al, 2003)). Eurostat Labor Force Survey (2002) provides data on foreign employees but the response rates are low (and subject to self-selectivity). It does not cover unregistered migrants and commuters who are employed in the shadow economies. Lifting of visa requirement is expected to increase substantially this type of labor supply.

Turkey's unemployment rate, and job placements in the Mid-East and former USSR. The reason for the latter is it appears job-seekers are shopping among countries for the wages offered and the networks in existence. Therefore, whether a job-seeker wants to migrate to the EU depends on what's on offer not just from the EU, but also outside the EU. These covariates do not capture all factors affecting migrants' ENPV calculus and future research must address this issue. In the strong rationality test (the weak test does not include any covariates) we would like to see that these covariates are statistically insignificant or at least becoming insignificant over time. Furthermore, if the constant term is tested to be zero and the coefficients for the lagged dependent variables not different from 1, then the rationality test is said to have passed in the strong sense. In other words, we are performing a random walk test for panel data with covariates (strong test) and without covariates (weak test).

3.5.2 Test for External Migration

Three models for job placements to the EU have been tested: one for the weak test and two for the strong test – for covariates with and without lag respectively. This is necessary as covariates without lag may not capture their declining influence over time on external migration. Covariates are also known as common regressors as they contain the same data for all panel dependent variables. They include Turkish economic (GDP) growth and unemployment rates, and job placements outside the EU. On the other hand, a cross-section specific regressor is unique to each panel dependent variable, i.e., its first lag, in order to represent a random walk. The estimation results for the strong test for both with covariates and without covariates are represented in Table 3.1, while the estimation results for the weak test of rationality in Turkish migration case are illustrated by Table 3.2.

Table 3.1 – External Turkish Migration test for Strong Rationality - Panel-Data Random-Walk Estimations (by weighted least squares: cross-section specific standard errors as weights) Sample: 1985-2002

Dependent Variables: Major EU destinations: Germany, France, Austria, Switzerland, Holland	*Model 1* Common regressors with lag	*Model 2* Common regressors without lag
Cross-section specific regressors (Lagged dependent variables)		
Lagged Germany	1.0283	1.0270
Lagged France	-7.3319	-10.7915
Lagged Holland	-1.6293	-2.0950
Lagged Switzerland	0.4577	0.3657
Lagged Austria	0.7213	0.7302
Common regressors		
Constant	-455.0671	-96.4017
Economic indicators		
-Turkish unemployment rate	54.2001	13.9908
-Turkish GDP growth rate	2.8542	1.4578
-Lagged Turkish unemployment rate	8.0649	
-Lagged Turkish GDP growth rate	0.5029	
Major non-EU destinations:		
-Libya	-0.0214	0.0021
-Iraq	0.0322	-0.0032
-Saudi Arabia	-0.0030	0.0001
-Former USSR	-0.0040	-0.0006
-Lagged Libya	0.0183	
-Lagged Iraq	-0.0232	
-Lagged Saudi Arabia	0.0023	
-Lagged Former USSR	0.0029	
Model	F = 21.1776 (p = 0.0000) R^2 = 0.87 Adj. R^2 = 0.83 DW = 1.9162	F = 33.0108 (p = 0.0000) R^2 = 0.85 Adj. R^2 = 0.82 DW = 1.9257
Rationality test	F = 0.6266 (p = 0.7082)	F = 1.2504 (p = 0.2932)

Table 3.2 – External Turkish Migration Test for Weak Rationality – Panel Unit Root Test Results

Method	*Null Hypothesis*	*Statistic*	*Prob.*
Levin, Lin & Chu t*	Unit Root	1.2368	0.8919
Im, Pesaran and Shin W-stat	Unit Root	-0.8995	0.1842
ADF - Fisher Chi-square	Unit Root	23.7694	0.0947
PP - Fisher Chi-square	Unit Root	27.8759	0.0327
Hadri Z-stat	No Unit Root	4.79888	0.0000

Firstly, both models for strong rationality are significant with p-values approaching 0.0000. This indicates the covariates as a group, have important informational content on EU job placement, although they are not statistically significant individually. However, the covariates appear to have lost their informational content over time, as the strong tests in models 1 and 2 (F = 0.6266 and 1.2504 with p = 0.7082 and 0.2932 respectively) indicate the null hypothesis of rational migration cannot be rejected. Indeed when lagged covariates are left out in model 2, the rationality test conclusion is unchanged, indicating lag in covariates is insignificant. That is, the lags lose significance over time.

On the other hand, for the weak rationality test five different approaches testing for unit root are used. These tests are the Levin, Lin and Chu (LLC) test, the Im, Pesaran and Shin test, the Fisher ADF test, the PP and the Hadri panel unit root tests. The null hypothesis for the first four tests implies the existence of unit root while the

migration series has a unit root at 5 percent significance level, hence is nonstationary, except the Fisher PP test which does not reject the null of a unit root only at 1 per cent. Therefore all tests imply the nonstationarity of the migration series, in other words the existence of weak rationality in migration decision making of Turkish migrants (see Table 3.2).

Note all the rationality tests were concluded with significant margin of safety. The issue of differing critical values for panel data random walk (unit root) tests is not binding (Bond et al, 2002). These results have significant ramifications for Turkey's EU accession. At present, Turkish migrants (skilled or unskilled) pending entry into the EU must undergo the Labor Placement Office screening in Ankara, which inadvertently prepares the external migrants for rational decision making, i.e., incorporating and acting on all known information.

3.6 Discussions and Concluding Remarks

The rationality approach to migration was defined as the exploitation of all known information affecting a potential migrant's expected net present value of his future earnings. Using Turkish worker placement data to the major EU host countries for the last 30 years, we could not reject the null hypothesis that Turkish external migration into the EU is rational [60]. Some implications of this can be extrapolated regarding the fear of migrant glut as the EU enlargement continues:

(1) Forecasting migration is futile since rational migration follows a random walk. Erzan, Kuzubas and Yildiz (2006) demonstrate how actual migration can be influenced by unexpected events. Hence, the futility of migration forecast. They

[60] This implies that traditional migration models (e.g., Todaro, 2000) are validated. Future research can incorporate explanatory factors unique for the EU and test them for empirical significance.

argue an unexpected slowdown in or suspension of Turkey's EU accession talks could lead to a reversal of the Turkish reform process, lower economic growth and higher unemployment. The resulting increase in potential migrants would largely find their way into the EU, by legal means or otherwise. Thus, they argue a more prosperous Turkey as an EU member state with free labor movement would ease the migration pressure in existing EU member states. They point to evidence from Greece, Spain and Portugal where high growth and effective political/economic reforms post-EU accession reduced and gradually eliminated the migration pressures [61].

(2) Preparing host countries for a potential migrant glut from Turkey (e.g., by adopting transitional periods and quota restrictions, etc) is inefficient. The glut may not happen. If it happens, it is better treated as any other unexpected economic event (e.g., financial crisis) by strengthening the host's economic structure. For instance, by removing imbalances in the labor market [62].

(3) Host countries need not fear migrants will cannibalize domestic jobs. Those taken by migrants are in general low-pay and unrewarding jobs (e.g., cleaning, transport) that host citizens would rather avoid. On the other hand, the presence of migrant communities and networks will generate jobs (e.g., counseling, education and healthcare) that are better suited to the host citizens given their local knowledge. To

[61] Some argue that if events affecting migration are unexpected, then they cannot be taken under consideration. Therefore, it must be possible to expect certain events, i.e., construct certain independent variables to explain migration. This is the basis for the strong version of rationality. There are indeed predictable events such as the on-going success of Turkey's accession negotiations, which would eventually lead to its joining the EU. Rationality argues that this effect on migration will dissipate over time, until another unexpected event takes hold (e.g., a French veto), whose effect on migration will also inevitably decline as time goes on, i.e., as rationality sets in.

[62] For example, jobs not matching skills, adopting a more efficient labor market (easier to hire and fire), and in general, by dealing with frictional, structural and cyclical unemployment (e.g., see Parkin, 2000)

achieve this, the host's labor market has to adapt and be flexible. For example: job training and re-training, new job creation, provision of transport for the immobile, business training for young entrepreneurs. These will help both host citizens and migrants for their transition into a new country.

It should be noted that, there is considerable literature written recently on the importance of culture and borders affecting economic decisions such as migration. For example, there is much greater east-west trade in Canada compared to north-south trade between Canada and the US even when there is no tariff under NAFTA (Goff, 2000). Therefore, after entry to the EU a potential Turkish migrant will likely still have a strong preference for remaining in Turkey rather than taking up the new opportunity to move to the EU-27.

One criticism of the model is that actual migration is used as the dependent variable instead of migration expectations based on the rational expectations hypothesis. Unfortunately, surveyed expectations data of this kind is absent for Turkey. More importantly, there exists an actual migration-expected migration gap. For instance, while surveys of public opinion suggest between 10% and 30% of acceding countries' populations have a preference to migrate to the EU (e.g., Wallace, 1998; Brucker et al, 2003), only a fraction of them will actually move. Buchel and Schwarze (1994) show only 5% of those East Germans who said they planned to migrate to western Germany in 1991 had actually moved there two years later. Hence an expectations gap of 95%! There are many reasons for this: migration expectation refers to the supply side only (the propensity of workers to migrate), not the demand

side (the capacity of host labor markets to absorb additional workers); and most labor migrants are sojourners or transients – temporary workers.

Transient migrants such as unskilled workers have a much different decision process than permanent migrants. The latter typically involves more senior and professional executives such as bank managers relocating to another country. Circular migration [63] is a much rarer event. While unskilled workers face little competition for undesired local jobs in a new country, skilled workers do and their decision-making is more rational, more dependent on changes in expected present value in lifetime earnings.

This chapter of the thesis does not provide an underlying model of migration decision making. The process leading to migration is taken as given and determined (by rationality tests) whether the evolution over time of migration is consistent with the rational expectations (RE) paradigm[64]. Typically, there is expectations-updating over time in RE since there may be considerable deviations between expectations and realizations. It is assumed that the realizations themselves are updating.

It can be expected that as Turkey's accession moves closer, uncertainty over migration drops (a narrowing probability distribution) and out-migrant numbers may increase. A potential veto from any member state (e.g., France, Austria) may further encourage migrants to move before accession. If indeed Turkish accession were voted down in the last minute, it would be expected to induce another wave of new migrant influx into EU, either legally or illegally.

[63] Defined as the to and fro movement between 2 places that includes more than 1 return.
[64] Such a model was developed in chapter 4.

On a broader level, Turkish migration into the EU is an entry point to debate on other issues: causes and consequences of circular migration, brain drain, the role of language proficiency in migration and earnings, public assistance on the decisions to work, and the effects of minimum wage on unemployment.

Chapter 4

APPLICATION OF HATTON'S MIGRATION MODEL IN TURKISH MIGRATION CASE

4.1 Introduction

The contemporary period of migration flows from developing to developed countries started at the beginning of 1950s and turned out to be a global phenomenon (Massey, 2000). It gained more importance and has turned out in recent years to be one of the main concerns of the developed countries.

Migration flows increased in 1950s because of the increase in the differences of economic and demographic structure of the developing and developed countries. Due to wars, there had been a serious loss in young generation of the developed countries leading to labour shortage, especially in Germany (Kaya and Kentel, 2004). The innovations that were made during the Second World War transplanted from military uses to industrialization after 1950s. In addition to the losses during the war, the developments in welfare economics, such as early retirement schemes, social security systems and the increase in education levels in developed countries, the shortage of unskilled workers increased and this need was met by temporary migrants from developing countries. Most of the labour migrated to developed countries were unskilled males between the age of 15 and 34 and willing to do the

undesirable jobs. The aim of many of the migrants was to earn money quickly to support their families back home.

Turkey was one of those developing countries sending temporary workers to the developed countries, mostly to Germany, after 1960s (Kaya and Kentel, 2004). The migration flows from Turkey to the Federal Republic of Germany started in 1961 with the agreement of Guest Workers. Those flows accelerated after 1963 with assignment of the Ankara Agreement between Turkey and European Economic Community. Unemployment turned out to be a problem in Turkey in those years. Industrialization in agriculture sector led to unskilled labour surplus in Turkey since more capital and less labour was needed. Thus, one of the main reasons to encourage workers to go abroad was to solve the unemployment problems in Turkey. Another reason was to find a solution for the foreign budget deficit problems. The remittances that the workers working abroad send to their families in Turkey helped the current account deficits. In addition, it was also believed that there would be an increase in the experience and technological knowledge of those workers who were sent abroad (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

The number of workers temporarily migrating from Turkey to Germany reached to a peak in 1973[65] and showed a sharp decrease afterwards and remained low till 1992. After 1992, the number of workers sent to Germany started to increase again with a slight trend.

On the other hand, the number of Turkish population living in Germany rose from 6,800 at the end of 1961 to reach to 712,300 by 1972. The difference between the

[65] 103,793 workers sent to Germany in 1973 with the workers agreement.

number of workers sent to Germany and the number of stock of Turkish population is due to the wives and children and other relatives of the workers sent by the workers agreement. This increase in number of Turkish population stock in Germany indicates the effect of networks created by the first flow of the workers sent to Germany (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

The Government of Federal Germany decided to end the Agreement on Guest Workers in 1973 as a result of the economic crises it faced following the sudden increase in world oil prices. However, the number of Turkish living in Germany continued to increase between 1973 and 1983 because of the network effects. An important factor was the German Government's decision to allow the Turkish workers to bring their wives and children under the age of eighteen to Germany. The increase of the number of Turks living in Germany was also encouraged by the political and economic situation in Turkey at the end of 1970s and the military coup in 1980. The family reunification policy of Germany reduced the future uncertainty for those migrating to Germany and led to a change in the demographic structure of the Turkish population in Germany. In 1973, the Turkish population in Germany was around 910,500, mostly males. The number of Turkish females and children started to increase after 1974. By 1982, the Turkish population in Germany increased to 1,580,700 (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

The migration phenomenon gained importance because of the increase in the number of Turkish migrants in the population and also other foreign populations accompanying social and political problems in Germany (Eryilmaz, 2002). The return support law[66] set in November 1983 by the Federal government and the decrease of

[66] According to the return support law, if the requirements were met, in addition to 1,500 DM for each child, 10,500 DM would be paid to the foreigners who turn back to their country and also the retirement premiums paid by those workers would be repaid immediately.

the age limit for children to sixteen for the family reunification led to a considerable decline in the number of Turkish population in Germany. This decline lasted till 1986. Between 1983 and 1985, around 374,000 Turkish migrants turned to Turkey.

After 1986, the Turkish population in Germany started to increase because of the instability of the social, politic and economic conditions in Turkey and the new law on foreigners set on the 1st of January 1991, which allowed the foreign workers in Germany to get German fellow-citizen (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

The acceptance of Turkey as a member state of EU has been argued since 1963 when Turkey has been an associated member of EU. One of the main reasons that Turkey has not been accepted as a member state till today is the size of the population in Turkey and the possible expected migration flows from Turkey to EU member states, mostly to Germany, mainly because of the network effects (Martin et. al., 2001; Avci, 2002, 108; Flam, 2003; Chislett, 2004; Font, 2006; Casanova, 2006)

An empirical migration model developed by Hatton (1995) to investigate UK emigration is estimated in this chapter that aims to capture the effects of both short term and long term variables on migration flows from Turkey to Germany. In particular an analysis is made to be able to forecast the expected potential migration flows from Turkey to Germany, if Turkey joins EU. The model developed by Hatton was also used by Fertig (2001) to analyze the determinants of immigration flows to Germany from the Eastern European accession candidates.

4.2 Empirical Analysis

4.2.1 The Model

The model formulated by Hatton is in turn based on the theoretical framework developed by Sjaastad in 1962. Sjaastad, in his article of Costs and Returns of Human Migration (1962), treated migration as an investment increasing the productivity of human resources, an investment which has costs and which also renders returns. In short, migration is seen as an investment in human capital.

There are two main reasons for using the model of migration developed by Hatton. First, it includes the uncertainty of finding a job in the destination country into the migration decision. Second, it explicitly accounts for the formation of expectations about future income streams based on past information. These features have direct implications for the relative size of regression coefficients and for the dynamic structure of the model (Hatton, 1995; Fertig, 2001). Thus, the individual decision to migrate depends both on the differences of the net present value of current income and differences of net present value of expected future income streams.

$$\begin{aligned}\Delta m_t &= \beta(\lambda+\alpha)\Delta\ln(\frac{w_f}{w_h})_t + \beta(\lambda+\alpha)\frac{3}{2}\Delta\ln(e_f)_t - \gamma\beta(\lambda+\alpha)\frac{3}{2}\Delta\ln(e_h)_t \\ &+ \beta(\lambda+\alpha-\lambda\alpha)\ln(\frac{w_f}{w_h})_{t-1} + \beta(\lambda+\alpha-\lambda\alpha)\frac{3}{2}\ln(e_f)_{t-1} \\ &- \gamma\beta(\lambda+\alpha-\lambda\alpha)\frac{3}{2}\ln(e_h)_{t-1} + \beta(\lambda+\alpha-\lambda\alpha)\varepsilon_0 \\ &+ (\beta(\lambda+\alpha)\varepsilon_1 - \frac{\beta\lambda\alpha\varepsilon_1}{\delta})MST_t + (\frac{\beta\lambda\alpha\varepsilon_1}{\delta}+\lambda-1)m_{t-1}\end{aligned} \tag{4.1}$$

The above equation is used to estimate the expected potential migration flows from Turkey to Germany, if Turkey joins EU. There are three main features of this model. The first feature of this model is that both the changes and levels of explanatory

variables concerning the economic conditions both in home country and foreign country are included in estimation model separately. This provides the possibility to distinguish the short-run and long-run migration decision. The estimation of lagged dependent variable has important implications since waiting for one more year to migrate is rational for some potential migrants if $d_{it}^{*} > d_{it}^{*} + d_{it}$, so migration may fluctuate more closely with the current conditions. The second feature of the model is that all variables related to the economic conditions in foreign country have positive signs, while all the variables related to the economic conditions in home country have negative signs. Employment rate is used to describe labor market conditions in both countries. There is an extra weight put on the coefficient of the employment rate in home country which is less than 1, so the coefficient of employment rate in foreign country is larger than in home country. The last feature of this model is that the lagged net migration rate and the stock of migrants are included into the equation to estimate the network effects in destination country, which is Germany in this study. From a theoretical point of view the sign of these two explanatory variables are not determined since previous studies have showed different effects of those variables. The lagged net migration rate is expected to have a negative impact on the change of the net migration rate as dependent variable in order to prevent net migration to foreign country to be ever increasing in the future (Fertig, 2001).

Setting all Δs equal to zero in the estimation model, (4.1), the long run steady state relationship is derived;

$$\overline{m} = \frac{\beta(\alpha + \lambda - \lambda\alpha)}{\eta}(\ln(\frac{w_f}{w_h}) + \frac{3}{2}\ln(e_f) - \frac{\gamma 3}{2}\ln(e_h) + \varepsilon_0) + \frac{\beta(\alpha+\lambda)\varepsilon_1 - \varepsilon_1\lambda\beta\alpha/\delta}{\eta} MST \tag{4.2}$$

where,

$$\eta = 1 - \lambda - \frac{\lambda\beta\alpha}{\delta}\varepsilon_1 \tag{4.3}$$

4.2.2 The Data

Hatton's migration model is estimated for the time period covering the years between 1969 and 2002 for migration outflows from Turkey to Germany by using time series observations. The dependent variable is the change in net migration rates from Turkey to Germany and denoted by Δmg. Net migration rate from Turkey to Germany, mg, is obtained by dividing the annual number of workers sent to Germany from Turkey by the annual population in Turkey.

$$mg = \frac{\#\text{of worker sent to Germany}}{popT} * 100 \tag{4.4}$$

The reason for using net values is to include the remigration flows over the sample period which has more effect in long-run. The annual data of number of workers sent to Germany between the years 1969 and 2002 is obtained from the Statistical Yearbook of Turkey (State Institute of Statistic, 2004). The number of job placements overseas is taken as an indicator of migration to Germany. This excludes other categories such as marriage and family reunion. Job placements are screened by the Labor Placement Office in Ankara which are directed at both skilled and unskilled workers for overseas postings. The annual population in Turkey, $popT$, covering the same time period, is obtained from World Bank.

The wage rates both in Turkey and Germany are approximated by the per capita Gross Domestic Products (GDPs) for each country. Per capita GDPs are calculated by dividing the GDP in year t by population of the related country in same year. The

annual data of GDP for each country is obtained from World Bank for the time period between 1969 and 2000.

The stock of Turkish migrants' data is obtained from TISK (Türkiye İşveren Sendikaları Konfederasyonu) covering the time period between 1960 and 2004.

Employment rates both in Germany and Turkey are obtained by subtracting unemployment rates from 1, $e_t = 1 - ue_t$, where ue_t determines the unemployment rate in year t. Unemployment rates in both countries are also obtained from Economics Web Institute for the time period between 1969 and 1998. The data for unemployment rates in both countries for the year 1998 till 2002 are obtained from World Bank to calculate the unemployment rates.

The model is extended by two dummy variables. First dummy variable accounts for the reunion of Germany, denoted by $d1$, and, the other one accounts for guest workers agreement between Turkey and Germany, $d2$. $d1$ is equal to 0 till 1990 and equal to 1 for the year 1990 and afterwards. $d2$ is equal to 1 for the years when the agreement existed and 0 otherwise.

In addition to the variables used in Hatton's model of migration, net migration to other countries, m_0, is also included in to the estimation equation as an explanatory variable. m_0 is obtained by dividing the annual number of workers sent to other countries from Turkey by the annual population in Turkey, $popT$. The annual data of migration to other countries from Turkey covering the time period 1969 and 2002 is collected from the Statistical Yearbook of Turkey (State Institute of Statistic,

2004). The number of job placements overseas is taken as an indicator of migration to the other countries as in the case of migration to Germany. This excludes other categories such as marriage and family reunion. Job placements are screened by the Labor Placement Office in Ankara which are directed at both skilled and unskilled workers for overseas postings.

$$mo = \frac{\#\text{of worker sent to other countries}}{popT} * 100 \tag{4.5}$$

4.2.3 Estimates for migration from Turkey to Germany

Ordinary least squares is used applying a time series data covering the years between 1969 and 2000 and adjusted sample covering the time period between the years 1970 and 2000. The estimation results for the long run net migration from Turkey to Germany are summarised by Table 4.1.

Table 4.1- Long run migration model estimation results by using Ordinary Least Squares Estimation Method

Dependent Variable: MGS			
Independent Variables:	Coefficient	t-statistic	Prob.
LNWGDTS	-0.0594	-0.6557	0.5180
BLNEGS	0.4804	1.3109	0.2018
BLENETS	0.3208	1.9816	0.0586
MSTS	-0.0735	-0.3138	0.7563
MOS	0.1659	0.7542	0.4578
AR(1)	0.3598	1.1642	0.2553

Net migration rate from Turkey to Germany is denoted by MG which is the dependent variable. LNWGDT is the logarithmic form of the relative wage rates of Germany and Turkey, $\ln \frac{w_g}{w_t}$, BLNEG is the logarithmic form of employment rate in

Germany, which is $\frac{3}{2}\ln e_g$ and BLNET is the logarithmic form of employment rate in Turkey after adjusted for the model, which is $\frac{3}{2}\ln e_g$ in the long run version of the migration model. MST determines the annual number of Turkish migrant stocks in Germany. Net migration rate from Turkey to the other countries is denoted by MO. All variables are adjusted by standardizing the data, by applying $\frac{(x-\bar{x})}{SE(x)}$, and which is the reason to add 'S' at the end of the variable names.

According to the estimation results of the long run version, the signs of the independent variables are not as they were expected. It is estimated that the relationship between the relative wage rates and net migration from Turkey to Germany is negative, indicating that net migration flows from Turkey decreases as the relative wage rate in Germany increases. But it should also be considered that the t-statistics for this explanatory variable in long run model is highly insignificant. The independent variable referred to the employment rate in Germany has a positive sign indicating a positive effect on migration to Germany. The sign of this variable is as it was expected but the t-statistics for this variable is also highly insignificant. On the other hand, the employment rate in Turkey also has a positive effect on migration outflow from Turkey. In other words, as employment rate increases in Turkey more people migrate to Germany. According to the estimation results network effect is positive, indicating that as the number of previous migrants in Germany increases the number of current migrants also increases. But it should be mentioned that according to the estimation results t-statistics are highly insignificant. Only the t-statistic for

BLNETS is highly significant. R^2 is 0.74, indicating that 74% of the dependent variable is explained by the independent variables used in model.

The estimation results of long run version of Hatton's migration model do not give significant relationship between dependent and independent variables in long run to able us making long-run migration comment from Turkey to Germany by applying Ordinary Least Squares method for estimations because of endogeneity problem. the Generalized Method of Moments is applied for the instrumental variable estimation for the long run version of the migration model of Hatton's for the Turkish migration case to solve the endogeneity problem. The estimation results of this model are summarized by Table 4.2.

Table 4.2- Long run migration model estimation results by using Generalized Method of Moments

Dependent Variable: MGS			
Independent Variables:	Coefficient	t-statistic	Prob.
C	-0.077967	-0.835045	0.4119
LNWGDTS	0.363029	2.362487	0.0266
BLNEGS	0.072981	0.557786	0.5822
BLENETS	0.408937	4.978555	0.0000
MSTS	-0.787443	-4.420099	0.0002
MOS	-0.521634	-3.447630	0.0021

According to the estimation results of the long run version obtained by applying Generalized Method of Moments with instruments including 1 to 2 lags of each variable in the model, the signs of the independent variables turned out mostly to be as expected. It is estimated that the relationship between the relative wage rates and

net migration from Turkey to Germany is positive, indicating that net migration flows from Turkey increases as the relative wage rate in Germany increases. It should also be considered that the t-statistics for this explanatory variable in long run model is turned out to be highly significant. The independent variable referred to the employment rate in Germany has a positive sign indicating a positive effect on migration to Germany. The sign of this variable is as it was expected in both estimation results but the t-statistics for this variable found to be highly insignificant when Ordinary Least Squares Method was applied but turned out to be highly significant when instrumental variables estimated. On the other hand, the sign of employment rate in Turkey is same according to both of the methods implying a positive effect of employment rate in Turkey on migration outflows from Turkey. In other words, as employment rate increases in Turkey more people migrate to Germany while it should have been estimated to be the reverse. It should be noted that this variable is highly insignificant. This is the only variable that is found to be insignificant when Generalized Method of Moments is applied. According to the estimation results network effect is turned out to be negative, indicating that as the number of previous migrants in Germany increases the number of current migrants decreases. The coefficient of MOS indicates that as migration to the other countries from Turkey increase the migration flows from Turkey to Germany decrease. In short the estimation results of Generalized Method of Moments serve more reliable results than the Ordinary Least Squares when applied for the long run migration model of Hatton's since endogeneity exist between explained and explanatory variables.

Table 4.3 in this chapter shows the estimation results for the short run version of the model.

Table 4.3- Short run migration model estimation results

Dependent Variable: DMGS			
Independent Variables:	Coefficient	t-statistic	Prob.
CLNWGDTS	0.0996	1.5103	0.1483
BCLNEGS	0.0955	1.1093	0.2820
BCLNETS	-0.4140	-1.7828	0.0915
D1	-1.1099	-4.2863	0.0004
D2	4.1769	5.6667	0.0000
MSTS	0.7387	2.6835	0.0152
MGS(-1)	-1.4169	-4.7856	0.0001
LNWGDTS(-1)	0.3217	2.1782	0.0429
BLNEGS(-1)	0.1746	0.7534	0.4609
BLNETS(-1)	-0.2058	-1.2282	0.2352
MOS	-0.1350	-1.1568	0.2624
AR(1)	-0.2723	-2.1138	0.0488

The change in net migration rate, Δm_t, is denoted by CM which is the dependent variable. CLNWGDT is the change in the logarithmic form of the relative wage rates of Germany and Turkey, $\Delta \ln \frac{w_g}{w_t}$. CBLNEG is the change in logarithmic form of employment rate in Germany, which is $\frac{3}{2}\Delta \ln e_g$ and CBLNET is the change in the logarithmic form of employment rate in Turkey after adjusted for the model, which is $\frac{3}{2}\Delta \ln e_g$ in the short run version of the migration model. MST determines the annual number of Turkish migrant stocks in Germany in year t. LNWGDT (-2), BLNEG (-2) and BLNET (-2) are the second lags of LNWGDT, BLNEG and BLNET

respectively. In the original model of Hatton's firsts lags of the variables are taken in the short run. The reason of taking the second lags is that the coefficient of error component term turns out to be higher than 1 in absolute value, unless the second lags are taken. M (-1) is the first lag of the annual net migration rate. The model is extended by two dummy variables as it was mentioned before. First dummy variable accounts for the reunion of Germany, denoted by $d1$, and is equal to 0 till 1990 and equal to 1 for the year 1990 and afterwards. The second dummy variable accounts for guest workers agreement between Turkey and Germany, $d2$, and is equal to 1 for the years covering the agreement period and 0 otherwise. MO is the net migration rate from Turkey to the other countries which is the additional variable used in Turkish migration case by added to the Hatton's model. As in long run version of the model, all variables are adjusted by standardizing the data, by applying $\frac{(x-\bar{x})}{SE(x)}$, and which is the reason to add 'S' at the end of the variable names.

According to the estimation results of the short run version, the signs of the independent variables are mostly as expected. The positive sign of CLNWGDTS means that migration flows from the country having relatively lower wage rate to the country having higher wage rate. The independent variable referred to the change in employment rate in Germany has a positive sign indicating that as employment rate in Germany increases more people from Turkey migrate to Germany. The change in employment rate in Turkey has a negative sign showing negative effect on migration outflows from Turkey to Germany. In other words, as unemployment rate increases in Turkey more out migration occurs and as unemployment rate in Germany decreases more people migrate from Turkey to Germany in short run. The sign of MSTS is also positive showing a positive effect of Turkish migrants stock in

Germany on migration rate which means that the network effect is positive and also highly significant. The negative sign of M(-1) indicates that the net migration of the previous year has a negative effect on net migration in current year, which is reasonably expected since the previous migrant faced some difficulties in host country in the first year of migration and sent the information back home preventing increase in migration in the following year. The positive sign of second lag of LNWGDTS and BLNEGS show positive effect on migration to Germany as it was expected. While the t-statistics of the first variable is highly significant, the second variable is highly insignificant. BLNETS also has a negative sign as it was expected but it should be mentioned that the t-statistics of this variable is highly insignificant. The negative sign of MOS determines that as migration flows from Turkey to other countries increase, the migration flows from Turkey to Germany decrease. According to the estimation results t-statistics of BCLNETS, D1, D2, MSTS, MGS (-1) and LNWGDTS (-1) highly significant and R^2 is 0.90, showing that 90% of the dependent variable is explained by the independent variables.

4.3 Concluding Remarks

Hatton's migration model was applied to the case of Turkey to be able to forecast the expected potential migration flows from Turkey to Germany, if Turkey joins EU. According to the estimation results, t-statistics are highly insignificant to be able to use the collected coefficients for forecasting migration flows from Turkey to Germany in the long run. But in short run the signs of the collected coefficients and most of the independent variables' t-statistics are highly significant for forecasting future migration flows from Turkey to Germany.

The reason that the model is inappropriate in Turkish migration case as in the long run, the migration flows from Turkey to Germany depends not only on economic reasons but also on political reasons both in Turkey and Germany and also in EU.

Chapter 5

RELATIONS BETWEEN TURKEY AND THE EUMIGRATION FROM TURKEY AND THE ACCESSION OF TURKEY TO THE EU

5.1 Introduction

There is view that Turkey's accession to the EU could lead to a massive inflow of Turkish labour to the higher income countries of the union (Aydinli and Waxman, 2001; Martin, Midgley and Teitelbaum, 2001; Avci, 2002; Flam, 2003; Chislett, 2004; Font, 2006; Casanova, 2006). The political response of some countries has been to erect additional barriers to Turkey's entry to the EU. In the case of France and Austria, these additional barriers include holding a national referendum on Turkey's membership, after Turkey has fulfilled the conditions of the *acquis communautaire* (Dahlman, 2004; Yavuz & Khan, 2004; Font, 2006; Ozcan, 2006; Missiroli, 2004; People's Daily Online, 2005; Peuch, 2004; European Union Information Website, 2007; European Union Information Website, 2008; European Stability Initiative, 2008; EU-Consent, 2008).

In this chapter of the thesis a model of migration decision making under uncertainty is constructed. It is used to explore how the migration decisions of Turkish residents, who are considering whether to migrate to EU member states during the 10 to 15

years following the beginning of negotiations for EU accession in 2005, are likely to be influenced by some of the political economy issues surrounding Turkey's accession process.

In an important paper, Erzan et al. (2006) investigated the likely response of Turkish migration to Turkey's entry into the EU. They suggested that if Turkey is not allowed to enter the EU, the total number of Turkish migrants living in the EU over the next 20 years is likely to be larger than if it is allowed to enter. This conclusion is based on their empirical estimates of migration flows using a traditional model of the determinants of migration. In these models net migration is explained by the income level in the country of origin, the employment rate in the home and host countries, the income differences between home and host countries and the lagged stocks of existing migrants in the host countries. The last variable is used to measure the networking effect on potential immigrants.

Their empirical estimates raise a number of important questions. First, they found that the coefficient on the income and employment rate differences in the host and home countries were relatively small. They conclude that the small values of the coefficients indicate that income and employment rate differences did not have a powerful effect on determining inter-European migration during the period under consideration. Their empirical work support the notion that if Turkey were to enter the EU and income differences continued to narrow, then the response of migration from Turkey should be very similar to the previous EU experience with the entry of Spain, Portugal and Greece. Using their model they predict that if Turkey's EU accession is suspended then "the EU might end up having more immigrants from

Turkey than under a free movement of labor regime with a prosperous EU-member Turkey" (Erzan et. al., 2006).

To arrive at this conclusion from their empirical analysis it is assumed that in the absence of EU membership, Turkey's unemployment rate could reach 20 percent. Given the open market between Turkey and the EU, extended periods of time with unemployment rates of this magnitude are highly unlikely. The authors rightly suggest that other factors that are likely to be important in reducing migration from Turkey if it gains entry to the EU, such as political stability, inflows of foreign capital, and improvements in the social security, health and educational systems. All these factors are fostered by the *acquis communautaire* and are very much at risk if Turkey does not enter the EU.

While it is ultimately an empirical question, this chapter argues that it is the uncertainty associated with political and governmental institutions that deliver protection and services to the residents in the home countries of immigrants that are key determinants of net migration, particularly in the case of Turkey. It is precisely the stabilization and strengthening of these institutions that is a major objective of EU's *acquis communautaire*. It is the expected utility of potential migrants and the influence of these aspects of EU membership that is going to have an immediate impact on net migration flows between Turkey and EU, rather the short run convergence of incomes and unemployment rates that has been the focus of most of the empirical work to date.

A theoretical framework is developed in this chapter that aims to capture the effects of the differences in these institutional variables if Turkey enters the EU. In

particular an analysis is made of how these additional uncertainties will likely affect the migration decision of potential Turkish residents who are on the margin in deciding whether to remain in Turkey or migrate to the EU. It is the group that we refer to as the "potential migrants" in this chapter of the thesis.

5.2 A Cost-Benefit Model of Migration with Uncertainty

From the early economic studies of migration (Sjaastad, 1962), the decision to migrate has been considered as an investment decision by individuals to increase the productivity of their human resources. As an investment, it involves initial costs and opportunity costs that are expected to be compensated over time by a better life in the place to which they migrated.

The private costs and returns of migration can be classified into two broad categories, monetary and non-monetary costs. Framing the decision to migrate in terms of a cost benefit analysis (Sjaastad, 1962), the potential migrants are evaluating the welfare they would get over their lifetime, and perhaps their children's lifetimes, if they migrate. This situation is compared to the welfare they and their children would expect to have if they were not to migrate.

Following Parikh and Van Leuvensteijn (2003), the present value (PV) of migrating is the difference in the expected utility stream that an individual obtains over her/his planning horizon if s/he remains in the home country (h) as compared to the expected utility stream s/he obtains if s/he migrate abroad (f). These utility streams will be a function not only of current income differentials between the home and the prospective host countries but also the future income differentials between these locations. These utilities are obtained from the total personal and social wealth in

both locations, W^h and W^f, at each point in time. The net present value of migration (NPV_m) can be obtained by subtracting the present value of direct costs arising from migration[67] from the difference between the present value of expected utilities of migration and staying at home country. This relationship can be expressed as;

$$NPV_m = PV\left[E\left[U\left(W^f\right)\right]\right] - PV\left[E\left[U\left(W^h\right)\right]\right] - PVc^m \quad (5.1)$$

where PVc^m denotes the present value of the direct costs of migration expressed in terms of utility. This gives us a decision criterion for migration. If the net present value of migrating, NPV_m, for the individual is positive, s/he should migrate, and if it is negative, s/he should stay in her/his home country.

It is assumed that the direct cost of migration, in terms of both expenditures and time, are known by the potential migrant with a high degree of certainty. These costs may include such items as the cost of obtaining visas and work permits, transportation and perhaps the cost of learning a new language.

Most studies of migration, including those of Turkish migration to the EU countries, have introduced uncertainty and its associated costs into the analysis. Thus, uncertainty was thought to arise from the problem of finding suitable employment quickly in the destination country (Hatton, 1995; Bentivogli and Pagano, 1999; Fertig, 2001). In these and other studies the only uncertainty facing the individual was the uncertainty they would experience if they migrate. If they remain at home, the future is assumed to be known with certainty.

[67] The personal and social wealth of migrants in the home and host countries will also be affected by a host of variables such as macro-political factors, globalization, internationalization of education, and network factors. To the degree these variables play a more important role if Turkey were to join the EU as compared to the situation if it does not, their impacts are included in the corresponding basket of "wealth".

This chapter of the thesis considers the uncertainties facing a potential migrant in a much broader sense, both in the destination and in the home country. This uncertainty includes the conditions of the labour market that traditionally have been included as determinants of migration and also other areas of uncertainty that the EU institutions are specifically designed to address. These include such factors as political stability, macro-economic stability, financial market stability, security and human rights guarantees.

To capture these longer term uncertainty variables in a simple, but realistic, manner it is first assumed that the individual's utility function for a potential migrant is characterized by constant risk aversion with respect to the level of wealth. This characterization of the individual's utility function is continued with the assumption that these people will face threats to their wealth over time that follows a normal distribution whether they reside in their home or the foreign country. The distribution of wealth outcomes from living in the home country is described as having a mean of μ_{wh}, and variance of σ_{wh}^2. Then the probability density function for wealth[68] is given by $f(w) = (\frac{1}{\sqrt{2\pi}})e^{-z^2/2}$. Where, $z = [(w_h - \mu_{wh})/\sigma_{wh}$.

Suppose these individuals have utility functions that can be expressed as an exponential of the individuals' wealth at any point in time;

$$U(W) = -e^{-AW}. \tag{5.2}$$

[68] Exponential utility functions are used as a specific form of utility function where uncertainty is presented. A derivation of these properties of a normal probability density function can be found in Nicholson, 2005, pp556)

Where A is the individuals' risk aversion parameter that determines the size of the negative effects that the variability of wealth, *W*, has on utility. This form of an individual utility function has been widely used in the economic literature (Levy and Markowitz, 1979). Given the assumption about the nature of the uncertainty of future wealth, the expected utility from his or her risky wealth at each point in time, if residing in the home country, can be expressed as;

$$E[U(W_h)] = \int_{-\infty}^{\infty} U(W_h) f(W_h) dW_h = \frac{1}{\sqrt{2\pi}} \int - e^{-AW_h} e^{-[W_h - \mu_{Wh})/\sigma_{wh}]^2/2} dW_h \qquad (5.3)$$

Carrying out this integration and simplifying, equation (5.3) becomes;

$$E[U(W_h)] \cong \mu_{wh} - \frac{A}{2} * \sigma_{wh}^2 \qquad (5.4)$$

Hence, the expected utility of an individual is expressed as a linear function of the two parameters of her wealth probability density function, the mean of the expected wealth, μ_{wh}, and a cost of risk term, $-\frac{A}{2} * \sigma_{wh}^2$. The cost of risk term is a function of the variance of wealth and the individual's risk aversion parameter A. This parameter A determines the size of the negative effect of the variability of wealth on the expected utility of the person. The role that risk aversion plays in determining the decision to migrate has been explored by Parikh and Van Leuvensteijn (2003). Berger and Gabriel (1991) have also estimated the impact that risk aversion had on the type of jobs selected by immigrants and its ultimate effect on earnings.

The same form of the individual's utility function and the variables that determine utility can be used to describe the expected utility of the potential migrants if they in fact decide to migrate to the foreign country. These variables are denoted by subscript f. Hence, substituting equation (5.4) (for both the home and foreign

locations) into equation (5.1), the present value of the difference in expected utility streams of an individual in the home country, h, and abroad, f, can be described as follows:

$$NPV_m = PV\,[\mu_{wf} - \frac{A}{2} * \sigma_{wf}^2] - PV[\mu_{wh} - \frac{A}{2} * \sigma_{wh}^2] - PVc^m \tag{5.5}$$

Rearranging (5.5);

$$NPV_m = PV(\mu_{wf} - \mu_{wh}) - \frac{A}{2} PV(\sigma_{wf}^2 - \sigma_{wh}^2) - PVc^m \tag{5.6}$$

The decision of a potential migrant depends on the expected net present value of differences between the expected wealth from living in the home and in the foreign country, and the differences in the variances of wealth that the potential migrant faces in both the home and destination countries adjusted by the individual's risk aversion parameter A. Finally, there are the direct costs associated with migration. If these specific costs of migration are known with certainty, their present value in monetary units can be just subtracted from equation (5.6). A potential migrant will decide to migrate if the expected net present value of migration, NPV_m, over her/his planning horizon is positive.

If the size of expected wealth, μ_{wh}, from living in the home country increases, other things remaining the same, the size of NPV_m decreases leading to a decrease in the incentive for the person to migrate. If only the uncertainty about the future living conditions in the home country increases, then we would expect that the variance of the wealth in the home country would increase for a potential migrant, leading to an increase in the incentive to migrate. Finally, the higher are the costs associated with migration, PVc^m, the lower will be the incentive to migrate.

An individual will find it more attractive to migrate to the foreign country as the difference between the mean values of the expected wealth in the foreign country and that of the home country is greater. Likewise, the attraction to migrate is greater, as the variance of wealth in the foreign country as compared to that of the home country is smaller. Of course it is the combination of both the effects of the differences in the expected values of wealth in both locations, offset by the differences in the variances of wealth (cost of uncertainty) in the two locations that determine the present value of the migration decision.

Formulating the determinants of migration in this way, the decision to migrate is based on the expectations of the utility they expect to enjoy if they remain in the home country relative to what they hope to enjoy if they migrate. Of course, the actual number of people who migrate for a given PV of benefits will depend on the degree of migration restrictions imposed by the foreign countries on those wishing to migrate from any particular home country. Given any system of restrictions, however, it is reasonable to assume that the higher the expected NPV_m from migration, the large will be the numbers of migrants who will be successful in making the move. This framework can be used to analyze a number of migration phenomena that have taken place in recent years before the imposition of more restrictions.

5.3 Applying Model to Explain Previous Intra-EU Migration Flows

It was the view of some analysts studying European migration, prior to the entry of Greece (1981), Portugal and Spain (1986) into the EU, that massive migration flow from these countries to the higher income countries in EU would arise (Dustmann, et. al., 2003; Chammartin Moreni-Fontes and Cantu-Bazaldua, 2004). To everyone's

suprise, a massive influx of migration from Greece, Portugal and Spain did not occur after these countries joined EU. This is quite similar to the situation of Turkey where there has been a continuing decline in out migration from Turkey to EU since 1995 arising as a result of increasing prosperity in Turkey.

The entry of Greece, Portugal and Spain into the EU was accompanied by such a large reduction in the level of uncertainty for residents living in these countries. These countries had a history of civil wars, military coups, dictatorships and the suppression of human rights that was fresh in everyone's mind. Turkey has also been experiencing a similar history. The entry into the EU was believed by most to be the vehicle that would put these kinds of uncertainties behind them once and for all. As a consequence, the attractiveness of these countries increased for both the natives of the country but also for other people who might consider residing in them. In fact, the increase in the attractiveness of living in Greece, Portugal and Spain was so large that after decades of out migration the number of migrant stock from those countries that were living in the other EU countries actually decreased after the entry of those countries into the EU (Zeiceva, 2003; Migration Information Source, Country Profiles; US Census Bureau International Data Base, 1950-2007).

This observation is entirely consistent with the model shown in equation (5.1). Entry into the EU for a country means an acceptance of a common code of conduct and the maintenance of a set of institutions whose objective is to reduce the uncertainty of living conditions, along with a strengthening of democratic political institutions within the member countries.

After becoming a member of EU, the variance of wealth, σ^2_{Wh}, in the home country will be lowered, hence, the cost of uncertainty experienced by those living in the home country, will be decreased. There will an increase the relative cost of uncertainty appreciated with migration as expressed by the second term of equation (5.6), $-\frac{A}{2}PV(\sigma^2_{wf} - \sigma^2_{wh})$. The result is a decrease in the expected net present value of the welfare from migration, hence reducing the incentive to migrate.

There is a vast literature on the determinants of the convergence of per capita income across countries, and particularly within the EU (Islam, 2003). This research has largely focused on the variables affecting the first term in equation (5.6), $PV(\mu_{wf} - \mu_{wh})$, that reflect the differences in the expected value of income or wealth in the two or more regions or countries (Parikh and Van Leuvensteijn, 2003). Under normal circumstances the expectations about the convergence of the values of expected per capita income or wealth for a country aspiring to join the EU is likely to be formed well before the date of its actual entry. At the point of the actual entry date into the EU, there is likely to be a smaller change in the person's expectations about the mean values of expected wealth than will be the change in peoples' expectations about the variance in the value of their future wealth.

5.4 Applying Model to Explain Timing of Migration Flows from Hong Kong

An illustration of the power of such uncertainties determining migration flows can be seen in the massive migrations that took place just prior to and after the decision for the political integration of Hong Kong into the People's Republic of China. The annual migration flow from Hong Kong between 1980 and 1986 remained stable at

around 20,000 people per year. After 1986, migration out flows experienced a sharp increase to peak at 62,000 in 1990 (Skeldon, 1990). The primary destination countries were Australia, USA and Canada. The main reason for the increase in out migration was the uncertainty about Hong Kong's political and economic future following the agreement with UK in 1984 for the transfer of its sovereignty to the People's of Republic of China in 1997 (Li, 2003; Salaff, 2006; Sussman, 2005; Siu-lun, 1992). The uncertainty and the decrease in public confidence about the future were based on the fear of Hong Kong being turned into a communist state with limitations on individual rights of speech and private property (Li, 2003). Many potential migrants did not wait in Hong Kong to see how the situation would turn out, but begun to migrate as soon as the regime change became inevitable.

The structure of the migrants from Hong Kong to those countries predominantly consisted of the young, educated professionals and middle class businessmen (Li, 2003; Siu-lun, 1992). It was estimated, in 1989, that 48.8% of total migrant population were between the ages of 25 and 44 of the total migrant population. 14.5% had either a postgraduate degree or post graduate qualification, and 23.3% were employed as professionals or a technical, administrative, and managerial staff before they migrated. The young, educated professionals are the group who are likely to have the lowest relocation costs. On the other hand, it is the middle class businessmen who face the greatest uncertainty about the future after Hong Kong is absorbed into the People's Republic of China.

Studies have shown that many of the migrants did not improve their level of income by moving away from Hong Kong (Salaff, 2006). For many, the main objective of

migration was to escape from the higher level of uncertainty of the future economic and political environment in Hong Kong. Some moved their families, while the head of the household continued to work or maintain their business in Hong Kong.

After 1995, the flows of migration out of Hong Kong started to decrease. In addition to this decrease, as people became better informed over time of China's economic development policies there was a significant flow of return migration back to Hong Kong (Sussman, 2005). Many of those returned only after obtaining a new citizenship and often with homes purchased abroad. With these precautions in place, an easy exit from Hong Kong could be facilitated, should their worst fears about the future political system in Hong Kong be realized.

5.5 Turkish Migration to the EU

The migration flows from Turkey to EU member states started during 1960s. Most of the migrants from Turkey went to Federal Germany starting in 1961 with the Guest Worker Agreement. Those flows accelerated after 1963 where the Ankara Agreement was signed between Turkey and European Economic Community. The number of Turkish population living in Germany was 6,800 at the end of 1961 but reached 712,300 by 1972 (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

The Government of Federal Germany decided to end the Agreement on Guest Workers in 1973 as a result of the economic crises it faced following the sudden increase in world oil prices. However, the number of Turkish living in Germany continued to increase between 1973 and 1983 actually because of the network effects. An important factor was the German Government's decision to allow the Turkish workers to bring their wives and children under the age of eighteen to

Germany. The increase of the number of Turks living in Germany was also encouraged by the political and economic situations in Turkey at the end of 1970s and the military coup in 1980. The family reunification policy of Germany reduced the future uncertainty for those migrating to Germany and led to a change in the demographic structure of the population in Germany. In 1973, the Turkish population in Germany was around 910,500, mostly males. The number of Turkish females and children started to increase after 1974. By 1982, the Turkish population in Germany increased to 1,580,700 (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

Migration became a controversial policy issue in Germany because of the social and political problems that accompanied the increase in Turkish migrants and the presence other foreign groups in Germany. The result was the Return Support Law of November 1983 legislated by German government (Eryilmaz, 2002). This law provided financial assistance to those who wished to return to Turkey and also it decreased the age limit to sixteen for the family reunification[69]. These policies created considerable uncertainty for the Turkish population in Germany. As a consequence, between 1983 and 1985, around 374,000 Turkish migrants turned back to Turkey. After 1986, the Turkish population in Germany started to increase again because of the instability of the social, politic and economic conditions in Turkey. This was further encouraged by the new German citizenship law of January 1991 that allowed long term resident permits for foreign workers in Germany (Türkiye İşverenler Sendikası Konfederasyonu, 2006).

[69] According to the return support law, if the requirements were met, in addition to 1,500 DM for each child, 10,500 DM would be paid to the foreigners who turn back to their country and also the retirement premiums paid by those workers would be repaid immediately.

The migration flows again increased from Turkey to Germany until 1995, but the number of migrants was not as great as in earlier periods. The largest migration from Turkey to Germany after 1991 took place in 1995. In that year 73, 592 Turkish citizens migrated to Germany. After 1995 the number of individuals migrating from Turkey to Germany decreased to only 25, 589 in 2006 (Migration Policy Institute). The falling off of migration flows coincided with the closer integration of the economies of Turkey and EU brought about by their Customs Union Agreement of 31th December 1995 (European Commission).

5.6 Migration and the Accession Process

In this context, we turn to the anticipated impact of Turkey's EU accession process on the decisions of potential migrants during this period. One of the important benefits of EU membership is that its institutions are expected to stabilize the economic and political conditions of a country. To gain admission, Turkey will need to make progress in implementing the a*cquis communautaire*. This process is expected to take up to 15 years to reach a conclusion.

On both the economic and the political fronts, joining the EU should lower the level of uncertainty for residents of Turkey and improve the conditions for economic growth and the strengthening of democratic institutions. In terms of the migration model, equation (5.6), if the accession process were to proceed smoothly then the expected variance of the wealth for an individual or family living in Turkey, σ_{wh}^2, would fall. This reduces the attractiveness of migrating in the period before Turkey is admitted to the EU and also after it is admitted. Not only is the per capita income for Turkey expected to converge toward that of the other EU countries, but also the

prospect of entering the EU would reduce the expected variance of wealth, hence, the utility from staying in Turkey increases.

In terms of the expected income in the future, a potential migrant would enjoy if s/he stayed in Turkey, the final admission of Turkey into the political union of the EU might not be very large. The major impact on expected income is likely to have come about due to implementation of the reforms and the development of the institutions needed to gain admission. However, the final act of entry in the EU requires a legal agreement by the country to abide by a set of rules governing economic and political policies that may have a much larger impact at the time of accession on the anticipated variance of the future wellbeing of its residents than it will have on the expected values of such economic indicators as per capita income. A law does not become a law until it is implemented. Hence, the level of uncertainty can be changed dramatically with the enactment of the law. Economic conditions are built up over time and hence expectations about future levels of income are more difficult to influence in the short term by a single policy action.

This dampening effect on the level of uncertainty experienced by potential Turkish migrants within the period of accession is greatly affected by the process by which the final decision is made for Turkey's admission to the EU. According to the EU rules, if any member country conducts a referendum and the majority of the voters say no to Turkey's admission, then Turkey's admission to EU will be denied. This will be the verdict on accession even if it has fulfilled all the requirements of the a*cquis communautaire*.

The decision making process of potential Turkish migrants concerning what they can expect if they remain in Turkey will be shaped according to the probability of the member states voting either 'yes' or 'no'. Let us begin by making the assumption that if Turkey were to satisfy all the conditions of the *acquis communautaire* then after being recommended by the officials of the EU the legislatures of the individual countries would be certain to vote in favour of Turkey's admission into the EU. In this circumstance, there would be only two conditions that the potential migrant must evaluate for the future situation of Turkey. One is the situation where Turkey meets all the conditions of the a*cquis communautaire*, and by assumption, becomes a member of the EU. μ_{wh}^{ve} denotes the mean of the expected wealth and $-\frac{A}{2}*\sigma_{wh}^{ve2}$ the term measures the cost of the future uncertainty of wealth if Turkey fulfils the a*cquis communautaire* and becomes a member state of the EU. The present value of benefits that a potential migrant receives if Turkey becomes a member state of EU and a potential migrant stays in Turkey is expressed by $PV(\mu_{wh}^{ve}-\frac{A}{2}*\sigma_{wh}^{ve2})]$. The second condition occurs if Turkey fails to fulfil a*cquis communautaire* and cannot be a member state of EU. The benefits derived from living in Turkey under the second condition are given by $PV(\mu_{wh}-\frac{A}{2}*\sigma_{wh}^{2})]$, where μ_{wh} stands for the mean of the expected wealth and $-\frac{A}{2}*\sigma_{wh}^{2}$ denotes the cost of the future uncertainty of wealth a potential migrant will be faced by remaining in Turkey if Turkey cannot fulfil the obligations of the a*cquis communautaire* to become a member state of the EU. Suppose the probability of Turkey being able to fulfil the obligations of the a*cquis communautaire* is π[70], and the probability of not being able to fulfil the a*cquis*

[70] π is assumed to be less than 1.

communautaire is $(1-\pi)$. In the latter case, Turkey is not able to become a member state of the EU. Some of the core member states of EU such as Austria, Germany and France suggested accepting Turkey as a privileged partner (İçener, 2007; Casanova, 2006) of EU but the Turkish leaders are not supprtive of this kind of status (Phillips, 2004). With these possibilities the net present value of the utility expected by a potential migrant from the act of migration from Turkey to EU during the accession period can be expressed as,

$$NPV_m = PV[\mu_{wf} - \frac{A}{2} * \sigma_{wf}^2] - \pi[PV(\mu_{wh}^{ve} - \frac{A}{2} * \sigma_{wh}^{ve2})] \\ -(1-\pi)[PV(\mu_{wh} - \frac{A}{2} * \sigma_{wh}^2)] - PVc^m \quad (5.7)$$

Given that the objective of the *acquis communautaire* is to increase the social and economic well being of the residents of the EU, we would expect that in the same manner as Parikh and Van Leuvensteijn (2003) viewed the prospective convergence of incomes on East and West Germany, a convergence of incomes would take place over time between Turkey and the rest of the EU. The result of successfully fulfilling the conditions should cause μ_{wh}^{ve} to be larger than μ_{wh}, while given the history of Turkey σ_{wh}^{ve2} would be expected to be less than σ_{wh}^2. From equation (5.7), it can be seen that the net present value from migration to the EU will increase if the probability (π) decreases of Turkey fulfilling the a*cquis communautaire* and becoming a member state of the EU.

Another cause of uncertainty to be considered is the uncertainty surrounding the process of Turkey's accession to EU membership. Even if Turkey fulfils the a*cquis communautaire*, she still might not be able to become a member state of the EU if a referendum is held in a member country, such as France, and the "no" votes gain the

majority. In short, fulfilling the a*cquis communautaire* is a necessary but not sufficient condition for Turkey to become a member state of the EU. However, if Turkey makes the policy changes for the implementation of the a*cquis communautaire* then it is likely to enjoy a level of expected wealth that is higher than if it fails to implement the a*cquis communautaire*. However, it is reasonable to assume that for a resident of Turkey, the expected future wealth would not be as high and the expected variance of future wealth would be greater if Turkey does not gain final approval to enter the EU than if it were given full membership. The status of implementing the a*cquis communautaire*, but not gaining membership is close to what some of the leadership of EU countries have called privileged association status (İçener, 2007; Casanova, 2006).

The levels of utility of the three possible situations that a potential Turkish migrant needs to take into consideration when evaluating the benefits of remaining in Turkey (full admission, fulfilling the a*cquis communautaire* but admission refused, no fulfilment of a*cquis communautaire* and no admission) are likely to be ranked as follows:

$$[PV(\mu_{wh}^{ve} - \frac{A}{2} * \sigma_{wh}^{ve2})] > [PV(\mu_{wh}^{e} - \frac{A}{2} * \sigma_{wh}^{e2})] > [PV(\mu_{wh} - \frac{A}{2} * \sigma_{wh}^{2})] \qquad (5.8)$$

The benefit of implementing the a*cquis communautaire* and gaining full membership in the EU is expressed by the first term within the brackets of expression (5.8). It would provide the best prospects for the potential Turkish migrant if s/he stayed home, this would be followed by the situation where Turkey was able to implement the a*cquis communautaire* but was not able to get admission to the EU, which is denoted by the middle term. μ_{wh}^{e} stands for the mean of the expected wealth and

$-\frac{A}{2}*\sigma_{wh}^{e2}$ denotes the cost of the future uncertainty of wealth a potential migrant will be faced by remaining in Turkey if Turkey fulfils the a*cquis communautaire* but refused to become a member state of EU. The worst situation, as expressed by the right hand term, would arise if Turkey was unable to implement the a*cquis communautaire.*

If we denote the probability of any member state of EU such as France accepting Turkey's EU membership as a result of the referendum, given that the referendum will be held after Turkey fulfils the a*cquis communautaire*, as ρ, the probability of France vetoing Turkey's EU membership, after Turkey fulfils the a*cquis communautaire* is therefore expressed as $(1-\rho)$. Now the present value of migrating for a potential Turkish migrant becomes,

$$\begin{aligned} NPV_m &= PV[\mu_{wf} - \frac{A}{2}*\sigma_{wf}^2] - \pi*\rho[PV(\mu_{wh}^{ve} - \frac{A}{2}*\sigma_{wh}^{ve2})] \\ &- \pi*(1-\rho)[PV(\mu_{wh}^{e} - \frac{A}{2}*\sigma_{wh}^{e2})] - (1-\pi)[PV(\mu_{wh} - \frac{A}{2}*\sigma_{wh}^{2})] - PVc^m \end{aligned} \tag{5.9}$$

Considering equation (5.9), when France or another member country holds a referendum the perceived probability is $\rho < 1$ that the vote will be "yes". In this case a higher present value of value is obtained from migration than for the case if the referendum were not being held and the entry into the EU were determined solely by Turkey's ability to fully implement the a*cquis communautaire*. The change in the expected NPV from migration due to the use of referenda,

$$ChangeNPV_m = \pi(1-\rho)([PV(\mu_{wh}^{ve} - \frac{A}{2}*\sigma_{wh}^{ve2})] - [PV(\mu_{wh}^{e} - \frac{A}{2}*\sigma_{wh}^{e2})]) \tag{5.10}$$

Equation (5.10) shows that if it is perceived that life would better for residents of Turkey if it were a full member of the EU than with some sort of special association

status, i.e. $[PV(\mu_{wh}^{ve} - \frac{A}{2} * \sigma_{wh}^{ve2})] > [PV(\mu_{wh}^{e} - \frac{A}{2} * \sigma_{wh}^{e2})]$, the use of a system of referenda to determine Turkey's final status will stimulate migration from Turkey during the accession period. In fact, the greater the number of EU countries that hold such referenda, the greater is the incentive for potential migrants from Turkey to try to migrate to the EU during the accession period[71]. The tendency to move forward the date of migration to before the final accession decision is made would be further strengthen by the fear that if Turkey does not gain admission then the EU would be likely to impose higher barriers on Turkish migration in the future. During the accession process the EU countries might be restrained in imposing higher barriers on migration from Turkey as it would be perceived badly by these voters in Turkey who want to enter the EU.

5.7 Conclusions

The fear of massive migration from Turkey to the member countries of the EU, if it were to become a full member of the European Union, is likely to be misplaced. From a model of migration that specifies the utility function of potential migrants' as a function of the difference between their expected wealth in the foreign country and Turkey, as well as the difference between the expected variance of wealth in the home and foreign countries, this conclusion appears to be in error. The impact of EU membership on Turkish residents is to increase the relative wealth they will enjoy if they remain in Turkey and will reduce the differences in the costs of the uncertainty in terms of the variability of wealth from living abroad versus in Turkey. Both impacts will encourage potential migrants from Turkey to remain in Turkey rather than migrate.

[71] This statement will only strictly hold if the referendum outcomes are independent of each other.

A further implication of the model is that the efforts to restrict Turkey's entry to the EU through the use of national referenda will serve to worsen the problem of Turkish migration to the EU, particularly during the accession period. The increased uncertainty of accession that such mechanisms create will encourage potential migrants to migrate now to the EU rather than remain in Turkey as the expected value of the benefits of improved living conditions that would result from Turkey's attempt to gain entry into the EU is decreased.

Chapter 6

CONCLUDING REMARKS

In this thesis an old question has been tackled, but in a different context and with a different data set than has been used in the studies that have been overviewed in chapter two which was the literature review. In this chapter we briefly summarize the findings of each chapter of the thesis.

Interesting and important results concerning the effects of the EU enlargement on migration flows from new entrants to the core EU members have been obtained by number of authors by applying econometric tools. Those studies concerning the pattern of future migration flows could be divided in to three groups. The first group of those studies were concerned with the southern enlargement. This was the enlargement of EU that Greece, Spain and Portugal became member states of the EU. The focus of these studies was to forecast what the migration flows would be after those countries become a member state of EU. The second group of those studies attempt to forecast the pattern of migration flows after the last enlargement, related to the CEECs' acceptance as member states of EU. The last group of studies deal with forecasting the expected migration flows from Turkey to the core EU members after Turkey's accession to the EU. This thesis focuses on the determinants of migration flows that might occur if Turkey becomes a member state of the EU.

The study begins by giving the methodology of the related topic and is carried by a literature review chapter. The literature review chapter contains both a set of brief summaries of selected previous studies on expectation of potential migration flows to the EU member countries as well a comparative analysis of these studies. The main reason for focusing on migration studies is to model expectations as a function of recent experience. This chapter is very important mainly at two points. First, it helps to bring up the importance of the topic of this thesis and second it helps to clarify the difference between this thesis and the previous studies on expected migration flows that might take place if Turkey becomes a member state of EU.

Since the main purpose of this thesis is to investigate how the migration flows from Turkey to European Union (EU), especially to Germany, will change if Turkey gets accession or cannot become a member state of the European Union the study is first by examines the external migration flows from Turkey. The first approach used is to test if migration flows are determined by rational behaviour and then the thesis is followed by applying the Hatton's migration model in Turkish migration case. In the Hatton's model migration flows are determined both by the differences of the past value of current income and differences of net present value of expected future income streams.

The data for the number of migrants used in estimations for the application of the Rational Expectations Approach are collected from the Statistical Year Book of Turkey (State Institute of Statistics, 2004). Three different estimations are applied for panel data; two estimations with covariates and one without covariates. The estimations of panel data with covariates tests for the strong rationality while the

estimations without covariates tests for weak rationality. One of the estimations to test strong rationality includes lagged covariates while the next do not include. These covariates include Turkish economic growth, unemployment rates and job placements outside of the EU. According to the estimation results of all of the three models it is found that the covariates as a group have important informational content on EU job placement but they are not individually significant. According to the estimation results it is found that external Turkish migration to the EU is both weakly and strongly rational. This will help allay certain fears regarding Turkey's potential post EU accession population movement patterns since Turkey has to fulfill the *acquis communitaire* which will provide better opportunities internally through Turkey. One of the most important conclusions that can be stated here is that forecasting migration flows is futile since rational migration follows a random walk. The second conclusion is that preparing host countries for a potential migrant glut from Turkey is inefficient, and there is no need to fear that migrants will cannibalize domestic jobs in host countries. But it should also be mentioned that there are some limitations of the research. Actual migration is used as the dependent variable instead of migration expectations based on the rational expectations hypothesis since surveyed expectations data of this kind is absent for Turkey. But there still exists a gap between actual migration and expected migration. Since this chapter of the thesis does not provide an underlying model of migration decision making and the process leading to migration is taken as given Hatton's model of migration is applied to explain the Turkish migration experience between Germany and Turkey.

Hatton's migration model is applied in the Turkish migration case to be able to forecast the expected potential migration flows from Turkey to Germany if Turkey

becomes a member state of EU. This model was also applied by Fertig (2001) to be able to forecast what the expected migration flows would be from the CEECs to Germany. The main reason of using this model is that it includes uncertainty of finding a job in destination country into the migration decision and it explicitly accounts for formation of expectations about future income streams based on past information. Germany is taken as the main destination country since the Turkish migrants mostly settled in Germany starting to migrate since 1960s. Those flows of migrants' created strong networks leading to a considerable size of Turkish population living in Germany. The model used variables affecting both short term and long term migration flows from Turkey to Germany. Unfortunately, the t-statistics are insignificant on the explanatory variable when Ordinary Least Squares is applied for the long-run version of the Hatton's migration model because of the endogeneity problem. Hence, Generalized Method of Moments is applied only for the long-run version of the model leading to more meaningful relationships between the explained and explanatory variables.

Since the uncertainty of the home conditions, rather than the uncertainty in country that people are migrating to, is the key determinant of migration, a new model of migration has been developed to give a theoretical explanation and comparison of the expected possible migration flows from Turkey to EU under three different scenarios. The migration scenarios are supported by the example of migration in case of Hong Kong. The first scenario is based on the condition that Turkey fails to fulfil the *acquis communautaire* and cannot become a member state of the EU. The second scenario is based on the condition that Turkey fulfils the *acquis communautaire* and becomes a member state of the EU and last scenario is based on the condition that

Turkey fulfils the *acquis communautaire* but her membership is not accepted as a member state of the EU as a result of a referendum. The importance of the model developed is that it includes the possibility of new uncertainties about the accession of Turkey to the EU. The model specifies the utility function of potential migrants' as a function of the differences between their expected wealth in the foreign country and Turkey as well as the difference between the expected variance of wealth in Turkey and foreign countries. This model shows that the fear of migration from Turkey to the member states of the EU if Turkey joins EU is misplaced. EU membership of Turkey increases the relative wealth that Turkish residents will enjoy if they remain in Turkey and decreases the differences in the costs of the uncertainty in terms of the variability of wealth from living abroad versus in Turkey. Both of these statements will encourage potential migrants from Turkey to remain in their home country rather than migrating to EU member states. The more important implication of the model is that the efforts to restrict Turkey's membership of EU through holding a national referendum will encourage the migration from Turkey to the member states of EU during the accession period.

With respect to the central issue of the economic, social and political situations in Turkey, it was clarified from the outset that a related but different question is addressed in this study. The main focus in the migration from accession countries to the EU literature has been on the estimations using the past migration flows and economic variables related to both the home countries and the host countries. For the case of the southern enlargement of the EU most studies estimated that there would be an increase in migration flows from the accession countries to the core states of the EU. But after those countries joined EU the reverse of what expected was

experienced. It is also true that the reverse can be experienced in case of Turkey's membership of EU as it is theoretically demonstrated in this study. What has been suggested by the theoretical investigation is that not only the economic conditions but also social and political conditions might play important role in case of Turkey's entry to the EU and on possible Turkish migration flows to the EU different from the case of previous enlargements. Another very important implication of this study is that it investigates the effect of uncertainties on migration flows in both the home and host countries, which were not mentioned in other studies on same topic. As a result of the study it can be stated that the fear of the core members of the EU from the massive migration flows arising if Turkey becomes a member state is misplaced. Encouraging the entry of Turkey into the EU may be a way to reduce the flows of immigration of Turks into the current EU states.

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World Bank

www.worldbank.org

APPENDICES

Appendix A: Acquis Communitaire

The candidate countries have to complete the *acquis communautaire* to be able to get accession to the EU. The *acquis communautaire* that Turkey has to fulfill consists of 35 chapters which are summarized below (Faucompert and Konings, 2008; EUABC);

1. Free movement of goods
2. Freedom of movement for workers
3. Right of establishment and freedom to provide services
4. Free movement of capital
5. Public procurement
6. Company low
7. Intellectual property low
8. Competition policy
9. Financial services
10. Information society and media
11. Agriculture and rural development
12. Food safety, veterinary and phytosanitary policy
13. Fisheries
14. Transport policy
15. Energy
16. Taxation
17. Economic and monetary policy
18. Statistics

19. Social policy and employment (including anti-discrimination and equal opportunities for women and men)
20. Enterprise and industrial policy
21. Trans-European networks
22. Regional policy and coordination of structural instruments
23. Judiciary and fundamental right
24. Justice, freedom and security
25. Science and research
26. Education and culture
27. Environment
28. Consumer and health protection
29. Customs union
30. External relations
31. Foreign, security and defence policy
32. Financial control
33. Financial and budgetary provisions
34. Institutions
35. Other issues

Appendix B: Tables Summarizing the Literature Review

Table B.1: High-impact Migration Forecasts

Study/author(s):	***Destination Countries:***	***Origin Countries:***	***Forecasted Flows:***
Fertig & Schmidt (2000)	Germany	CEEC-4: Czech Republic, Estonia, Hungary and Poland	Average annual net migration flow to Germany will be 62,656 between 1998 and 2017.
Hille & Straubhaar (2001)	Germany	CEEC-10: Bulgaria, Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Romania, Slovenia and Poland	396,000 in one year after the enlargement.
Fetig (2001)	Germany	CEEC-10 CEEC-4	Average annual migration flow from CEEC-10 to Germany will be 69,306 in 2015. Average annual migration flow from CEEC-4 to Germany will be 33,828 in 2015.
Bruder (2003)	Germany	CEECs: Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Slovenia and Poland	Average annual migration flow to Germany will be 25,000 between 2000 and 2015.
Zaiceva (2003)	EU-15	CEECs: Bulgaria, Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Romania, Slovenia and Poland.	Migration flows will be 239,620 in 2014.
Alvarez-Platza, Herbert Brucker, Boriss Silverstove (2003)	Germany	CEEC-10 CEEC-8: Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Slovenia and Poland.	Average annual net migration flow to Germany will be 104,815 between 2004 and 1015 and 46,585 between 2004 and 2030. Average annual net migration flow to Germany will be 83,303 between 2004 and 1015 and 37,024 between 2004 and 2030.
Dustmann, Casanova, Fertig, Preston and Schmidt (2003)	Germany	AC-10: Cyprus, Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Malta, Slovenia and Poland.	Annual average net migration flow between the years 2000 and 2010 is expected to be 20,459.

Brucker & Silverstoves (2004)	Germany	CEEC-10 CEEC-8	Average annual net migration flow to Germany will be 57,769 between 2030 and 2004 and 111,232 between 2015 and 2004. Average annual migration net flow to Germany will be 39,874 between 2030 and 2004 and 74,928 between 2015 and 2004.
Erzan, Kuzubas &Yildiz (2006)	Germany	Turkey	Net change in the Turkish migrant stock in Germany is 2,734,000 between the years 2004 to 2030.

Sources: Fertig & Schmidt (2000), Hille &Straubhaar (2001), Fertig (2001), Bruder (2003), Zaiceva (2003), Alvarez-Platza, Herbert Brucker, Boriss Silverstove (2003), Dustmann, Casanova, Fertig, Preston and Schmidt (2003), Brucker & Silverstoves (2004) and Erzan, Kuzubas &Yildiz (2006).

Table B.2: Low-impact Migration Forecasts

Study/author(s):	***Destination Countries:***	***Origin Countries:***	***Forecasted Flows:***
Fertig & Schmidt (2000)	Germany	CEEC-4: Czech Republic, Estonia, Hungary and Poland.	Average annual net migration flow to Germany will be 14,656 between 1998 and 2017.
Hille & Straubhaar (2001)	Germany	CEEC-10: Bulgaria, Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Romania, Slovenia and Poland.	118,100 in one year after the enlargement.
Fetig (2001)	Germany	CEEC-10 CEEC-4	Average annual migration flow from CEEC-10 to Germany will be 61,269 in 2015. Average annual migration flow from CEEC-4 to Germany will be 29,291 in 2015.
Bruder (2003)	Germany	CEECs: Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Slovenia and Poland	Average annual migration flow to Germany will be 17,437 between 2000 and 2015.
Zaiceva (2003)	EU-15	CEECs: Bulgaria, Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Romania, Slovenia and Poland.	Migration flows will be 127,437 in 2014.
Alvarez-Platza, Herbert Brucker, Boriss Silverstove (2003)	Germany	CEEC-10 CEEC-8: Czech Republic, Estonia, Hungary, Slovakia, Latvia, Lithuania, Slovenia and Poland.	Average annual net migration flow to Germany will be 140,045 between 2004 and 1015 and 72,899 between 2004 and 2030. Average annual net migration flow to Germany will be 108,975 between 2004 and 1015 and 54,908 between 2004 and 2030.
Dustmann, Casanova, Fertig, Preston and Schmidt (2003)	Germany	AC-10: Cyprus, Czech Republic, Estonia, Hungary Slovakia, Latvia, Lithuania, Malta, Slovenia and Poland.	Annual average net migration flow between the years 2000 and 2010 is expected to be 209,651.
Brucker & Silverstoves (2004)	Germany	CEEC-10 CEEC-8 CEEC-2: Bulgaria and Romania.	Average annual net migration flow to Germany will be 62,656 between 1998 and 2017. Average annual

			migration net flow to Germany will be 62,656 between 1998 and 2017.
Erzan, Kuzubas &Yildiz (2006)	Germany	Turkey	Net change in the Turkish migrant stock in Germany is 2,734,000 between the years 2004 to 2030.

Sources: Fertig & Schmidt (2000), Hille &Straubhaar (2001), Fertig (2001), Bruder (2003), Zaiceva (2003), Alvarez-Platza, Herbert Brucker, Boriss Silverstove (2003), Dustmann, Casanova, Fertig, Preston and Schmidt (2003), Brucker & Silverstoves (2004) and Erzan, Kuzubas &Yildiz (2006).

Table B.3: Model Specifications

Study/author(s):	***Model Specifications***
Fertig & Schmidt (2000)	$m_t = \beta_0 + \beta_1 X_{h,t} \beta_2 m_{t-1} + \varepsilon_t$ m_t : aggregate migration rate, defined as the net rate in the relevant age range, ε_h : country-specific component that captures all aspects of process, ε_{hg} : reflects all determinants of migration activity which vary over time but operate in all origin countries identically during the same period, ε_t : white noise, h : sending country, g is the receiving country and t is the time.
Hille & Straubhaar (2001)	$m_t = \beta_0 + \beta_1 \log\left[1 - \frac{w_h}{w_g}\right] + \beta_2 \log\left[1 - \frac{ue_h}{ue_g}\right]_{t-1} + \beta_3 \log(MST)_{t-1} + \beta_4 \log$ m_t is defined as the bilateral migration rate taking place between sending and receiving countries, w : wage rate (per capita income in purchasing power parities), ue : unemployment rate, MST : stock of migrants in receiving country, D_{hg} : geographical distance.
Fetig (2001)	$m_t = \beta(\alpha + \lambda)\left[\ln(w_g)_t + \frac{3}{2}\ln(e_g)_t - (w_h)_t + \gamma(e_h)_t + \bar{z}_t\right] - \lambda\beta\alpha\left[\ln(w_g)_t\right.$ e : employment rate, $\bar{z}$: mean of the cost of migration for all individuals determined by the stock of previous immigrants.
Bruder (2003)	$\ln m_t = \beta_0 + \beta_1 \ln(w_g)_{t-1} + \beta_2 \ln(w_h)_{t-1} + \beta_3 \ln(ue_h)_{t-1} + \beta_4 \ln MST_{t-1} +$ FZ : country specific fixed effects.
Zaiceva (2003)	$\ln(m_t) = \beta_0 + \beta_1 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_2 \ln\left(\frac{ue_g}{ue_h}\right)_t + \beta_3 \ln(MST_t) + \beta_4 FM + \beta_5 FI$ $\beta_7 \ln(MST_t) + \sum_{g=1}^{14} \lambda_g FZ + \delta_t + \varepsilon_t$ FM : dummy for free movement of workers, δ_t : year dummy.
Alvarez-Platza, Herbert Brucker, Boriss Silverstove (2003)	$m_t = \beta_0 + (1-\delta)m_{t-1} + \beta_1 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_2 \ln(w_{ht}) + \beta_3 \ln(e_g)_t + \beta_4 \ln(e_h)$ P : labour force.
Dustmann, Casanova, Fertig, Preston and Schmidt	$m_t = \beta_0 + \varepsilon_h + \varepsilon_{hg} + \varepsilon_t$

(2003)	
Brucker & Silverstoves (2004)	$\Delta m_t = \beta_1 m_{t-1} + \beta_2 \ln\left(\frac{w_g}{w_h}\right)_{t-1} + \beta_3 \ln(w_h)_{t-1} + \beta_4 \ln(e_g)_{t-1} + \beta_5 \ln(e_h)_{t-1}$ $\beta_9 \Delta \ln(e_h)_t + \sum_{j=0}^{\gamma} \delta_{kj} \Delta mst_{h,t-1-j} + \eta' z_t + \mu_h + \varepsilon_t$ μ_h :long-run value for country specific effect.
Erzan, Kuzubas &Yildiz (2006)	$m_t = \beta_0 + \beta_1 m_{t-1} + \beta_2 m_{t-2} + \beta_3 \ln\left(\frac{w_g}{w_h}\right)_t + \beta_4 \ln(w_h)_t + \beta_5 \ln(e_g)_t + \beta_6$

Sources: Fertig & Schmidt (2000), Hille &Straubhaar (2001), Fertig (2001), Bruder (2003), Zaiceva (2003), Alvarez-Platza, Herbert Brucker, Boriss Silverstove (2003), Dustmann, Casanova, Fertig, Preston and Schmidt (2003), Brucker & Silverstoves (2004) and Erzan, Kuzubas &Yildiz (2006).

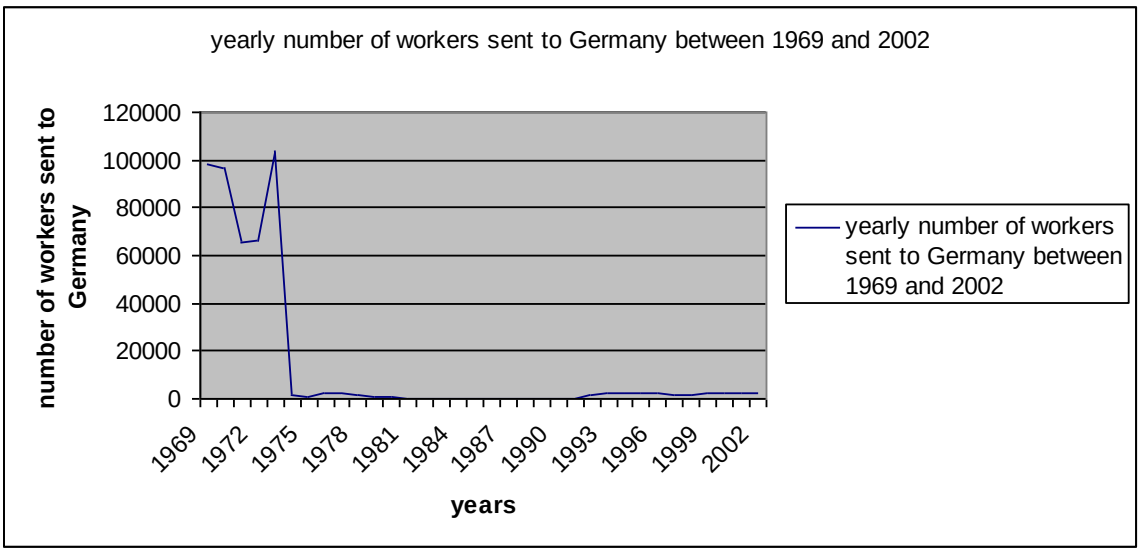
Appendix C: Tables for the data and graphical illustration of the variables used for estimations in Chapter 3 and Chapter 4

Table C.1 – Annual data of the number of workers sent from Turkey to Germany between the years 1969 and 2002

Years	Workers sent to Germany
1969	98,142
1970	96,936
1971	65,684
1972	65,875
1973	103,793
1974	1,228
1975	640
1976	2,101
1977	2,413
1978	1,333
1979	933
1980	764
1981	274
1982	75
1983	43
1984	17
1985	23
1986	17
1987	27
1988	85
1989	51
1990	62
1991	49
1992	1,685
1993	1,999
1994	2,032
1995	2,246
1996	2,443
1997	1,800
1998	1,734
1999	2,350
2000	2,047
2001	2,047
2002	2,135

Source**:** The Statistical Yearbook of Turkey (State Institute of Statistic, 2004). Because the data for the years 2000 and 2001 was not available, the average of the number of workers sent abroad in 1996, 1997, 1998, 1999 and 2002 was taken for those two years.

Graph C.1 – Graphical illustration of Table C.1



The number of workers sent to Germany is very high at the beginning of 1970s. The reason is the effect of Guest Workers Agreement which was signed in 1961 and lasted till the end of 1973. At the end of 1973, there had been a sharp decrease in number of workers sent to Germany and remained low, showing very smooth changes till today.

Table C.2 – Annual data of the number of workers sent from Turkey to other countries between the years 1969 and 2002

Years	Workers sent to other countries
1969	5,833
1970	32,639
1971	22,758
1972	19,354
1973	32,027
1974	18,983
1975	3,779
1976	8,457
1977	16,671
1978	17,519
1979	22,697
1980	27,739
1981	58,479
1982	49,313
1983	52,427
1984	45,798
1985	47,330
1986	35,591
1987	40,780
1988	52,915
1989	49,860
1990	47,645
1991	52,971
1992	58,315
1993	61,245
1994	59,123
1995	57,237
1996	38,254
1997	31,521
1998	24,173
1999	15,125
2000	22,420
2001	22,420
2002	11,510

Source: The Statistical Yearbook of Turkey (State Institute of Statistic, 2004). Because the data for the years 2000 and 2001 was not available, the average of the number of workers sent abroad in 1996, 1997, 1998, 1999 and 2002 was taken for those two years.

Graph C.2 – Graphical illustration of Table C.2

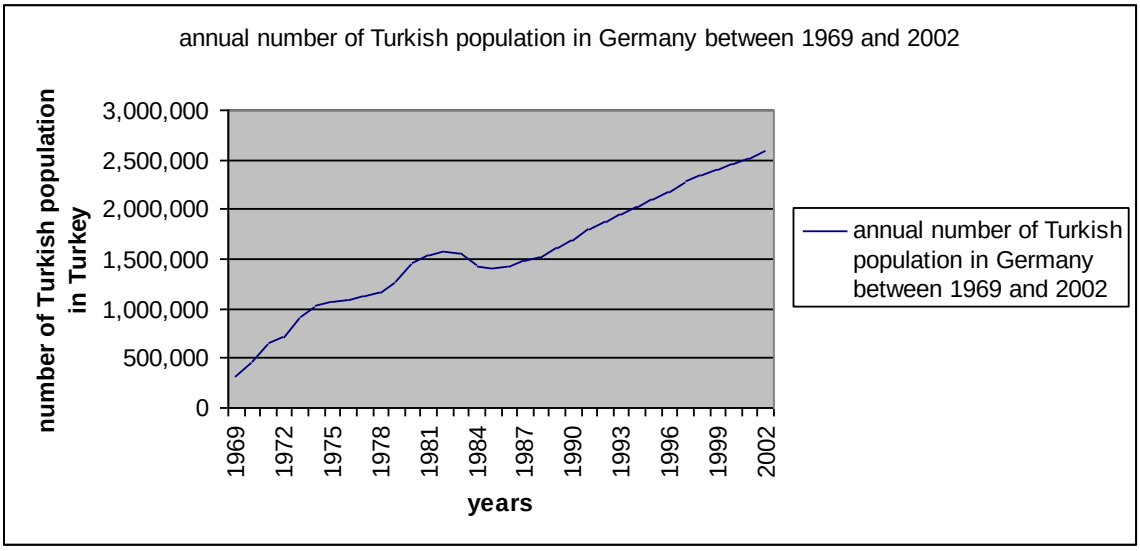
The number of workers sent to other countries was highly fluctuated showing sharp decrease and increases after 1969. But it should be mentioned that after 1995 there had been a considerable decrease in number of workers sent to other countries from Turkey.

Table C.3 – Annual data of the number of stock of Turkish population in Germany between the years 1969 and 2002

Years	Number of stock of Turkish population in Germany
1969	322,400
1970	469,200
1971	652,800
1972	712,300
1973	910,500
1974	1,027,800
1975	1,077,100
1976	1,079,300
1977	1,118,000
1978	1,165,100
1979	1,268,300
1980	1,462,400
1981	1,546,300
1982	1,580,700
1983	1,552,300
1984	1,425,800
1985	1,400,400
1986	1,425,721
1987	1,481,369
1988	1,523,678
1989	1,612,632
1990	1,694,649
1991	1,795,111
1992	1,877,847
1993	1,954,212
1994	2,020,984
1995	2,101,296
1996	2,182,339
1997	2,281,701
1998	2,344,162
1999	2,391,403
2000	2,455,983
2001	2,515,990
2002	2,580,155

Source: TISK

Graph C.3 – Graphical illustration of Table C.3



The migration flows from Turkey to Federal Germany started in 1961 with the agreement of Guest Workers. Those flows accelerated after 1963 after the Ankara Agreement signed between Turkey and European Economic Community. The Government of Federal Germany decided to end the Guest Workers Agreement in 1973. However, the number of Turkish living in Germany showed an increasing pattern between 1973 and 1983, because the German Government gave the opportunity to the Turkish workers to bring their wife and children under the age of eighteen to Germany. In 1973, the Turkish population in Germany was around 910,500. The number of Turkish females and children started to increase after 1974. In 1982, the Turkish population in Germany increased to 1,580,700. In November 1983 the Federal government of Germany decreased the children age limit to sixteen for the family reunification which led to a considerable decline in the number of Turkish population in Germany. Between 1983 and 1985, around 374,000 Turkish migrants turned back to Turkey. But this decline lasted till 1986.

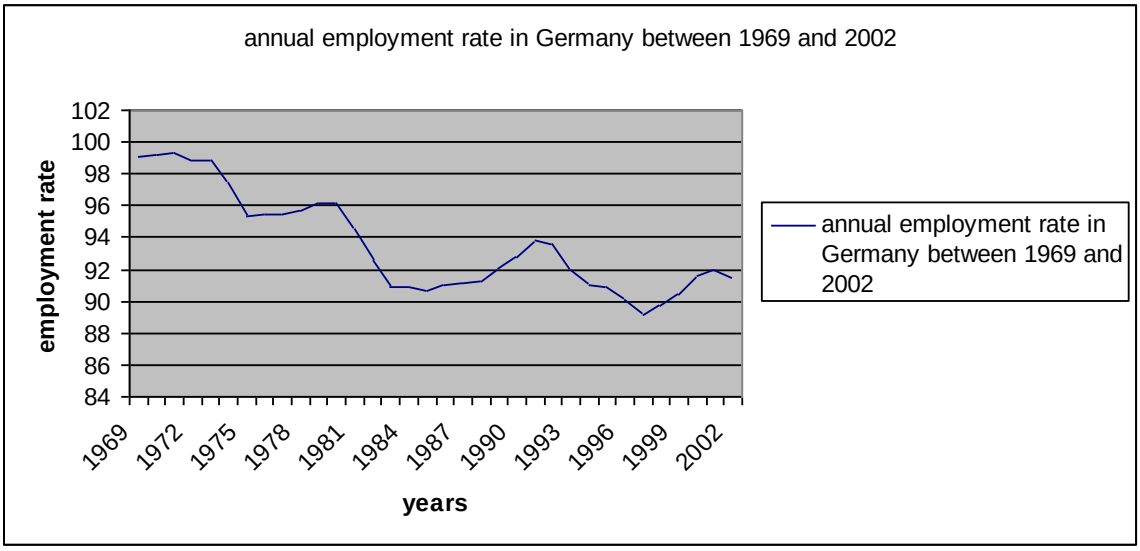
After 1986, Turkish population in Turkey started to increase because of the instability of the social, politic and economic conditions in Turkey and has been showing an increasing pattern till today. New law of foreigners set on the 1st of January 1991, which allowed the foreign workers in Germany to get German fellow-citizen.

Table C.4 – Annual data of employment rate in Germany between the years 1969 and 2002

Years	Employment rate in Germany
1969	99.1
1970	99.2
1971	99.3
1972	98.9
1973	98.8
1974	97.4
1975	95.3
1976	95.4
1977	95.5
1978	95.7
1979	96.2
1980	96.2
1981	94.5
1982	92.5
1983	90.9
1984	90.9
1985	90.7
1986	91
1987	91.1
1988	91.3
1989	92.1
1990	92.8
1991	93.8
1992	93.6
1993	92
1994	91
1995	90.9
1996	90.1
1997	89.2
1998	89.7
1999	90.4
2000	91.6
2001	92
2002	91.5

Source: economics web institute till 2000 and http://devdata.worldbank.org/query/default.htm for year 2000 and the years after 2000, calculated as 1-unemployment rate.

Graph C.4 – Graphical illustration of Table C.4



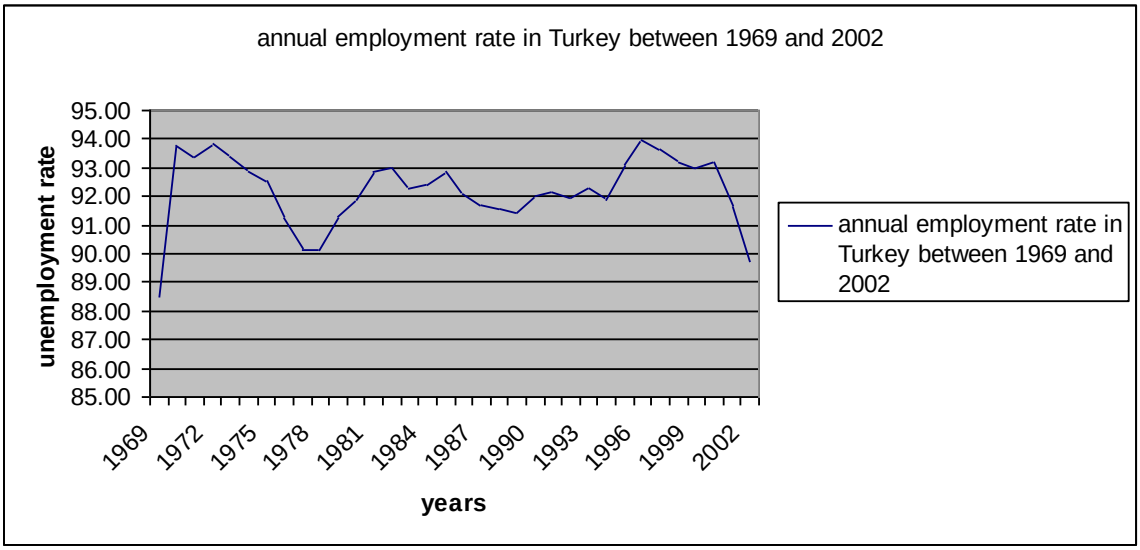
The employment rate in Germany showed a decreasing pattern between 1969 and 2002. According to the above graph, there had been two sharp decreases first during the beginning of 1970s and the second during the beginning of 1980s. There had been a considerable increase in employment rate during 1980s and the beginning of 1990s. In 1993, it started to decrease again lasting till 1997. After 1997, employment rate in Germany showed an increasing progress. But it should be necessary to mention that the employment rate in Germany changed less than 10 % in approximately 30 years.

Table C.5 – Annual data of employment rate in Turkey between the years 1969 and 2002

Years	Employment rate in Turkey
1969	88.50
1970	93.74
1971	93.38
1972	93.83
1973	93.37
1974	92.83
1975	92.55
1976	91.23
1977	90.16
1978	90.10
1979	91.32
1980	91.89
1981	92.86
1982	92.98
1983	92.28
1984	92.39
1985	92.86
1986	92.08
1987	91.66
1988	91.55
1989	91.43
1990	92.00
1991	92.14
1992	91.95
1993	92.30
1994	91.87
1995	93.09
1996	93.97
1997	93.65
1998	93.19
1999	93.00
2000	93.19
2001	91.60
2002	89.70

Source: economics web institute till 2000 and http://devdata.worldbank.org/query/default.htm for year 2000 and the years after 2000, calculated as 1-unemployment rate.

Graph C.5 – Graphical illustration of Table C.5



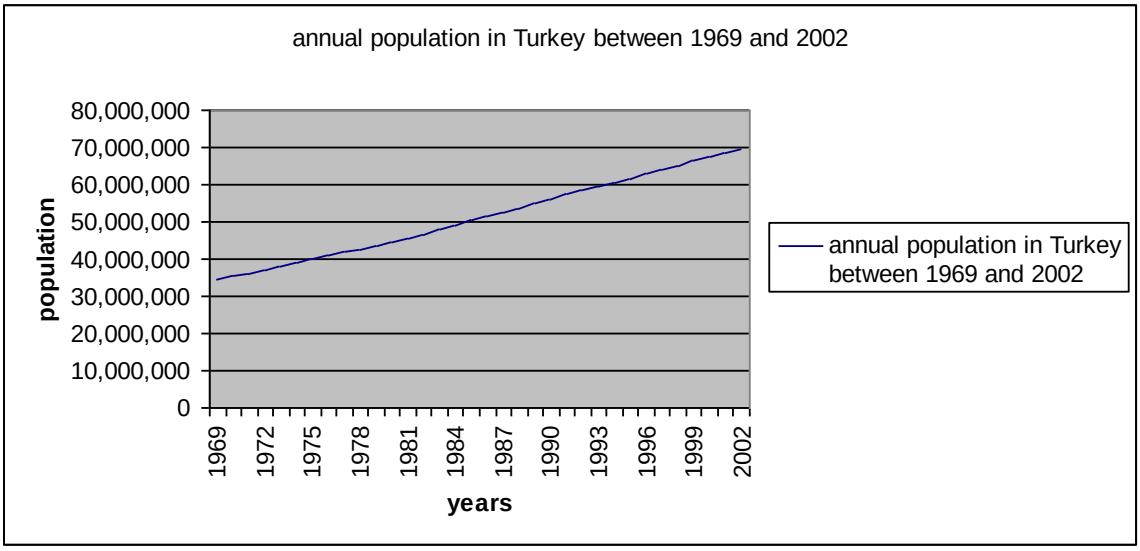
The employment rate in Turkey showed highly fluctuating pattern between 1969 and 2002. The employment rate in Turkey showed a decreasing pattern during 1970s. There had been a considerable increase in employment rate during 1980s and the beginning of 1990s. The change in employment rate in Turkey is around 5 % in approximately 30 years.

Table C.6 – Annual data of population in Turkey between the years 1969 and 2002

Years	Population in Turkey
1969	34,433,576
1970	35,321,000
1971	36,237,748
1972	37,189,776
1973	38,156,980
1974	39,107,912
1975	40,025,000
1976	40,911,296
1977	41,760,236
1978	42,605,848
1979	43,502,692
1980	44,484,000
1981	45,548,000
1982	46,696,000
1983	47,873,000
1984	49,079,000
1985	50,286,000
1986	51,440,000
1987	52,569,000
1988	53,723,000
1989	54,902,000
1990	56,154,000
1991	57,262,000
1992	58,374,000
1993	59,491,000
1994	60,612,000
1995	61,737,000
1996	62,873,000
1997	64,015,000
1998	65,157,000
1999	66,293,000
2000	67,420,000
2001	68,529,000
2002	69,626,000

Source: World Bank

Graph C.6 – Graphical illustration of Table C.6



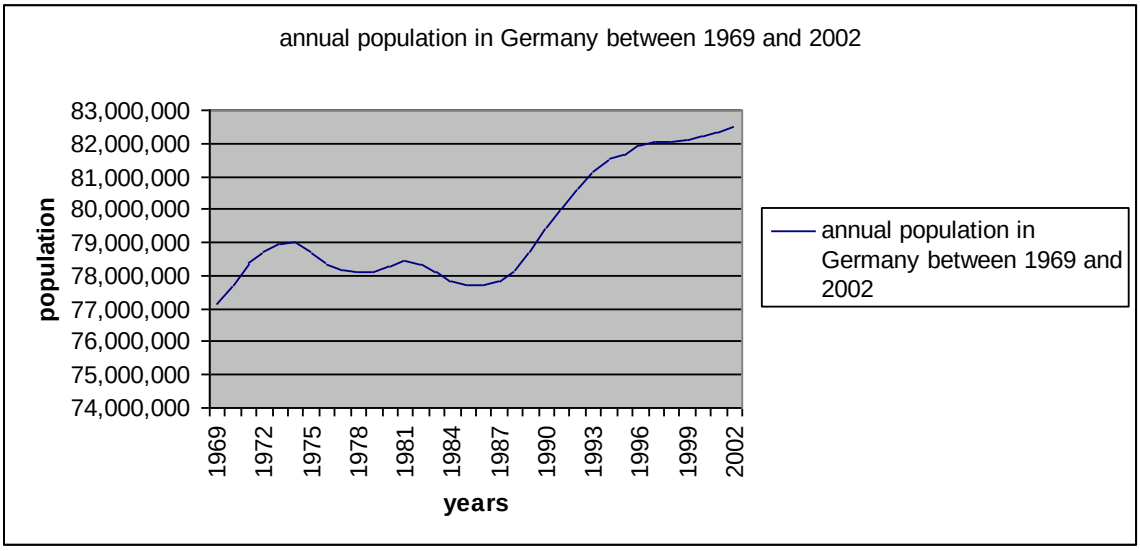
The annual population in Turkey shows increasing trend without any fluctuations between 1969 and 2000. According to the annual data obtained from World Bank, population in Turkey in 2002 reached to nearly 70,000,000.

Table C.7 – Annual data of population in Germany between the years 1969 and 2002

Years	Population in Germany
1969	77,143,000
1970	77,719,000
1971	78,363,000
1972	78,715,000
1973	78,956,000
1974	78,979,000
1975	78,679,000
1976	78,317,000
1977	78,166,000
1978	78,083,000
1979	78,104,000
1980	78,303,000
1981	78,418,000
1982	78,335,000
1983	78,122,000
1984	77,846,000
1985	77,698,000
1986	77,728,000
1987	77,840,000
1988	78,144,000
1989	78,752,000
1990	79,433,000
1991	80,014,000
1992	80,624,000
1993	81,156,000
1994	81,516,000
1995	81,642,000
1996	81,912,000
1997	82,071,000
1998	82,047,000
1999	82,087,000
2000	82,210,000
2001	82,333,000
2002	82,508,000

Source: World Bank

Graph C.7 – Graphical illustration of Table C.7



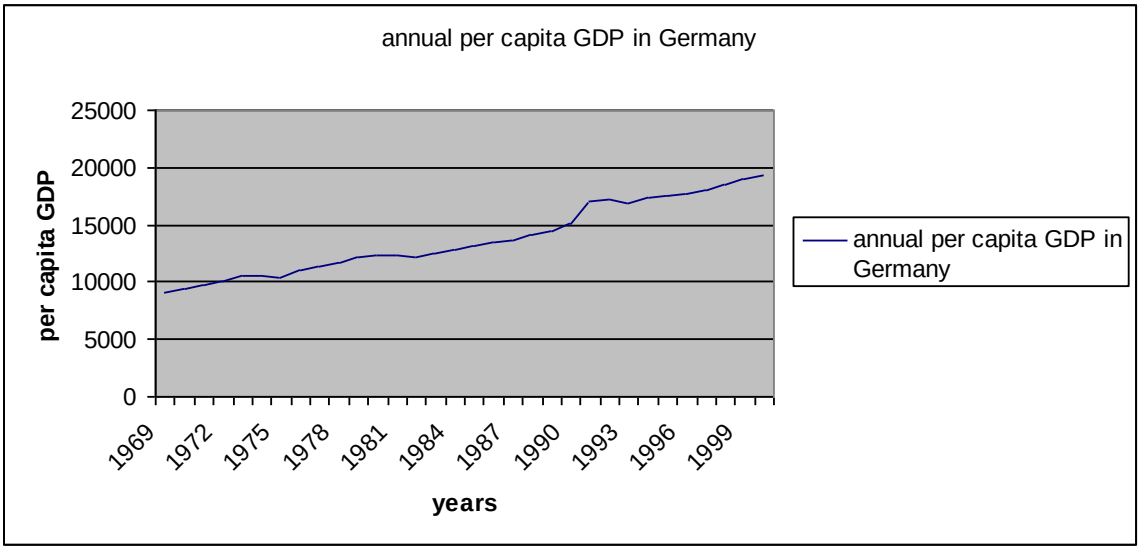
The annual population in Germany shows a sharp increase after 1990 and reached to nearly 83,000,000 at the beginning of 2000s. The reason of the increase in annual population in Germany after 1990 is related to the reunification of East and West Germany in 1990.

Table C.8 – Annual data of per capita GDP in Germany between the years 1969 and 2002

Years	Per capita GDP in Germany
1969	9098.781725
1970	9486.23462
1971	9696.034769
1972	10062.96304
1973	10510.26173
1974	10527.76774
1975	10435.5376
1976	11041.93983
1977	11378.03677
1978	11731.54155
1979	12223.84954
1980	12310.48942
1981	12304.61888
1982	12201.79711
1983	12450.29491
1984	12846.03858
1985	13131.79115
1986	13434.61081
1987	13613.49349
1988	14065.44702
1989	14462.72338
1990	15156.5747
1991	17035.68782
1992	17278.86881
1993	16962.53794
1994	17346.45574
1995	17530.31513
1996	17696.4634
1997	18050.97297
1998	18551.72193
1999	18948.22362
2000	19397.3598
2001	
2002	

Source: economics web institute till 1998 and http://devdata.worldbank.org/query/default.htm for year 1998 and the years after 1998.

Graph C.8 – Graphical illustration of Table C.8



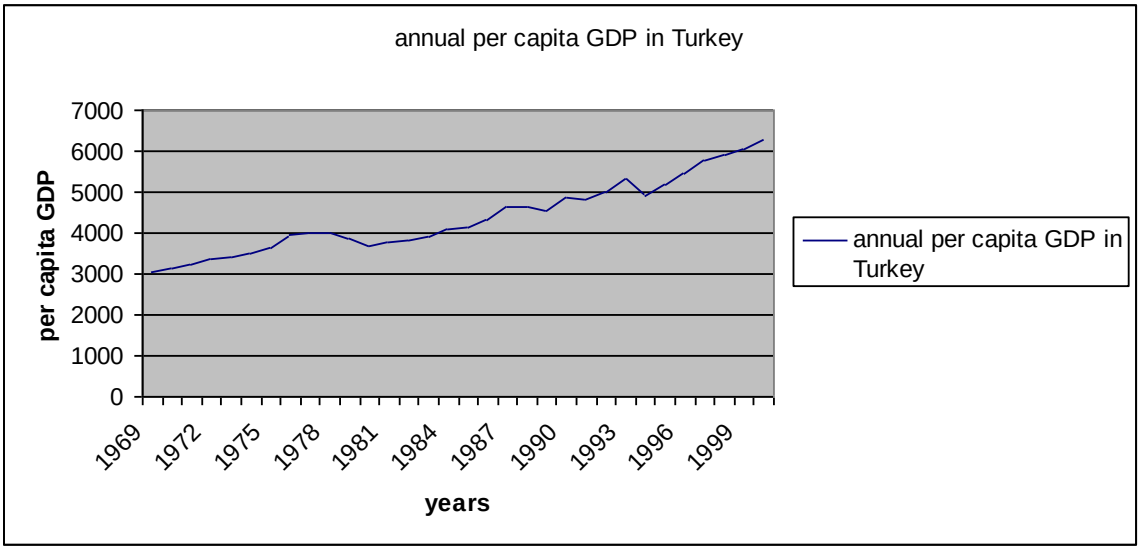
Annual per capita GDP in Germany shows a smoothly increasing pattern between 1969 and 2002.

Table C.9 – Annual data of per capita GDP in Turkey between the years 1969 and 2002

Years	Per capita GDP in Turkey
1969	2290.939247
1970	2273.627223
1971	2353.082563
1972	2512.275036
1973	2552.655606
1974	2555.809866
1975	2784.043803
1976	2837.021825
1977	2951.458904
1978	3031.336395
1979	3100.514992
1980	3188.172293
1981	3338.348656
1982	3395.538206
1983	3496.949192
1984	3655.186239
1985	3949.803698
1986	4000.878527
1987	3978.02401
1988	3872.357899
1989	3700.461374
1990	3786.316689
1991	3824.798792
1992	3916.211829
1993	4076.350194
1994	4144.849362
1995	4338.429121
1996	4647.903769
1997	4644.523653
1998	4556.288197
1999	4861.950661
2000	4812.670046
2001	5004.954864
2002	5308.397858

Source: economics web institute till 1998 and http://devdata.worldbank.org/query/default.htm for year 1998 and the years after 1998.

Graph C.9 – Graphical illustration of Table C.9



Annual per capita GDP in Turkey shows a smoothly increasing pattern between 1969 and 2002. Starting with 3000$ in 1969, per capita GDP increased %100 till the end of 2002.

Appendix D: Derivation of Hatton's Migration Model

The model formulated by Hatton is based on the hypothesis developed by Sjaastad in 1962. Sjaastad, in his article of Costs and Returns of human migration, treated migration as an investment increasing the productivity of human resources, an investment which has costs and which also renders returns. In short, migration is seen as an investment in human capital.

There are two main reasons of using the model of migration developed by Hatton. First, it includes uncertainty of finding a job in destination country into migration decision. Second, it explicitly accounts for the formation of expectations about future income streams based on past information. These features have direct implications for the relative size of regression coefficients and for the dynamic structure of the model (Hatton, 1995; Fertig, 2001). Thus, the individual decision to migrate depends both on differences of the net present value of current income and differences of net present value of expected future income streams. The differences in expected utility streams of an individual i at home country, h, and abroad, f, in a given year, t, can be written as;

$$d_i = EU(Y_f) - EU(Y_h) + z_i \quad (1)$$

Where Y is income and z is the individual's non pecuniary utility difference between the home country and abroad and may also be taken to include the cost of migration. It is assumed that the individual's utility function is concave. Individuals with concave utility functions are risk averse which means that they prefer sure events to make their decisions. So, the expected utility function of an individual with concave utility function is in logarithmic form, u(y) = ln (y). Hence, the difference in

expected utility streams of an individual i at home country, h, and abroad, f, in a given year, t, can be illustrated in the following form;

$$d_i = E\ln(Y_f) - E\ln(Y_h) + z_i \tag{2}$$

Taylor series[72] is applied to expanding E ln (Y_g) around E Y_g, which gives;

$$E\ln(Y_f) = \ln(EY_f) + \frac{1}{1!(EY_f)}E(Y_f - EY_f) - \frac{1}{2!(EY_f)}E(Y_f - EY_f)^2 \tag{3}$$

Rearranging the last two term in (3) yields;

$$\frac{2(EY_f) * E(Y_f - EY_f)}{(EY_f) * 2(EY_f)} - \frac{1 * E(Y_f - EY_f)^2}{2(EY_f)^2} \tag{4}$$

Since, $E(Y_f - EY_f) = E(Y_f)$, we will have;

$$-\frac{E(Y_f - EY_f)^2}{2(EY_f)^2} = -\frac{\text{var}\, Y_f}{2(EY_f)^2} \tag{5}$$

Then, expected utility of an individual in foreign country can be interpreted as follows;

$$E\ln(Y_f) = \ln(EY_f) - \frac{\text{var}(Y_f)}{2(EY_f)^2} \tag{6}$$

In Hatton's model of migration Todaro's definition of expected income, which is the multiplication of wage rate, w, and the employment rate, e, EY = w*e, is used. The uncertainty about the expected income is related to the uncertainty about the employment rather than the uncertainty about the wage rate. The probability of employment is characterized following a binomial distribution with expected value of employment e and the variance of e(1-e). Thus the second term in (6) can be written as;

[72] Taylor series is used to expand a function y = *f*(x) around a given point x_0. This means transforming that function into a polynomial form, which implies the expression of the coefficients of the various terms in
form of their derivative values, such as $f'(x_0)$, $f''(x_0)$, $f'''(x_0)$, etc. – all evaluated at the point of expansion x_0.

$$-\frac{\text{var}(w_f * e_f)}{2(E(w_f * e_f))^2} \tag{7}$$

Rearranging (7);

$$-\frac{{w_f}^2 \text{var}(e_f)}{2{w_f}^2{e_f}^2} = -\frac{{w_f}^2 e_f(1-e_f)}{2{w_f}^2{e_f}^2} = -\frac{(1-e_f)}{2e_f} \cong \frac{1}{2}\ln(e_f) \tag{8}$$

Then, by using (8), (6) can be rewritten as follows, which denotes the expected utility of income in foreign country, f,;

$$E\ln(Y_f) = \ln(w_f) + \frac{3}{2}\ln(e_f) \tag{9}$$

and the expected utility in home country, h, can be written as follows by giving an extra weight on employment rate, which reflects uncertainty because going abroad involves more risk than staying at home, since an individual already had a job in home country but going abroad involves risk of finding a new job;

$$E\ln(Y_h) = \ln(w_h) + \gamma\frac{3}{2}\ln(e_h),\ \gamma < 1 \tag{10}$$

Substituting (9) and (10) into (2),

$$d_i = \ln(w_f) + \frac{3}{2}\ln(e_f) - \ln(w_h) + \gamma\frac{3}{2}\ln(e_h) + z_i \tag{11}$$

As it was mentioned before, migration depends not only on the differences of the net present value of current income but also the differences of net present value of expected future income streams. Even though the NPV of migration today is positive, potential migrant might choose to wait for one more year to migrate, if waiting for one more year increases the NPV of migration. The NPV of the difference in utility streams from t+1 on, viewed at time t is denoted by d_{it}^*. Hence, the total value of NPV of moving today is $d_{it}^* + d_{it}$. If $d_{it}^* > d_{it}^* + d_{it}$, the potential

migrant will choose to wait for one more year to migrate. So the probability of migration at time t (m_{it}=1) is determined by;

$$\Pr(m_{it}=1) = \Pr(d_{it}^{*} + d_{it} > 0 \cap d_{it} > 0) \quad (12)$$

Thus, the function of aggregate migration can be written as follows;

$$M_t = \beta(d_t^{*} + \alpha d_t) = \beta d_t^{*} + \beta\alpha d_t \quad (13)$$

where, M_t is the aggregate migration rate, β is the parameter that measures the impact of difference in expected utility streams on aggregate migration rate and α is the parameter that denotes the extra weight given to current condition. The parameter α is assumed to be larger than 1 since it reflects the extra weight. A potential migrants could choose to wait for one more year if d_{it}<0

It is assumed that expectations of future utility streams are formed by a geometric series of past values of *d*, such that,

$$d_t^{*} = \lambda d_t + \lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \lambda^4 d_{t-3} + \ldots\ldots\ldots\ldots \quad (14)$$

The parameter λ reflects the extra weight attached to the past d_{it} in the formation of current expectations about d_{it}, i.e. d_t^{*}. This would be equivalent to rational expectations if *d* follows an AR(1) process.

Using the Koyck transformation the aggregate migration rate could be illustrated as follows;

$$M_t = \beta(\lambda d_t + \lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \ldots\ldots\ldots + \alpha d_t) \quad (15)$$

Rearranging (15);

$$M_t = \beta(\lambda + \alpha) d_t + \beta(\lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \ldots\ldots\ldots) \quad (16)$$

Taking the first lag;

$$M_{t-1} = \beta(\lambda + \alpha)d_{t-1} + \beta(\lambda^2 d_{t-2} + \lambda^3 d_{t-3} + ...) \quad (17)$$

Multiplying both sides by λ, and adding $\beta\lambda^2 d_{t-1}$ into the second term of the left hand side of the equilibrium and also subtracting from the left had side of the equilibrium (17) can be rewritten as follows;

$$\lambda M_{t-1} = \lambda\beta(\lambda + \alpha)d_{t-1} + \beta(\lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \lambda^4 d_{t-3} + ...) - \beta\lambda^2 d_{t-1} \quad (18)$$

Rearranging the left hand side,

$$\lambda M_{t-1} = \lambda^2\beta d_{t-1} + \lambda\beta\alpha d_{t-1} + \beta(\lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \lambda^4 d_{t-3} + ...) - \beta\lambda^2 d_{t-1} \quad (19)$$

The first and the last terms of the left hand side of the equilibrium will cancel each out,

$$\lambda M_{t-1} = \lambda\beta\alpha d_{t-1} + \beta(\lambda^2 d_{t-1} + \lambda^3 d_{t-2} + \lambda^4 d_{t-3} + ...) \quad (20)$$

From (16) and (20);

$$M_t - M_{t-1} = \beta(\lambda + \alpha)d_t - \lambda\beta\alpha d_{t-1} \quad (21)$$

$$M_t = \beta(\lambda + \alpha)d_t - \lambda\beta\alpha d_{t-1} + \lambda M_{t-1} \quad (22)$$

Substituting $d_i = \ln(w_f) + \frac{3}{2}\ln(e_f) - \ln(w_h) + \gamma\frac{3}{2}\ln(e_h) + z_i$ into (22),

$$\begin{aligned} M_t = {} & \beta(\lambda + \alpha)\left[\ln(w_f)_t + \frac{3}{2}\ln(e_f)_t - \ln(w_h)_t - \gamma\frac{3}{2}\ln(e_h)_t + \bar{z}_t\right] - \\ & \lambda\beta\alpha\left[\ln(w_f)_{t-1} + \frac{3}{2}\ln(e_f)_{t-1} - \ln(w_h)_{t-1} - \gamma\frac{3}{2}\ln(e_h)_{t-1} + \overline{z_{t-1}}\right] + \lambda M_{t-1} \end{aligned} \quad (23)$$

where,

$$\bar{z}_t = \varepsilon_0 + \varepsilon_1 MST_t \quad (24)$$

$\bar{z}_t$ reflects the mean of z_i over all *i*, and is determined by the stock of previous immigrants migrated from home country, h, to foreign country, f. MST_t denotes the stock of immigrants migrated from home country, h, to the foreign country, f, at the

beginning of year t. MST_t decreases due to deaths and remigration and increases due to new immigrants. The rate of decrease in this stock is reflected by *1-δ*.

$$MST_t = \delta MST_{t-1} + M_{t-1} \tag{25}$$

By rearranging (23) by opening the brackets and applying a simple first order error correction mechanism (ECM), which is applied by taking the difference and first lag of the variables used in the estimation model, the following equation is obtained;

$$\begin{aligned}
\Delta M_t &= \beta(\lambda+\alpha)\Delta\ln(\frac{w_f}{w_h})_t + \beta(\lambda+\alpha)\frac{3}{2}\Delta\ln(e_f)_t \\
&- \gamma\beta(\lambda+\alpha)\frac{3}{2}\Delta\ln(e_h)_t - \beta(\lambda+\alpha)\ln(\frac{w_f}{w_h})_{t-1} - \beta(\lambda+\alpha)\frac{3}{2}\ln(e_f)_{t-1} \\
&- \gamma\beta(\lambda+\alpha)\frac{3}{2}\ln(e_h)_{t-1} + \beta(\lambda+\alpha)\bar{z}_t - \beta\lambda\alpha\ln(\frac{w_f}{w_h})_{t-1} \\
&- \beta\lambda\alpha\frac{3}{2}\ln(e_f)_{t-1} + \gamma\beta\alpha\frac{3}{2}\ln(e_h)_{t-1} - \beta\lambda\alpha\bar{z}_{t-1} + \lambda M_{t-1} - M_{t-1}
\end{aligned} \tag{26}$$

By rearranging (26),

$$\begin{aligned}
\Delta M_t &= \beta(\lambda+\alpha)\Delta\ln(\frac{w_f}{w_h})_t + \beta(\lambda+\alpha)\frac{3}{2}\Delta\ln(e_f)_t - \gamma\beta(\lambda+\alpha)\frac{3}{2}\Delta\ln(e_h)_t \\
&+ \beta(\lambda+\alpha-\lambda\alpha)\ln(\frac{w_f}{w_h})_{t-1} + \beta(\lambda+\alpha-\lambda\alpha)\frac{3}{2}\ln(e_f)_{t-1} \\
&- \gamma\beta(\lambda+\alpha-\lambda\alpha)\frac{3}{2}\ln(e_h)_{t-1} + \beta(\lambda+\alpha)\bar{z}_t \\
&- \beta\lambda\alpha\bar{z}_{t-1} + \lambda M_{t-1} - M_{t-1}
\end{aligned} \tag{27}$$

Taking the last four terms in (27), $\beta(\lambda+\alpha)\bar{z}_t - \beta\lambda\alpha\bar{z}_{t-1} + \lambda M_{t-1} - M_{t-1}$, and substituting (24) in the two of those four terms,

$$\beta(\lambda+\alpha)\varepsilon_0 + \beta(\lambda+\alpha)\varepsilon_1 MST_t - \beta\lambda\alpha\varepsilon_0 - \beta\lambda\alpha\varepsilon_1 MST_{t-1} \tag{28}$$

Substituting (25) in (28) and rearranging (28),

$$\beta(\lambda+\alpha-\lambda\alpha)\varepsilon_0 + \beta(\lambda+\alpha)\varepsilon_1 MST_t - \beta\lambda\alpha\varepsilon_1 MST_{t-1} \tag{29}$$

Since, $MST_t = \delta MST_{t-1} + M_{t-1}, MST_{t-1} = \frac{MST_t}{\delta} - \frac{M_{t-1}}{\delta}$, then rearranging and rewriting (29);

$$\beta(\lambda + \alpha - \lambda\alpha)\varepsilon_0 + \beta(\lambda + \alpha)\varepsilon_1 MST_t - \beta\lambda\alpha\varepsilon_1 \frac{MST_t}{\delta} + \beta\lambda\alpha\varepsilon_1 \frac{M_{t-1}}{\delta} \tag{30}$$

By rewriting those four terms;

$$\beta(\lambda + \alpha - \lambda\alpha)\varepsilon_0 + \beta(\lambda + \alpha)\varepsilon_1 MST_t - \beta\lambda\alpha\varepsilon_1 \frac{MST_t}{\delta} + \beta\lambda\alpha\varepsilon_1 \frac{M_{t-1}}{\delta} + \lambda M_{t-1} - M_{t-1},$$

and rearranging them,

$$\beta(\lambda + \alpha - \lambda\alpha)\varepsilon_0 + (\beta(\lambda + \alpha)\varepsilon_1 - \frac{\beta\lambda\alpha\varepsilon_1}{\delta})MTS_t + (\frac{\beta\lambda\alpha\varepsilon_1}{\delta} + \lambda - 1)M_{t-1} \tag{31}$$

Then substituting (31) into (27), it will be end up with;

$$\begin{aligned}
\Delta M_t &= \beta(\lambda + \alpha)\Delta \ln(\frac{w_f}{w_h})_t + \beta(\lambda + \alpha)\frac{3}{2}\Delta \ln(e_f)_t - \gamma\beta(\lambda + \alpha)\frac{3}{2}\Delta \ln(e_h)_t \\
&+ \beta(\lambda + \alpha - \lambda\alpha)\ln(\frac{w_f}{w_h})_{t-1} + \beta(\lambda + \alpha - \lambda\alpha)\frac{3}{2}\ln(e_f)_{t-1} \\
&- \gamma\beta(\lambda + \alpha - \lambda\alpha)\frac{3}{2}\ln(e_h)_{t-1} + \beta(\lambda + \alpha - \lambda\alpha)\varepsilon_0 \\
&+ (\beta(\lambda + \alpha)\varepsilon_1 - \frac{\beta\lambda\alpha\varepsilon_1}{\delta})MST_t + (\frac{\beta\lambda\alpha\varepsilon_1}{\delta} + \lambda - 1)M_{t-1}
\end{aligned} \tag{32}$$

There are three main features of this model. First of all, this model includes both the changes and levels of explanatory variables concerning the economic conditions both in home country and foreign country and included in estimation model separately, providing the possibility to distinguish the short-run and long-run of the migration decision. Estimating lagged dependent variable has important implications since waiting for one more year to migrate is rational for some potential migrants if $d_{it}^* > d_{it}^* + d_{it}$, so migration may fluctuate more closely with the current conditions. Second, all variables related to the economic conditions in foreign country have

positive signs, while all the variables related to the economic conditions in home country have negative signs. Employment rate is used to describe labor market conditions in both countries. There is an extra weight put on the coefficient of the employment rate in home country which is less than 1, so the coefficient of employment rate in foreign country is larger than in home country. Finally, the lagged net migration rate and the stock of migrants enter into equation, to estimate the network effects in the between the home and foreign countries. From a theoretical point of view the sign of these two explanatory variables are not determined since in previous studies different effects of those variables are estimated as discussed in the second chapter of the thesis. The lagged net migration rate is expected to have a negative impact on the change of the net migration rate as dependent variable in order to prevent net migration to foreign country to be ever increasing in the future (Fertig, 2001).

Setting all Δs equal to zero in the estimation model, (32), the long run steady state relationship is derived;

$$\begin{aligned}\overline{M} &= \frac{\beta(\alpha+\lambda-\lambda\alpha)}{\eta}(\ln(\frac{w_f}{w_h})+\frac{3}{2}\ln(e_f)-\frac{\gamma 3}{2}\ln(e_h)+\varepsilon_0) \\ &+\frac{\beta(\alpha+\lambda)\varepsilon_1-\varepsilon_1\lambda\beta\alpha/\delta}{\eta}MST\end{aligned} \tag{33}$$

where,

$$\eta = 1-\lambda-\frac{\lambda\beta\alpha}{\delta}\varepsilon_1 \tag{34}$$

Appendix E: Table Summarizing the Relationship between Turkey and the EU

Table E.1 Relationship between Turkey and the EU

30 June 2010	Negotiations are opened on chapter 12: Food Safety, Veterinary and Phytosanitary Policy
June 2008	Negotiations are opened on two chapters: Intellectual property and Company Law
February 2008	Adoption by the Council of a revised Accession Partnership for Turkey.
December 2007	Negotiations are opened on two chapters: Trans-European Networks and Consumer and health protection
June 2007	Negotiations are opened on two chapters: Financial Control and Statistics.
March 2007	Negotiations are opened on the chapter Enterprise and Industry
December 2006	Due to the Turkish failure to apply to Cyprus the Additional Protocol to the Ankara Agreement, the Council decides that eight relevant chapters will not be opened and no chapter will be provisionally closed until Turkey has fulfilled its commitment. The eight chapters are: Free Movement of Goods, Right of Establishment and Freedom to Provide Services, Financial Services, Agriculture and Rural Development, Fisheries, Transport Policy, Customs Union and External Relations.
June 2006	Negotiations are opened and closed on the chapter Science and Research
December 2005	Adoption by the Council of a revised Accession Partnership for Turkey.
October 2005	Starting of the screening process concerning the analytical examination of the acquis.
October 2005	Adoption by the Council of a Negotiating Framework setting out the principles governing the negotiations followed by the formal opening of Accession negotiations with Turkey.
June 2005	The Commission adopts a Communication on the civil-society dialogue between EU and Candidate countries. This communication sets out a general framework on how to create and reinforce links between civil society in the EU and candidate countries.
December 2004	The European Council defines the conditions for the opening of accession negotiations.
October 2004	The Commission presents its Recommendation on Turkey's Progress towards accession along with its paper Issues Arising

	from Turkey's Membership Perspective.
May 2003	Adoption by the Council of a revised Accession Partnership for Turkey.
March 2001	The Council adopts the Accession Partnership for Turkey.
December 1999	EU Helsinki Council recognises Turkey as an EU candidate country on an equal footing with other candidate countries.
December 1997	At the Luxembourg European Council, Turkey is declared eligible to become a member of the European Union.
1995	Turkey-EU Association Council finalises the agreement creating a customs union between Turkey and the EU.
April 1987	Turkey makes an application for full EEC membership.
November 1970	The Additional Protocol and the second financial protocol are signed in Brussels, preparing the ground for the establishment of the customs union.
September 1963	An association agreement (known as the Ankara Agreement) is signed, aiming at bringing Turkey into a Customs Union with the EEC and to eventual membership. A first financial protocol to the initial agreement is also signed.
September 1959	Turkey applies for associate membership of the European Economic Community (EEC).

Source: European Commission
http://ec.europa.eu/enlargement/candidate-countries/turkey/eu_turkey_relations_en.htm