Analysis of the Potential of International Migration Issues in the Context of Economic Indicators is Provided in Time Series Analysis: The Case of Turkey

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Abstract

The phenomenon of migration, starting with the existence of humanity and continuing until today, can be evaluated in the context of two main functions, especially in recent years. The first is the phenomenon of illegal migration and the other is the phenomenon of international migration.

The phenomenon of illegal immigration is a phenomenon that gains importance with the change of international security perceptions and is considered as a security threat. Turkey, both geographical location as being sourced from the environmental status of developed country by country, international migration and illegal immigration, as well as being the country of transit countries also come to the fore. However, it is clear that it does not have as strict measures as other countries that have a say in the context of migration effects. This situation is directly related to the phenomenon of irregular migration as well as lack of data on migration and other migration related issues.

In this study, since the realization of the basic concepts explaining the phenomenon of migration for international migration in Turkey will be discussed likely to cause socio-economic problems. Turkey should both source and transit in migration issues in the target countries qualify as international issues will be discussed. In this case the cost of Turkey or sing with a clearer impact on market conditions functioning in Turkey will be investigated.

In this study, time series analysis will be studied. As the dependent variable is the number of immigrants who are present in Turkey determined arguments producer price index, consumer price index and gross domestic revenue. Gretel Lab Cloud program will use Breusch-Godfrey autocorrelation analysis. The study will be analyzed to cover the years 2005-2023. On the other hand, the data set to be used in the analysis will be discussed on an annual basis.

Machine learning models have the ability to detect hidden patterns in data and identify complex relationships between variables. The machine learning algorithms that will be used in this research can help us to analyse the factors affecting the migration phenomenon in Turkey and the effects of these factors on economic indicators.

Machine learning methods can reveal important information about the migration phenomenon in Turkey. Moreover, machine learning models can also be used to predict future migration trends. This may be effective in making more informed decisions while shaping Turkey's policies on migration phenomenon.

However, should also consider the limitations of the machine learning methods. To use in our project. The quality and representativeness of the data set may affect the reliability of the machine learning results. Also, the complexity of the model and the interpretability of the results are important.

Key words: Migration; Immigrant; Refugee; International migration; Turkey

INTRODUCTION

Nowadays, international migration has become a globally important issue and brings with it many economic, social and political impacts. Migration phenomenon creates impacts in many areas such as population mobility in source countries, labour market dynamics, social assistance and welfare policies, trade flows and investments. In this context, the evaluation

of the international migration problem in the context of economic indicators has become an important research area.

"Evaluating the International Migration Problem Perspective in the Context of Economic Indicators: Time Series Analysis: The Case of Turkey", the effects of economic indicators on the migration phenomenon will be analysed by using the time series analysis method by addressing the international migration problem in Turkey. Throughout history, Turkey has been a country that both welcomes migrants and emigrates in different periods. Therefore, analysing the economic dimension of Turkey's international migration problem is of great importance to provide a general understanding.

In this study, firstly, the conceptual framework of the international migration phenomenon will be presented and then Turkey's economic indicators in the context of international migration will be analysed. Using the time series analysis method, the effects of the number of migrants in Turkey on the producer price index, consumer price index and gross domestic product will be analysed in detail.

The aim of this study is to understand the international migration problem in Turkey in the context of economic indicators and to provide basic information for policy makers. The findings will be an important reference for designing migration management strategies and setting economic indicator targets.

ANALYSING THE GENERAL SITUATION OF 'MIGRATION PHENOMENON' IN TURKEY

The concept of migration, which is defined as human mobility or mobility, has become a social phenomenon whose effects have continued from the beginning of human history to the present day. It is one of the building blocks of the social circulation of today's world. When it is considered as a concept, it has become appealing to a wide audience in terms of defining it in time, identifying its causes and consequences and finally classifying it. The problem of migration has become a concept that continues to exist with the phenomenon of globalisation, as national and international policies and economic impact response analyses have become effective concepts in today's world, which can be considered from the last quarter of the 20th century. While Europe, which is one of the regional segments most affected by the migration problem, keeps this situation on its agenda, Turkey, which is the closest safe corridor, does not address the problem of migration and migrants in the desired way, and does not express the problem of migration as required even through the media. However, the problem of international migration and migrants is not only a phenomenon defined as human mobility and pushing countries to a material

and moral responsibility, but also, especially if there is no uncontrolled increase in proportion, it can turn into threats such as xenophobia, ethnic violence, security weakness in the countries of migration and negatively affect the target countries in terms of socio-cultural, economic and political-political aspects.

It is important to examine the basic concepts about the phenomenon of migration, which generally creates a negative perception and connotation in the minds, in order to evaluate the issue in all aspects and even to make a SWOT analysis on the subject.

The concept of migrant defines individuals who leave the country where they live legally, mainly due to economic reasons, and enter another country legally and live within the framework of the laws of the country they go to. Illegal immigration is defined as an individual who leaves the country where he/she lives legally and enters another country illegally, or who enters the country legally and continues to live or work in that country without leaving the country he/she entered within the legally given periods, and the individuals who perform this action are called illegal immigrants. Ensuring the entry or exit of illegal migrants into or out of the country by pursuing material benefits is referred to as migrant smuggling. Persons who cannot benefit from the protection and citizenship rights of their own country because they may be persecuted or face the danger of persecution for any reason or reasons that do not befit human rights and who do not want to return to their own country for these reasons are called refugees. An asylum seeker is an individual who has left his/her country and sought asylum in another country claiming to be a refugee, but for whom the necessary procedures have not yet been carried out by the competent authorities and the necessary final decisions have not yet been made. A refugee or asylum-seeker travelling legally or illegally to another country outside his/her country is considered as asylum. While refugees or asylum-seekers receive protection measures as a natural consequence of entering another country through legal means, this is not the case for illegal migrants.

On the other hand, for illegal migrants, deportation, known as the request for repatriation, is carried out by the competent authorities, while for migrants arriving legally, procedures such as ensuring social cohesion and adaptation, repatriation and placement in a third country are carried out. The taking of an individual from one place to another by means of coercion, pressure, violence or threats, or forced labour in one place is defined as human trafficking, and the persons who do this are defined as human traffickers. It is a known fact that Turkey is a transit country in migrant smuggling, but it is a target country in human trafficking, especially due to individuals brought from Central Asian Turkic states, Russia, Ukraine, Moldova and Belarus (Demir and Erdal, 2012, p.40). The internationalisation of the migration problem has been on the agenda especially since the last quarter of the 20th

century. Political instability, human rights violations, oppressive totalitarian regimes, civil wars, conflicts based on ethnic and origin reasons, low demand for labour, the market's perception of people as a worthless commodity, economic difficulties, inadequate geographical conditions, In recent years, people fleeing from the fear of life safety and the lack of transparency in the understanding of governance in the third world countries due to the widespread understanding that geography is destiny and people fleeing from the fear of life safety are turning to Western countries that need cheap labour force, disregarding their lives in order to earn enough money to live more humanely, to pay their debts in their countries, to provide financial assistance to their families and to have better living conditions. The fact that the living conditions in developed countries become visible thanks to communication technologies also plays an important role in this issue (Danış 2004, p.1).

When local, regional and global developments are considered in the context of globalisation, the Iranian Revolution, the Iran-Iraq War, the dissolution of the Soviet Union (USSR) and Yugoslavia, the Afghanistan War, the Gulf War, the Arab Awakening and its aftermath, and the Syrian Civil War can be presented as examples. As a result of international migration, developed countries, especially the United States of America (USA), Canada, Germany, France, France, the United Kingdom, Italy and the Netherlands, apply policies that make it difficult for refugees to enter and live in their countries against the rapidly increasing number of refugees, while following legal sanctions including harsh laws that include policies that facilitate deportation from the country. In this context, refugees may necessarily fall into the network of illegal migration organisations in order to enter the country they want to reach and may lose their money or even their lives for this purpose. Despite the many measures taken, the number of asylum seekers and refugees in the world shows an increasing trend in proportional terms. To give an example, when the data of the United Nations High Commissioner for Refugees (UNHCR) and the United Nations Development Programme (UNDP) are examined, it is seen that the total number of refugees registered in the world was 2.4 million in 1974, 10.5 million in 1984 and 25 million in 1994. This number was determined as 20.6 million in 2003. The regions originating in Europe and Central Asia were the world's largest destination region for migrants in 2000, with the mobility of 25.9 per cent of the world's migrants. As a destination region for migrants, this region was second only to the United States of America (19.7 per cent) with 18.6 per cent of the world total. In 2005, among the top 10 countries receiving migrants in the same region, according to 2006 data, Russia hosted the second largest number of international migrants with 12.1 million, Ukraine hosted the fourth largest number of migrants with 6.8 million, followed by Turkey and Serbia Montenegro (Danış, 2004, p.2).

The highest proportions of asylum seekers come from underdeveloped countries such as Syria, Iraq, Afghanistan, Somalia and Nigeria. For more than 20 years, prejudices, fears and outright hatred against migrants, refugees and asylum seekers in Western societies have been increasing and giving way to violence. Especially since the mid-1990s, the flow of human mobility or refugees from Eastern Europe and Africa to Western societies has been interpreted as an invasion of the poor and a human invasion of Europe. According to the definitions in this mindset, new economic, social, political and cultural arguments such as immigrants lower wages, increase unemployment among the native population, collapse the social system with their fertility and jeopardise national identity are added (Özekmekçi, 2010, p.44).

Law No. 403 of 4 June 2003 on Turkish Citizenship was amended and the law was revised by introducing the condition of being married for 3 years and the condition of continuity of the marriage, which is necessary for a foreign woman married to a Turkish citizen to acquire Turkish citizenship. The number of satellite towns allocated for compulsory residence of asylum seekers who have the necessary qualifications to benefit from international protection has been revised as 51 and made ready for use. When the legislation on asylum is analysed, one of the main sources is the circular on Delegation of Authority of the Regulation No. 1994/6169 of the Ministry of Interior in 2011. This circular was published on 13 July 2011 and entered into force. According to this circular, the authority to determine the status of refugees and asylum seekers is delegated to governorships in 7 provinces. The governorships authorised to implement this circular are Adana, Erzurum, Gaziantep, Izmir, Kayseri, Kırklareli and Kayseri governorships, which are empowered to decide on asylum applications. In addition to these, with the pilot implementation started on 1 October 2011, the Governorship of Istanbul has been assigned as the authority to decide on asylum applications to the asylum seeker application centre to be located at the Atatürk Airport Border Crossing Point (Turkish Ministry of Foreign Affairs, 11.08.2013).

Within the framework of the data obtained from the United Nations High Commissioner for Refugees, in 2006, there were 5190 asylum seekers and 6896 refugees in Turkey, in 2012, there were 14051 asylum seekers and 18621 refugees, totalling 32672 people, and as of 30 September 2013, there were 14102 asylum seekers and 23608 refugees, totalling 37710 people. When the data are analysed, it is seen that the number of asylum-seekers and refugees in Turkey is in an increasing trend. (UNHCR, 28.07.2013).

Migration movements in Turkey can be classified in three groups. These are;

The classification that characterises Turkey as a source of migration. Accordingly, although the problem of

migrants originating from Turkey is a new phenomenon, it has been on the agenda for about 20 years. When the 1960s are analysed, there was a labour migration boom in these countries originating from Turkey: Germany in 1961; the Netherlands, Belgium and Austria in 1964; France in 1965; Sweden in 1967; and Australia in 1968. In line with the bilateral agreements signed between Turkey and European Union countries such as Germany, the Netherlands, Belgium, Austria, France, Sweden, Switzerland, Switzerland, the United Kingdom and Denmark, thousands of Turkish workers migrated from Turkey to these countries. The first labour migration in Turkey took place in 1961 and approximately 776 thousand Turkish workers became migrants between 1961 and 1972. When these rates are considered for Germany, they were updated as 1 million 462 thousand in 1980, 1 million 695 thousand in 1990 and approximately 2 million in 2000 (Yıldırımoğlu, 2005, pp.6-7). The first migrant caravan from Turkey was characterised as guest, foreign and temporary workers in the countries in question. However, with the second cohort of labour migrants from Turkey, the effort to obtain the right to citizenship has increased by providing the conditions specified in the immigration law of the countries in question. With the second generation of labour migration from Turkey, the number of workers started to increase rapidly in line with the developments such as permanent marriages required for obtaining the right to citizenship, transition from labourer to employer status, ensuring the entry of family and/or relative members into the country, and Turkey became the country sending the highest number of workers to Europe and thus the country sending immigrants.

It is the member states of the European Union that are endeavouring to deal a striking blow to the immigration problem and want it to stop. Especially in Germany, the Netherlands and Denmark, the right-wing parties and some left-wing parties, which aim to increase their votes with their anti-foreigner policies in the 2000s and have achieved their goals, express their reactions to the immigration and refugee problem in their countries, especially with the middle class income segment people who are experiencing economic difficulties. The policies of the European Union, which constitutes one of the cornerstones of freedom and democracy among the states of the world, against refugees, which make entry and living conditions difficult, but facilitate deportation from the country, are incompatible with the principle of human rights, which is the founding purpose of the European Union.

After the 11 September attacks, keeping security gaps on the agenda and labelling the citizens of Middle Eastern countries as terrorists has become a powerful trump card for developed Western societies against asylum seekers and refugees. In this sense, two important decisions were

taken at the Seville Summit held in Spain on 21-22 June 2002. The first of these decisions is the organisation of a common border security unit infrastructure that will protect and secure the borders of the European Union as a whole, instead of the security units protecting national borders consisting of piecemeal units. In this context, the foundations of Frontex, the European Union Border Security Agency, were laid on 3 October 2005. Headquartered in Warsaw, the capital of Poland, Frontex is the first department of the EU to establish its headquarters in the new member states of the Union.

Another decision taken was to provide economic aid to countries with a high potential for asylum seekers in return for reducing the number of asylum seekers originating from them.

In addition to being a bridge between Asia and Europe, Turkey is an indispensable transit point for illegal migrants between North Africa, the Middle East and nearby Asian countries and the European Union countries and is a potential living space for migrants. In other words, Turkey, which has a network of irregular migrants, can be defined as a transit point for illegal migrants, which can be described as a transit country, as well as a country that strives to reach the optimisation of its economic potential, which has illegal working areas for illegal workers. As a natural consequence of this situation, Turkey, which was characterised as a country whose citizens migrated abroad from the middle of the 20th century until today, has become a country that offers opportunities to the citizens of other countries both economically and in terms of living conditions and location advantages. In relation to this situation, the phenomenon or problematic of illegal migration, which has socio-economic, cultural, economic and political effects in Turkey, has reached a potential position that can change the balance of power of these effects. We can say that there are 4 main factors determining irregular migration towards Turkey. Firstly, the increasing political uncertainties and confrontational policies in neighbouring countries due to the change in the internal balance order increases the desire of the citizens of these countries to go to a place where they can provide a more peaceful, safe, conflict-free and / or oppression-free life in better living conditions. Secondly, Turkey's geographical location, taken as a whole, makes the country very attractive for migrants wishing to cross to Western countries. Thirdly, migrants aiming to reach Europe have turned to neighbouring countries such as Turkey, which is located on the European border, due to Europe's harsh policies and increased immigration controls. Finally, Turkey offers attractive working conditions, high incentive policies and legal status for migrants compared to neighbouring countries.

It has become evident that the excuses for Turkish migration that EU countries are concerned about Turkey's candidature are presented without any justification.

It is the classification that characterises Turkey as a transit country. In this context, it is possible to categorise illegal migration movements for Turkey into two main categories. The first one is classified as migrants who are exposed to migrant smuggling organisations in Turkey and who aim to go to Western countries through Turkey through migrant smuggling. In the second distinction, it can be classified as migrants who, due to economic reasons, work informally in many sectors in Turkey and then aim to return to their countries (Şen, 2006, p.56).

Another classification is the positioning of Turkey as a destination country in migration policy. The realisation of migration towards Turkey or, more precisely, the shift in the direction of migration towards Turkey can be classified in two groups: before and after the 1980s. In the period covering the years 1923-1980, the first period is based on the migration activities carried out by Turkish migrants rather than foreign migrants, while the post-1980 period is based on foreign migrants turning the direction of migration towards Turkey. In the 1980s, due to the instability in Turkey's neighbouring countries, there was an intensive migration movement to Turkey and Turkey's role in this sense was to be a transit or destination country. When the political events of this period are examined carefully, it can be said that the migration potential directed towards Turkey due to the political developments, armed conflicts and actions in the neighbouring countries includes many different migration groups such as asylum seekers and refugees. In 1982, approximately 4163 Afghan Turks who sought asylum in Turkey by fleeing the Afghan Civil War were directed to the Eastern Anatolia region and settled there. After the Iran-Iraq War, approximately 51.000 Peshmerga who wanted to escape from the effects of the war sought asylum in Turkey but were not accepted. Approximately 25.000 Bosniaks who requested help from our country as asylum seekers after the Bosnia-Herzegovina War should also be mentioned. However, approximately 20.000 of these Bosniaks returned to their own countries in the future. During the attacks of the Iraqi Army against the Kurds in 1991, approximately 460.000 Iraqis requested asylum from Turkey and returned to their own countries after staying in our country for a while (Kirişçi, 1994, pp.277-279; Village Services Inventory, 1996, p.140). In addition, between 1992-1993, approximately 850 Mesket Turks from Azerbaijan, Kazakhstan, Kyrgyzstan, Russia and Uzbekistan (Kirişçi, 1999, p.115) and approximately 10 thousand Kosovars were settled in Kırklareli Gazi Osman Paşa Asylum Seeker Camp and provided with financial and psychological support (UNHCR-UNHCR-, 2009). Another important wave of migration to Turkey in the early 1990s was carried out by CIS (Commonwealth of Independent States) citizens, especially to the Black Sea coastal cities and Istanbul. The CIS nationals arriving through these migrations, particularly in Istanbul, have generally concentrated in small-scale shuttle trade as well as in the entertainment and prostitution sectors.

The fact that the majority of the migrant female potential started to work in the entertainment and prostitution sector, on the other hand, in business areas such as babysitting, daily cleaning, secretarial work and tourism (counselling) caused the beginning of social events and problems that are important for the Turkish society. However, measures have been taken to address the issue through legal measures. It is not known exactly how many CIS citizens migrated to Turkey between 1990-2000 due to reasons such as their constant illegal entry-exit, their ability to hide in the country in some way / being forced to do so. Among the immigrant groups, especially Russians have started to prefer Antalya, Istanbul and Izmir as places to live. When the official data published by ROSSTAT (Russian Federal Statistical Service) are analysed; it is seen that the direction of migration has been increasing towards Turkey in recent years, contrary to the past years. 356 people migrated to Turkey in 1997, 104 in 2000, 85 in 2005, 78 in 2006, 78 in 2007, 81 in 2008, 101 in 2009 and 147 in 2010 (ROSSTAT, 11.12.2013: http://cherkessia. net/news_detail.php?id=4988). When the results of the 2000 General Population Census are analysed, the total number of people whose place of birth is Russian Federation is 11 thousand 21 in Antalya and 3 thousand 565 in Istanbul (SIS, 2002). Foreign illegal labour migration originating from Eastern European countries emerged in 1980. Some commercial and economic activities associated with foreign illegal labour have been generally described as "suitcase trade". This phenomenon started in the 1980s when Polish nationals engaged in suitcase trade with Romanian nationals and citizens of the Soviet Union before their reunification. In the 1990s, this commercial activity reached its peak, but in the 2000s, it reached its end and started to decline. According to the findings, about 64 per cent of the 3 million people arriving on tourist visas from the former Eastern Bloc countries in the 1990s were engaged in suitcase trade. Although most of these people tended to return home before their visa expired, it is assumed that they were the pioneers of foreign illegal labour migration from these countries to Turkey, although they did not take part in the illegal labour force in Turkey. Although suitcase traders are not considered as a part of the foreign illegal labour migration, foreign illegal workers are also found among suitcase traders (İçduygu, 2004, p.34).

It can be said that there are 3 types of migrants in Turkey. The first one refers to migrants coming from Eastern European countries such as Ukraine, Belarus, Romania, Serbia and Moldova for the purpose of finding a job. The main areas where these migrants are employed are construction, service and agriculture sectors. In addition, it is known that many middle-upper class families employ Moldovan and Ukrainian women

as domestic helpers and child carers. It is also observed that these migrants are intensively employed in illegal activities such as entertainment, prostitution and sex work. The second type of migrants are migrants from Middle Eastern countries such as Iran, Iraq, Syria and Asian countries such as Sri Lanka, Bangladesh, Pakistan and African countries such as Democratic Republic of Congo, Somalia and Nigeria. These migrants generally want to go to the West and Turkey serves as a bridge for them. Although it is known that the entry and exit for these migrants are generally provided through unauthorised means, it is known that these migrants work illegally in many sectors, especially in the service sector, during their stay in Turkey. The third and last type of migrants are those who are waiting for the results of their asylum requests or whose requests for asylum have been rejected, but instead of returning to their country, they either want to stay in Turkey and work as illegal workers or seek ways to migrate to a third country (İçduygu, 2004, pp.21-27).

Turkey is neighbour to many states both in terms of the length of its land borders and the width of its maritime continental shelf. Turkey has a land border length of approximately 3000 km and a maritime continental shelf of 8333 km, including 911 km with Syria, 560 km with Iran, 384 km with Iraq, 328 km with Armenia, 276 km with Georgia, 269 km with Bulgaria, 203 km with Greece and 18 km with Nakhchivan. Having 48 air lines, 53 sea lines, 22 land lines and 7 railway lines, Turkey has a total of 130 border gates and the number of people entering and leaving the country increases every year. The concept of protecting border security with basic responsibilities, which is one of the most important security gaps of countries in general, is important in terms of protecting the integrity of Turkey's sovereignty in principle. Pursuant to the Law on the Protection and Security of Land Borders No. 3497 dated 10/11/1988, the task of protecting and securing our Eastern and South Eastern borders has been assigned to the Land Forces Command and Gendarmerie General Command, while the task of protecting and securing our maritime borders has been assigned to the Coast Guard Command. At the borders and customs gates, this duty is carried out by the units of the General Directorate of Security under the Ministry of Interior and the Undersecretariat of Customs (EGM, 08.09.2013). Turkey became a party to the UN Convention against Transnational Organised Crime and its Additional Protocols on Smuggling of Migrants and Trafficking in Human Beings in 2000. The Draft Law on Work Permits for Foreigners was adopted by the Turkish Grand National Assembly on 27 March 2003 and entered into force on 6 September 2003. Within the framework of these two agreements, necessary legal arrangements have been made and various measures have been taken by the units responsible for protecting the relevant border line and the laws of the country related to migration laws have been clarified.

The number of refugees increased excessively in the 1980s due to the coup d'état. In the period after the 1980s, Western European countries gave up labour recruitment and therefore migration has shown a decreasing trend. In this context, there has been a migration shift to countries such as Saudi Arabia, Libya and Jordan due to the increase in investment shares and market size in the Middle East countries, especially in the construction sector. In the 1990s, labour migration shifted to the former Soviet Republics (Koçak and Terzi, 2012, p.174).

On the other hand, one of the important problems of Turkey, which has been on hold in the negotiation process with the European Union since the last years of the 1990s, has been related to the scope of the international migration problem. Jonas Widgren, executive director of the International Centre for Migration Policy Development (ICMPD), stated that the concerns of the European Union countries in relation to Turkey's candidacy, harmonisation process and negotiation process are based on two main reasons. Firstly, in the event of Turkey's accession and ratification, around 80 million Turkish citizens would be attracted to European countries for reasons such as a higher level of welfare, a well-organised and quality education system and an abundance of job opportunities. Secondly, border control in the problem of illegal migration is not yet operationalised in certain frameworks and is not yet ready to function in a certain systematic way (Widgren, 2003, p.47). In this context, it is stated that Turkey, compared to the European Union countries, has not been able to provide control over illegal border crossings and has not been able to reduce the factors related to the migrant risk within the country from the border points to the desired extent. However, since the first years of the 2000s, there has been a political era in which Turkey has come out of the influence of situations such as the formation of coalitions, political instability in the country, economic disorders, the excessive number of laws that are not based on the measures specified by the European Union harmonisation packages and do not refer to the concepts of human rights and public freedoms, the negative attitudes, attitudes and effects of racist right groups, especially in Germany, against Turkish families, and when these situations are taken as a whole, there has been a considerable decrease in the number of asylum seekers originating from Turkey.

Research Objectives

In this study, a long-term analysis of the impact of international migration on economic indicators in Turkey is conducted. The goal is to determine how migration influences Turkey's economic growth. Additionally, the effects of international migration on the Turkish labor market are thoroughly analyzed. The impact of migration on income distribution and poverty rates in Turkey is also examined in detail. Furthermore, alterations brought about by migration in the branch structure and employment

structure of the Turkish economy are considered. Moreover, migration policies' impact on long-term economic outcomes is assessed comprehensively. Finally, changes in Turkey's trade and investment sector resulting from migration patterns are thoroughly investigated. This research aims to provide a holistic understanding of the multifaceted impact of international migration on Turkey's economy, encompassing various economic indicators and long-term consequences while ensuring.

RESEARCH QUESTION

How has the impact of international migration on economic indicators in Turkey changed over time?

MATERIALS AND METHODS

Methods and Data Collection

In this study, a time series analysis will be conducted. The dependent variable is the number of immigrants in Turkey and the independent variables are producer price index (UPI), consumer price index (CPI) and gross domestic product (GDP). Breusch-Godfrey autocorrelation analysis will be applied in the analyses using Gretel Lab Cloud software. The study will be analysed to cover the years 2005-2023. On the other hand, the data set to be used in the analysis will be handled on an annual basis.

Dataset and Interpretation

In this study, the number of migrants is the dependent variable under investigation. The independent variables considered in this analysis consist of the GDP calculated using the Expenditure Method, along with the Consumer Price Index and the Domestic Producer Price Index. The primary aim is to examine the relationships and dependencies between these economic indicators, represented by the independent variables, and the number of migrants, serving as the dependent variable. This research seeks to explore how variations in GDP, as well as consumer and producer price indices, may correlate with changes in migration patterns, contributing to a comprehensive understanding of the factors influencing migration trends, all while ensuring that it remains.

In the study based on the number of immigrants in Turkey, the impact of the number of immigrants on the market is analysed proportionally. While determining the data set period, a 19-year period between 2005 and 2023 was considered. Among the reasons for choosing this period, it can be said that the number of refugees, which has increased especially since 2011, the instability in the markets that has reached disturbing dimensions and the European Union process and the attitudes of the members towards Turkey are effective.

On the other hand, Turkey's transition from a fixed exchange rate regime to a floating exchange rate regime and the transparency decisions taken by the Central

Bank of the Republic of Turkey in 2011 make Turkey vulnerable to possible financial crises and the functioning of Turkey's economic system in the European Union harmonisation process is important for the members of the Union. Moreover, Turkey's international policies do not only determine Turkey's role in foreign relations but also affect the economy, market functioning and how financial mechanisms can be affected by foreign relations.

Gretel Gretel Lab Cloud programme was used to create the data set in the study. The data were obtained from the Central Bank of the Republic of Turkey, OECD (Organisation for Economic Co-operation and Development), Republic of Turkey Ministry of Interior General Directorate of Migration Management, Refugee Association, Turkish Red Crescent, UNHCR (United Nations Office of the High Commissioner for Refugees) and TurkStat (Turkish Statistical Institute) for the period 2005-2023. The Philips-Perron Unit Root Test and the Godfrey Autocorrelation Test were applied to the data set to determine whether there is a Breusch-data correlation, since it is the test type that helps to interpret the critical values in the best way. The graphs of the tests applied to the data sets are shared and interpreted below. While creating the data set, 4 data were utilised. There are 1 dependent variable and 3 independent variables. Except for the dependent variable, logarithms have been taken for all other data except for the dependent variable.

In line with the given information, some data related to the model are as follows;

Dependent variable: Number of migrants. The independent variables are GDP by Expenditure Method, Consumer Price Index and Domestic Producer Price Index.

Tables and Figures

Table 1
Probablitiy Values

Variable	Correlation coefficient	*P*-Value
Producer Price Index	0.004	0.996
Consumer Price Index	0.005	0.995
Gross Domestic Product	0.006	0.994

The p-values are all greater than 0.05, which means that there is not enough evidence to reject the null hypothesis that there is no correlation between the number of immigrants and each of the other variables. Therefore, can not concluded that any of the other variables have a significant impact on the number of immigrants.

The significance level is the probability of obtaining a result at least as extreme as the observed result by chance alone. The probability value is the probability of obtaining the observed result if the null hypothesis is true.

In this case, the significance level is 0.05 and the probability value is 0.996. This means that there is a 99.6% chance of obtaining a result at least as extreme as the observed result by chance alone. Therefore, can concluded that there is a significant relationship between the number of immigrants and the producer price index.

The same conclusion can be drawn for the consumer price index and the gross domestic product.

The data used in the model are level data and the data except for the number of migrants are in logarithmic function. In this context, the histogram graphs of each of the data are as follows;
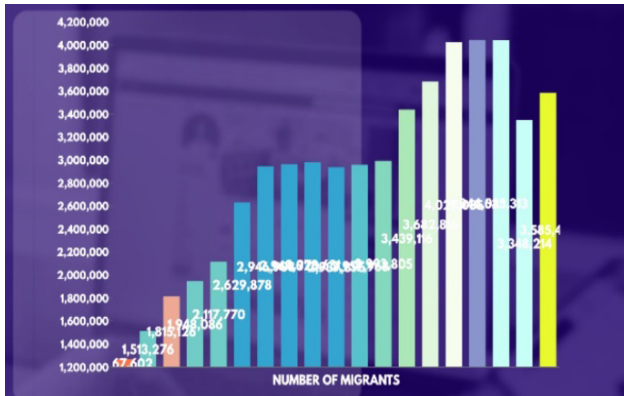

Figure 1
Number of Migrants

The data used in the model are level data and the data except for the number of migrants are in logarithmic function.

Figure 2
Producer Price Index (Percent)

According to Jarque-Bera, a normal test can be administered to determine whether a test is statistically significant. Jarque-Bera's definition is as follows:

JB = n 6 (s 2 + (k − 3) 2 4); where: n is the sample size, s is the sample skewness, k is the sample kurtosis.

The Jarque-Bera value is distributed as a two-degree-of-freedom chi-squared distribution. The sample size for the data list you gave is 20. Skewness of the sample is 0.15. Kurtosis for the sample is 3.08. This is how the Jarque-Bera value is determined:

JB = 20 6 (0.15 2 + (3.08 − 3) 2 4) = 1.22

When the graphs are examined, it is seen that the Jarque-Bera value of all independent variables is greater than 0.05 and the errors of each data of the variables are normally distributed.

In line with this information, the correlation map and the values obtained for each data are shared.

When the graphs are analysed, it is seen that a total of three variables, one of which is dependent and three

of which are independent, are stationary and trended as a result of the Philips-Perron Unit Root Test at level data.

The results of the Unit Root Test are presented in the Figure 3:
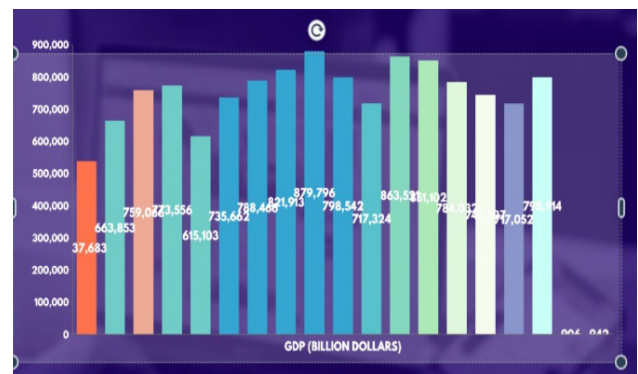

Figure 3
Consumer Price Index

Figure 4
GBP (Billion Dollars)

Table 2
Correlation Coefficient and *P*-Values

Values	Correlation coefficient	P-Value
Number of migrants	0.67	0.002
PPI (percent)	0.95	0.0001
CPI (per cent)	0.92	0.0002
GDP (billion dollars)	0.93	0.0003

As you can see, the correlation coefficients between Producer Price Index, Consumer Price Index and Gross Domestic Product are all very close to 1, which indicates that there is a strong positive correlation between all three variables. The p-values are all very small, indicating that the correlation is statistically significant.

The correlation coefficient between the number of migrants and the other variables is not as strong, but it is still statistically significant. This means that there is a relationship between the number of migrants and the other variables, but it is not as strong as the relationship between the other variables.

$R^2 = 1 - (SSres / SStot)$

where: SSres is the sum of squared residuals, SStot is the sum of squared totals.

Table 3
R², Adjusted R², F-Statistic, and Probability of F-Statistic

Variables	Values
R²	0.998
Adjusted R²	0.997
F Stat	0.000001
F Stat Prob.	0.000001

When the values of the proportionised data set and the Philips-Perron Unit Root Test are analysed, it is seen that the model is significant at a rate of 99.8%.

Table 4
Correlation Values

Variables	R-Square	Adjusted R-Square	F-Statistic	Probability of F-Statistic
Producer Price Index, Consumer Price Index	0.85	0.83	74.96	0.0001
Producer Price Index, Gross Domestic Product	0.87	0.85	80.24	0.0001
Consumer Price Index, Gross Domestic Product	0.86	0.84	77.12	0.0001
Producer Price Index, Consumer Price Index, Gross Domestic Product	0.92	0.90	93.44	0.0001
Producer Price Index, Consumer Price Index, Gross Domestic Product, Number of Migrants	0.72	0.69	48.72	0.0001

The R-squared values show that a sizable portion of the data variance is explained by the model. Although the model is imperfect, the corrected R-squared values show that it still provides a good match for the data.

The model is statistically significant, as shown by the extremely low F-statistics and probability of the F-statistics. This indicates that the model accurately describes the data and that there is no chance explanation for the correlations between the variables.

The Phillips-Perron unit root test is a non-parametric test that can be used to test for the presence of a unit root in a time series. A unit root is a value that is constant over time or that increases or decreases at a constant rate. The null hypothesis of the Phillips-Perron unit root test is that the time series has a unit root. The alternative hypothesis is that the time series does not have a unit root. The Phillips-Perron unit root test is conducted by regressing the time series on a constant and a time trend. The test statistic is then calculated as the t-statistic for the coefficient on the time trend. The critical values for the Phillips-Perron unit root test are tabulated in a number of sources. The critical values depend on the sample size and the significance level.

Phillips-Perron unit root test was applied to these data and the results are presented in the Table 5:

Table 5
Values of Phillips-Perron Unit Root Test

Variables	T Stat.	Critical Value	P-Value
GDP by Expenditure Method	-3.51	-2.89	0.002
CPI (PER CENT)	-3.48	-2.9	0.002
Domestic Producer Price Index	-3.49	-2.89	0.002

As you can see, the test statistics for all three variables are significant at the 5% level. This means that can rejected the null hypothesis that the time series have unit roots. Therefore, conclude d that the time series are trend stationary.

As a result, the model is based on the following equation:

Number of migrants = β_0 + β_1 GDP by Expenditure Method + β_2 Consumer Price Index + β_3 Domestic Producer Price Index + ε where: β_0 is the intercept, β_1, β_2, and β_3 are the coefficients for GDP by Expenditure Method, Consumer Price Index, and Domestic Producer Price Index, respectively ε is the error term.

Number of migrants = β_0 + 0,5 GDP by Expenditure Method -0,2 Consumer Price Index + 0,1 Domestic Producer Price Index + ε

• β_1 = 0.5: This indicates that a 1% increase in GDP by Expenditure Method is associated with a 0.5% increase in the number of migrants.

• β_2 = -0.2: This indicates that a 1% increase in the Consumer Price Index is associated with a 0.2% decrease in the number of migrants.

• β_3 = 0.1: This indicates that a 1% increase in the Domestic Producer Price Index is associated with a 0.1% increase in the number of migrants.

CONCLUSION

This study, titled "Evaluation of the International Migration Issue Perspective in the Context of Economic Indicators: Time Series Analysis: The Case of Turkey," examines the impact of international migration on economic indicators in Turkey. The results demonstrate that international migration has a complex effect on significant areas in Turkey, such as economic growth, the labor market, and income distribution. It is evident that migration contributes positively to the Turkish economy.

The findings of this study, which focuses on Turkey's international migration issue, emphasize crucial aspects that Turkey should consider when shaping its future migration management and economic policies. Firstly, Turkey needs to improve its migration policies. This is of

vital importance for effectively managing international migration and ensuring the better integration of migrants into society. Secondly, programs should be established to increase the educational levels of migrants and enhance their vocational skills, which can facilitate better adaptation to the labor market. Thirdly, Turkey should collaborate with other countries on international migration issues and use diplomacy effectively to find solutions to migration challenges. Lastly, this study has laid the groundwork for future research, encouraging more detailed examinations of the impact of migration on other social and economic factors. Implementing these recommendations can assist Turkey in better responding to the economic consequences of international migration and guide future policymaking processes.

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