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# The Effect of Unqualified Labor Migration on Economic Growth: The Case of OECD Countries

## Niteliksiz İşgücü Göçünün Ekonomik Büyümeye Etkisi: OECD Ülkeleri Örneği

Gökhan ASYA [a] iD,  Adem AKTAŞ [b] iD

| ABSTRACT | ÖZ |
|---|---|
| In an age where global competition is shaping from labour to knowledge, information's importance is increasing daily. Countries that adapt to this rise are to adapt their production factors to this change fully. However, It is a matter of curiosity how the unqualified labour migration from countries that have not yet adapted to the information age and whose development has not reached the desired level affects host country economies. | Küresel rekabetin seyrinin emekten bilgiye doğru şekillendiği cağımızda bilginin önemi her geçen gün artarak yükselmektedir. Bu yükselişe uyum sağlayan ülkeler kendi üretim faktörlerini bütünüyle bu değişime uyarlama gayreti içindedirler. Bununla birlikte, bilgi çağına henüz kendini uyarlayamamış, gelişimini istenilen düzeye ulaştıramamış, ülkelerden alınan niteliksiz iş gücü göçü ev sahibi ülke ekonomilerini nasıl etkilediği merak konusudur. |
| İn this study, the effect of unqualified labour migration on the economic growth of OECD countries, which are aware of the information economy and receive immigration from abroad, is analyzed. Panel data analysis was performed by using annual dates of 31 OECD countries between 2000 and 2015. Real GDP is used as dependent variable in the established model whilst unskilled labour migration employment, human capital index and population are selected as independent variables. | Bu çalışmada, bilgi ekonomisinin bilincinde olan ve dışardan göç alan OECD ülkelerinin almış olduğu niteliksiz işgücü göçünün ekonomik büyümeye etkisi incelenmiştir. 31 OECD ülkesinin 2000-2015 dönemine ait yıllık verileri kullanılarak panel veri analizi yapılmıştır. Kurulan modelde bağımlı değişken olarak Reel GSYİH, bağımsız değişken olarak ise niteliksiz işgücü göçü istihdamı, beşerî sermaye endeksi ve nüfus seçilmiştir. |
| The findings conclude that there is a positive and significant relationship between unskilled labour migration employment and real GDP.in addition, there is also a significant and positive relationship between human capital and real GDP. However, it has been found that the impact of human capital on Real GDP is greater | Analiz bulguları, niteliksiz işgücü göçü istihdamı ile reel GSYİH arasında pozitif ve anlamlı bir ilişki olduğunu göstermiştir. Bununla birlikte beşerî sermaye ve reel GSYİH arasında da anlamlı ve pozitif bir ilişkinin varlığı gözlemlenmiştir. Fakat beşerî sermayenin Reel GSYİH üzerindeki etkisinin niteliksiz iş gücü göçü istihdamına kıyasen daha büyük olduğu tespit edilmiştir. |
| **Keywords** | **Anahtar Kelimeler** |
| Information Economy, Human Capital, Economic Growth, Unskilled Labor Migration | Bilgi Ekonomisi, Beşerî Sermaye, Ekonomik Büyüme, Niteliksiz İşgücü Göçü, |

[a] Öğretim Görevlisi, Muş Alparslan Üniversitesi, Malazgirt Meslek Yüksekokulu, Finans, Bankacılık ve Sigortacılık Bölümü. Email: g.asya@alparslan.edu.tr
*(Sorumlu Yazar/Corresponding author)*
[b] Dr. Öğretim Üyesi, Muş Alparslan Üniversitesi, Malazgirt Meslek Yüksekokulu, Finans, Bankacılık ve Sigortacılık Bölümü. Email: a.aktas@alparslan.edu.tr.

## 1. Introduction

Increasing the output of a country is directly related to the effective use of production factors. Labor, which has an important place among the factors of production, has increased its quality level with knowledge economies. Information communication technologies, which have been developing rapidly since the 1980s, have penetrated every field at every stage of life. One of the important effects in the field of production is the increase in the demand for skilled labor. Developed countries can bring the necessary qualifications to their workforce potential with their education systems and developed production areas. However, countries that have not yet reached the desired level of development have lagged in increasing the quality of their labor force. With the increasing mobilization of labor with globalization, the difference between the development levels of the countries becomes more evident.

Development differences between countries also manifest themselves in human capital. People in countries that have not yet completed their development, migrate due to necessary reasons such as war, famine and for a more prosperous life. Significant human capital disparity exists between immigrants and citizens of host countries. As the disparity increases, conflicts and costs increase in both social life and business life. It is a question of whether this situation benefits or harms the economies of the country.

Keeping migration and its effects under control is one of the important goals of economic policies. Migration, which is an interdisciplinary phenomenon, is a very dynamic factor that is both affected by and influenced by socio-economic, cultural and political changes in the national and global arena. Factors affecting labor migration are classified under four titles as attractive factors, driving factors, regulations and costs in the study conducted by Molle and Mourik in 1988. Broad job opportunities, high wages, security of life and property in receiving countries are examples of attractive factors. Low wages, civil war, inequality of opportunity, high unemployment and despotic governments in the countries of immigration are among the driving factors that force people to migrate. As an example of regulations, we often encounter immigrant rights and responsibilities, procedures for the immigration process determined by the legal framework. Costs, on the other hand, may include moving, housing, socio-cultural conflicts, economic obligations encountered in all adaptation processes. (Smith, 2003: 269).

Based on these four main topics that affect migration, the scope of the study is limited to the effect of unskilled work migration on the economic growth of the receiving country. The reason for limiting the scope to unskilled work migration is to examine whether unskilled work migration contributes to economic growth, despite the preference of more qualified workforce with the expanding knowledge economy as the new economic model.

Traditional production methods, which meet the needs of humanity for centuries, are transforming into production methods based on mental power instead of human muscle power with industrialization. Especially since the middle of the 19th century, traditional production methods have not been sufficient to meet the growth demands of countries. Countries that want to grow more have invested more in areas that increase the quality of their workforce. Thus, human capital has started to play a more active role between production factors and development criteria. (Karabulut ve Emsen,1997)

With globalization, capital has gained a more mobile structure than labor. Local economies were unable to protect labor against the imperial structures of multinational corporations and

labor became weaker. Labor, which has become less valuable against capital, has been further limited in terms of rights and freedoms and has lost many of its guarantees, even in informal employment. However, this situation is different for qualified workforce. Qualified workforce is acting freer and it has begun to be considered as one of the important production factors needed by information societies. Due to their intelligence, education, knowledge, skills, experience and similar qualities, they are much more popular in developed economies than unqualified ones. (Yalınpala, 2002: 287-289) In the face of this situation, even skilled labor migration creates certain costs for the economy of the receiving country. While this is the case for skilled labor migration, the outcome for countries receiving unskilled labor migration has been deemed worthy of investigation.

This class of immigrants is mostly included in the qualified labor class and their contribution to the economies of the countries they take refuge in is positive. They negatively affect the countries they leave, depriving them of the most productive segment of human capital. (Başel, 2006: 315)

Robert Emerson Lucas (1988), one of the representatives of neoclassical economic thought, known for his contributions to the endogenous growth model, in his work titled "On The Mechanics of Economic Development", developed the first endogenous growth model that examines the relationship between economic growth and human capital. According to Lucas, the main determinant of economic growth is human capital. (Lucas, 1988: 23)

Knowledge Economy is the system in which all activities in the economy are carried out on the basis of knowledge and these activities are integrated with information. It has been observed that the economies of the country have gradually transformed into knowledge economies since the 1980s. Along with knowledge economies, production models of human physical labor are replaced by production models where knowledge-intensive labor based on human knowledge is used. Thus, the concept of human capital has increased its influence in economies day by day.

Human capital, which refers to human power that can be developed through knowledge, experience and ability, defines the concepts of growth and development with a more modern perspective. Human capital, whose importance has increased with the internal growth models established in the 1980's, expresses that especially education will contribute to growth and development by qualifying labor. Human capital, where knowledge is the main nutritional source, confirms the argument that it is the main determinant of growth with its contributions to the development of technology, opening new employment areas and ultimately increasing productivity (Söylemez, 2020: 177).

Education, which is the dominant criterion of human capital, is recognized as an important feature that reduces the risk of unemployment. Acting with this acceptance, OECD countries use education as an important tool in combating unemployment. (Kayak, 1997: 35). This awareness expresses the importance of human capital in OECD Countries. In this way, it was thought that the impact of uneducated or low-educated labor migration could be analyzed better. They are also the countries with a high rate of immigrants in employment. For these reasons, the data of OECD countries were used in the study.

The place where the difference in knowledge level of immigrant unskilled labor and host country citizens can be measured most accurately is considered as the effect of unskilled

immigrant labor on the economic growth of OECD countries which better understand the value of human capital. In the study, human capital index is included in the model as an independent variable, with the belief that the most accurate factor that can be compared to the effect of unskilled labor migration on economic growth. The reason why the econometric analysis of the study is limited to OECD Countries is that these countries are adapted to the knowledge economy and are generally the countries that receive labor migration. The reason why not all OECD Countries were included in the study is that the membership of 31 selected countries continued during 2000-2015 and they recorded labor migration data by education level.

The impact of migration is a very comprehensive subject that varies according to the type of migration, the state of the emigrant and receiving country, and the study is limited to the effects of unskilled labor migration on host countries' economies. Since the effect to be measured is about the level of knowledge, human capital index has been chosen as the independent variable. Also as a dependent variable GDP and the model established from unskilled labor migration employment, human capital index and population independent variables were tested with panel data analysis method.

Conceptual framework for the variables in the established model covers the concepts of economic growth, immigration, unskilled labor, knowledge economy and human capital, and the related concepts will be briefly discussed. Migration is an expectation for a future full of hopes for a dignified life with more prosperous economic conditions and security of property and life.

## 2. Literature

In the literature review, "labor migration and economic growth" or "human capital and economic growth" studies were found. However, based on the opinion that the effects of unskilled labor migration and human capital on growth together have not been examined, a contribution has been made to the literature.

The studies on the subject in Turkey and in the world, migration and economic growth and human capital and economic growth studies and their findings are listed below chronologically.

In his study (2001), Borjas examined the effects of labor migration on the economy in terms of receiving-emigration countries. The conclusion reached in the study revealed the short-term and static effects of international labor migration on the labor market and contributed to the literature with the view that there are long-term and dynamic effects. Moreover, he argued that the economic output level of the receiving countries increased.

Bashier and Siam (2014) examined the effects of migrant workers on economic growth with the FMOLS approach based on the period 1980-2012 on Jordan. According to the empirical findings obtained, real capital and domestic labor force variables affect economic growth positively and significantly. However, the impact of migrant workers on economic growth was found to be positive and insignificant.

Bove and Elia (2017) created a heterogeneity index based on the data of immigrants living and employed outside their country of birth during the period 1960-2010, and ultimately it was observed that this index had a significant positive effect on real GDP per capita and that the impact of diversity was more consistent in developing countries.

Škuflić & Vučković (2018) examines how the unemployment rates of the emigrant countries are affected by migration with the panel data analysis they conducted for the period 2004-2015 on nine EU countries. The findings show that there was an increase in the unemployment rate of the emigrating country.

Borjas (2019) analyzed the effect of migration on economic growth theoretically through the Standard Slow model and claimed that migration would have more beneficial effects on growth if it was composed of highly skilled workers.

Using the Durbin Spatial Model (DSM), Mihi-Ramirez et al. (2020) examined how economic growth was affected by labor productivity and employment rates of domestic and foreign workers and their level of success with data from 13 European countries for the period 2000-2017. The results obtained show that highly skilled local workers have a positive effect on economic growth, and that the contribution of labor force participation to the growth rate of countries is significant.

Esposito at al. (2020), evaluated the impact of immigration on domestic unemployment in the short and long term with a panel error correction model for a sample of 15 EU countries between 1997 and 2016, and found that migration reduced unemployment rates in both the long and short term.

It is contented with the studies on labor migration and economic growth, and the rest of the area reserved for the literature includes studies on the relationship between human capital and economic growth.

Einarsson and Marquis (1998) examined the impact of human capital on the US economy through the Lucas model. It has been observed that human capital grows more slowly than physical capital. In the study, the data of the period 1950-1989 were used and it was concluded that the effect of human capital on economic growth is less than physical capital.

Brempong and Wilson (2003) examined the relationship between human capital and economic growth for Sub-Saharan Africa for the period 1975-1994. The model established in the panel data analysis was obtained from the data on life expectancy at birth, per capita income and health expenditures. As a result, a positive relationship has been determined between human capital and economic growth.

Gümüş (2005) likewise explores the relationship between economic development and human capital. With the Cobb-Douglas production function, the current state of health, education and immigration and the development of human capital investments for the period 1960-2002 are analyzed. According to the vector error correction model findings, a positive relationship was found between the human capital index and economic growth.

Çakmak and Gümüş (2005) analyzed the relationship between human capital and economic growth with the method of cointegration analysis. In the study covering the period of 1960 and 2002, it was concluded that there is a long-term, positive relationship between human capital and economic growth. It is concluded that physical capital affects economic growth more than human capital.

Acaroglu (2005) in his study of Turkey's provinces, has examined the effect of education and wage rate of GDP per person. The findings of the study covering 19 provinces are that the

biggest influence of GNP is human capital. Based on this result, the effect of education on human capital is emphasized.

Çetin and Ecevit (2010) discuss the relationship between health expenditures, one of the human capital indicators, and economic growth. Panel regression analysis was performed with the data of the determined 15 OECD countries for the period 1990-2006. As a result of the analysis, the relationship between economic growth and health expenditures was found to be meaningless. A significant and positive relationship was found between economic growth and the variables of employment, imports, exports and labor productivity.

Koç (2010) analyzed the relationship between economic growth and human capital with the help of cross-section analysis method with the 2012 data of some of the EU member countries he selected. In the analysis made with education and life expectancy data at birth as human capital criteria, a significant and positive relationship was found between human capital and economic growth.

Similarly, Hartwig (2012) examined the relationship between human capital and economic growth on 18 OECD countries with the Granger causality test. While real GDP per capita is taken as the dependent variable, independent variables are composed of secondary enrollment rate, population growth rate and gross capital formation. As a result of the study based on 1970-2005, it was determined that human capital does not affect economic growth internally, and at the same time, a statistically significant, negative and long-term interaction has been determined.

Çetinkaya (2013) evaluated the relationship between human capital and economic growth through theoretical and empirical studies conducted after 1960. In his evaluation, he concluded that there is a positive relationship between human capital and economic growth. He emphasized that the human factor took place in the economy after the 1970s. He stated that the importance of human power increased with the transition to information societies after the 1980s, when globalization gained momentum.

Iqbal and Daly (2014) analyzed the relationship between economic growth and human capital with a dynamic panel data analysis on 52 middle-income countries. GDP per capita was modeled as dependent variable, and human development index of UNDP, gross capital formation and corruption index were modeled with the annual data of 1986-2010 period. It was concluded that health is more effective than education in capital formation on GDP per capita.

Can (2015) examined the human capital-growth relationship through the panel data analysis fixed and random effects method from the data on public expenditures allocated to primary, secondary and higher education in OECD countries between 1985-2014 and the number of students enrolled in the same education levels. The findings were interpreted as a significant and positive relationship between public spending on education at secondary and primary education levels and growth, as well as a significant and positive relationship between the number of students enrolled in higher education and growth.

Zhumabekova (2016) analyzed the effect of human capital on the growth of Turkmenistan, Tajikistan, Kazakhstan, Uzbekistan and Kyrgyzstan between the periods of 1991-2014. In the model where GDP is considered as the dependent variable, it has preferred the ratio of education expenditures and the rate of health expenditures as independent variables. Panel FMOLS, Panel Johansen-Fisher and Kao cointegration tests were used as econometric

methods. As a result, it has been determined that there is a strong relationship between human capital and economic growth in the long run for selected countries.

Elma (2016) examined the relationship between human capital and economic growth for the short and long term with cointegration and causality analysis. It is based on the schooling rate and the ratio of undergraduate graduates to the total population as an indicator of human capital. In the analysis, it was concluded that the ratio of schooling and the ratio of undergraduate graduates to the total population do not significantly affect economic growth in the long term, but the ratio of undergraduate graduates to the total population in the short term affects economic growth.

Teixeria and Queiros (2016) analyzed the relationship between human capital and growth in OECD countries for the period 1990-2011 with the method of dynamic panel data analysis. The variable used in the analysis is the GDP per capita, the number of years of schooling of the population aged 25 and over, the share of high-level industries in human capital, the share of high-level industries in total employment, the rate of investment, the population growth rate, the public consumption in GDP, the civil liberties index and the political rights are used as index. From the findings, it is concluded that economic growth in sectors with high level of knowledge is significantly affected by human capital.

Kucak (2017) deals with the relationship between health expenditures and economic growth, which are among the human capital indicators for the 2008-2012 periods, on OECD countries. Findings reached with the panel data analysis method, it was determined that there is a positive relationship between health expenditures and economic growth.

Yılmaz (2017), the study covers the period from 1983 to 2013 for Turkey, relationship between economic growth indicators and human capital indicators of health, education and brain drain has examined. In time series analysis, Johansen-Juselius cointegration and Granger causality tests are used. According to the findings of cointegration, a long-term relationship was found between human capital and economic growth, whilst the Granger causality test concluded that there is no causality relationship from human capital to economic growth, as well as from economic growth to human capital.

Gülen (2018) applied panel data analysis to analyze the relationship between employed human capital and economic growth for the period 1999-2014 for 28 OECD countries. While the ratio of employment with medium and high education level to total employment and the ratio of employment with secondary education to total employment are used as human capital criteria, real GDP data are used as an indicator of economic growth. As a result of the analysis, it was concluded that the relationship between employed human capital and economic growth for developed countries is meaningless in the short run, and this relationship is significant in the long run.

## 3. Data Set And Econometric Method

Panel data set was created using annual data of 31 OECD countries for the period 2000-2015. These countries are; USA, Germany, Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Netherlands, Canada, Chile, Greece, Hungary, Iceland, Ireland, Israel, Italy, Luxembourg, Mexico, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the UK were chosen as. It was limited to the years 2000-2015 to examine the increasing migration mobility due to the increase in civil wars in the Middle

East countries. The reason for choosing these countries is that they are OECD members for the period 2000-2015, and low-educated migrant employment data are kept. In addition, it was thought that the effect of unqualified labor migration and human capital on economic growth will be observed more accurately due to their adaptation to the knowledge economy. So as a dependent variable GDP and the model established from unskilled labor migration employment, human capital index and population independent variables were tested with panel data analysis method.

The model consists of one dependent and three independent variables, and the variables and their sources are given in the table below.

**Table 1**: Defining Variables

| Variables | Definition | Source |
|---|---|---|
| **lnrgdpo** | Real GDP (Dependent variable) (million US $ logarithmic transformation according to 2011 data) | World Bank |
| **lnlowedu** | Low Educated Immigrant Employment rate (Logarithmic transformation of low educated migrant employment rates between 25-64 years old as defined by the International Labor Organization) | OECD |
| **lnhc** | Human capital index, (logarithmic transformation of schooling rate) | Penn World Table, version 10.0 |
| **lnpop** | Population (Million, logarithmic transformation) | World Bank |

Unitary differences between the used variables are eliminated by taking the logarithmic transformation. The model is thus analyzed over a full logarithmic equation.

The equation for the panel data model;

$$log(rgdpo)_{it} = \alpha_{it} + \beta_{0it}Log(lowedu)_{0it} + \beta_{1it}Log(hc)_{1it} + \beta_{2it}Log(pop)_{2it} + \varepsilon_{it}$$

## 4. Empirical Findings

First, the existence of unit and / or time effects in the model will be tested. In this direction, it was decided to test whether the effect of unit and time coexist or not, and it was preferred to use the Likelihood Ratio Test (LR Test) for this.

**Table 2:** Testing Unit Effect: Likelihood Ratio Test

| Test Statistics | Probability Value |
|---|---|
| **1052.55** | 0.0000 |

$H_0$: $\mu_i=0$

$H_1$: $\mu_i \neq 0$

According to the Likelihood Ratio Test results, the H0 basic hypothesis, which assumes that the unit effect is 0, was rejected at the 95% confidence level because the probability value was less than 0.05, and it was found that there was a unit effect in the model.

**Table 3**: Testing Time Effect: Likelihood Ratio Test

| Test Statistics | Probability Value |
|---|---|

| 0.00 | 1.0000 |
|---|---|

$H_0$: $X_t=0$

$H_1$: $X_t \neq 0$

According to the Likelihood Ratio Test results, the H0 basic hypothesis, which assumes that the time effect is 0, could not be rejected at the 95% confidence level because the probability value was greater than 0.05. Thus, it was concluded that there was no time effect in the model.

As a result of the Likelihood Ratio (LR) tests applied, there is no time effect in the model; but it is determined that there is a one-way model with unit effect.

Hausman Test was conducted to understand whether the unit effect determined in the model is constant or random, that is, whether the independent variables are correlated with the existing unit effect.

**Table 4:** Model Selection: Hausman Test

| Test Statistics | Probability Value |
|---|---|
| **15.01** | 0.0018 |

H0: The Random Effects Model is Effective.

H1: Fixed Effects Model Is Consistent.

According to the result of the Hausman Test, the H0 basic hypothesis that the Random Effects Model is Effective was rejected. Accordingly, the fixed effects model is consistent for the mentioned model. This result indicates that the units, ie countries, were not withdrawn from the main mass by chance, but were selected according to a certain measure, and that the economic structures of the countries included in the model were homogeneous. Thus, it has been proven that the model to be used in the study is the One-Way Fixed Effects Model.

In panel data models, it is assumed that the error term is constant variance within and according to units (homoskedastic), periodic and spatially uncorrelated (no autocorrelation) and inter-unit correlation (Tatoğlu, 2013, p.199). Based on this opinion, the existence of any deviations from the said assumptions should be tested and, if necessary, these deviations should be corrected. The deviations from the hypothesis were first tested with the Heteroscedasticity Modified Wald Test.

**Table 5**: Testing Heteroscedasticity; Modified Wald Test

| Test Statistics | Probability Value |
|---|---|
| **11000.80** | 0.0000 |

H0: Heteroscedasticity None.

H1: There is a heteroscedasticity.

According to the modified Wald Test result, the H0 hypothesis that there is no Heteroscedasticity was rejected at 95% confidence interval.

**Table 6**: Testing Autocorrelation: Bhargava, Franzini and Narendranathan's Durbin-Watson and Baltagi-Wu's Local Best Invariant Tests

| Test Name | Test Statistics | Probability Value |
|---|---|---|
| **Bhargava, Franzini ve Narendranathan'ın Durbin-Watson Test** | 0.33 | - |
| **Baltagi-Wu's Local Best Invariant Tests** | 0.57 | - |

H0: Autocorrelation None.

H1: Autocorrelation Is Available.

Test statistics are given in Table 6, but probability values are not given. Although critical values are not given in the literature, if the test statistics are less than 2, it is assumed that autocorrelation is important (Tatoğlu, 2013: 226). It is seen that the test statistics in Table 6 converge to 0. As it can be understood, the H0 basic hypothesis, which is based on the assumption that autocorrelation does not exist, is rejected. In other words, it has been determined that there is an autocorrelation problem in mole.

**Table 7:** Testing for Correlation Between Units: Frees Test

| Test Statistics | Probability Value |
|---|---|
| **14.203** | 0.0000 |

H0: No Correlation Between Units.

H1: There is Correlation Between Units.

Table 7 contains the critical values and test statistics obtained from the Frees Q distribution. The H0 basic hypothesis based on the assumption that there is no correlation between units is rejected since the test statistic is greater than the probability value at the 95% confidence level. Therefore, there is a correlation problem between units in the model.

Finally, as a result of testing the deviations from the hypothesis, it was concluded that there were heteroskedasite, autocorrelation and inter-unit correlation deviations in the model. From this assumption, the final model is obtained by using the Driscroll-Kraay estimator robust to deviations.

**Table 8:** Final Model

| | Coefficients | Driscroll-Kraay Robust Standard Errors | t-Statistics | Probability Value | Confidence Interval (%95) | |
|---|---|---|---|---|---|---|
| **Constant Coefficient** | 6.74 | 0.21 | 31.43 | 0.000 | 6.30 | 7.18 |
| **Inlowedu** | 0.10 | 0.05 | 2.09 | 0.046 | 0.00 | 0.21 |
| **Inhc** | 3.04 | 0.43 | 6.96 | 0.000 | 2.14 | 3.93 |
| **Inpop** | 0.85 | 0.18 | 4.63 | 0.000 | 0.47 | 1.23 |

| Number of Observations | F- Statistics | Probability Value | R2 | | | |
|---|---|---|---|---|---|---|
| **457** | 407.27 | 0.0000 | 0.6292 | | | |

$$\text{lnrgdp}_0 = 0{,}10 \ \text{lnlowedu} + 3{,}04 \ \text{lnhc} + 0{,}85 \ \text{lnpop} + 6{,}74$$

In the final model obtained with the help of Driscroll-Kraay estimator resistant to autocorrelation and heteroskedasite deviation, the F-statistic value was found statistically. (Probability value = 0.0000 <0.05) This result indicates that the model is generally completely significant. According to the t-statistics values of the variables, it was observed that both the fixed coefficient and the coefficients of the variables of unskilled migrant employment, human capital and population were statistically significant at 95% confidence level. According to the determination coefficient ($R^2$), 62.92% of the changes in Real GDP, which is the dependent variable, are explained by independent variables, low-educated immigrant employment, human capital and population. 37.08% of the changes in real GDP are explained by the variables not included in the model.

## 5. Conclusion

The conclusion from the findings is that there is a positive and significant relationship between unskilled labor migration employment and real GDP. A significant and positive relationship has also been observed between human capital and real GDP, and it has been determined that human capital has a greater effect than unskilled labor migration employment.

When we examine the effect of each independent variable on the dependent variable when other variables are kept constant; A 1% increase in the employment of unskilled labor migration increases real GDP by 0.10%. It is understood that there is a significant and positive relationship between unskilled labor migration employment and Real GDP. 1% increase in human capital increases real GDP by 3.04%. In other words, there is a positive and significant relationship between human capital and real GDP. It has been observed that a 1% increase in the population increases the real GDP by 0.85%. Thus, it was determined that there is a positive and significant relationship between population and real GDP. If we look at the significance of the fixed parameter, it has been observed that the real GDP will increase by 6.74% with the assumption that the other variables are zero. This situation can be explained by the fact that other variables affecting real GDP are not included in the model.

When we consider the model economically, the difference between the effect of human capital on real GDP and the effect of unqualified labor migration on real GDP can be expressed as an inevitable result of the knowledge economy. As human capital increases, real GDP increases and increases by 3% to 1%, show that knowledge and education positively and significantly affect economic growth.

Finally It is understood that as long as countries transition to knowledge economy, the importance of education, which is the carrier of human capital, will increase and employment of immigrants due to unqualified or low education level will become difficult. Thus, economic growth will increase as human capital increases, which also affects economic growth. It is concluded that the increase in unskilled labor migration will affect economic growth at smaller rates than before the knowledge economy.

Considering the technology that develops day by day, it is thought that the contribution of unqualified labor migration to the economy should decrease, the positive relationship between unskilled labor migration employment and real GDP can be explained by the following reasons;

- The need for workers in workplaces requiring unqualified labor as a result of the employment of host country citizens in qualified jobs,
- Based on work-based learning theory, unqualified workforce is qualified on the job,
- With advanced robotic production systems, the job areas that require qualifications for the worker are reduced and people are employed only as a controller.

The reasons for the differences in value between countries are seen as differences in human capital level, physical and political differences that prevent migration, and success level differences in orientation training. In order to increase the contribution of the unskilled migrant to the economic growth of the host country, more attention should be paid to increasing education levels, providing vocational courses and orientation training.

Based on the observations in the working process, in the future in this field; By comparing the education of unqualified immigrants in countries, the policies of countries that have achieved superior success are seen as an important issue to be studied in terms of setting an example for other countries. Immigrant education policies should be considered as issues to be studied in order to adapt immigrants to society, to reduce their costs to host country economies and to increase their contribution to economic growth.

Considering the limitations encountered during the study in terms of contributing to future studies; unregistered employment, unregistered migration, differences in education levels between countries, use of different indexes on human capital, and the difference in years of joining and leaving the union of member countries.

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