



## Testing the Hypothesis of the Economic Assimilation of Immigrants: Türkiye Case<sup>1</sup>

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### Abstract

The labor market adaptation of foreign-born individuals in Türkiye is examined in this research. It tests the Immigrant Assimilation Hypothesis for Türkiye with this aim. The primary research question of this work is, "In Türkiye, could foreign-born people improve their labor market outcomes more rapidly than native people?" Thus, this paper's goals include determining the wage disparity between native-born workers and immigrants and the takeover point. TurkStat's Household Labour Force Surveys, conducted between 2009 and 2020, are used for this purpose. First, the logistic regression method assesses the disparities between labor force participation and employment rates of natives and immigrants. Then, the ordinary least squares method assesses the wage disparity between native-borns and foreign-borns. The main results of this approach are that immigrants' earnings are equalized in 20-25 years after migration, which is also the takeover point against natives. This investigation shows that the wage penalty for recent immigrants is 20%. As a result, after spending years in Türkiye, immigrants integrate into the labor market.

**Keywords:** Immigrant Assimilation Hypothesis, Economic Adaptation, Immigrants' Labour Market Integration, International Migration

**Jel Codes:** F22, O15, J15

### Göçmenlerin Ekonomik Asimilasyonu Hipotezi'nin Test Edilmesi: Türkiye Örneği

#### Özet

Bu çalışmada yurtdışı doğumlu bireylerin Türkiye'ye ekonomik entegrasyonu incelenmektedir. Bu amaçla Türkiye için Göçmen Asimilasyonu Hipotezi test edilmektedir. "Türkiye'deki göçmenler işgücü piyasası çıktılarına yerlilere göre daha hızlı büyütebiliyor mu?" bu makalenin ana araştırma sorusudur. Bu nedenle, bu makalenin hedefleri arasında Türkiye'de doğmuşlarla göçmenler arasındaki ücret eşitsizliğini ve devralma noktasını belirlemek yer almaktadır. Bu amaçla TÜİK'in 2009-2020 yılları arasında gerçekleştirdiği Hanehalkı İşgücü Anketleri kullanılmıştır. İlk olarak, yerli ve göçmenlerin işgücüne katılım ve istihdam oranları arasındaki farklılıkları değerlendirmek için lojistik regresyon yöntemi kullanılmıştır. Ardından, yerli ve yabancı doğumlular arasındaki ücret eşitsizliğini değerlendirmek için sıradan en küçük kareler yöntemi kullanılmıştır. Bu yaklaşımın temel sonuçları, göçmenlerin kazançlarının göçten sonraki 20-25 yıl içinde, ki bu aynı zamanda devralma noktasıdır, yerlilere karşı eşitlendiği yönündedir. Bu araştırma, yeni göçmenler için ücret cezasının %20 olduğunu göstermektedir. Sonuç olarak, göçmenler Türkiye'de yıllarını geçirdikten sonra işgücü piyasasına entegre olmaktadır.

**Anahtar kelimeler:** Göçmen Uyumu Hipotezi, Ekonomik Uyum, Göçmenlerin İşgücü Piyasasına Entegrasyonu, Uluslararası Göç

**Jel Kodu:** F22, O15, J15

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## 1. INTRODUCTION

The assimilation of foreign-born people in a destination country is a multidimensional issue. From an economic point of view, the integration process is based on the adaptation of immigrants to the labor market in the destination country. Economic assimilation of foreign-borns is one of the central aspects of the overall integration process, besides other dimensions of adaptation. In this respect, the economic status of foreign-born people in a destination country is a critical indicator of understanding their success in integration.

Türkiye is one of the historical migration countries (İçduygu & Aksel, 2013). Still, the economic assimilation process has not been taken into account because of the ethnic and religious affinity perspective of Türkiye's immigration policy. However, immigrants who came after the 1990s vastly originated from non-traditional origin countries and are labor immigrants (İçduygu, 2014). This situation partially contradicts the ethnic and religious affinity perspective, which is Türkiye's historical approach to immigration. This contradiction between the historical perspective and the actual case makes analyzing the labor market assimilation of immigrants more critical for Türkiye.

According to the latest figures, 3 percent of the population of Türkiye is foreign-born (OECD, 2023). In addition, more than sixty percent of Syrian refugees worldwide live in Türkiye, which made Türkiye the top refugee-hosting country (UNHCR, 2023). Approximately 3.5 million Syrian refugees live in Türkiye under Temporary Protection Status (The Presidency of Migration Management, 2023). These cases indicate that migration is an integral topic for Türkiye in all aspects. As a result, analyzing the labor market integration of the foreign-born population is vital for evaluating the overall assimilation process in Türkiye.

This paper aims to analyze Türkiye's foreign-born male population's labor market performance. This analysis focuses on foreign-born males who arrived in Türkiye after 1980. In this scope, this article investigates whether foreign-born males can successfully adapt to the Turkish labor market. The leading way to estimate foreign-borns' labor market assimilation is by comparing their labor market outcomes with natives'. With this comparison, this paper proposes to investigate the impact of foreign-born status on the labor market outcomes in Türkiye. Another viewpoint is to compare the immigrants with each other and natives by the number of years of residence in the destination country. With this identification, this paper will investigate the effect of the duration passed in the destination country on assimilation.

To unpack the labor market assimilation process of the foreign-born population, we use the Labour Force Survey that the Turkish Statistical Institute (TurkStat) conducts. This survey is the best available data set to analyze the labor market issues in Türkiye. Due to foreign-born and native-born people starting to identify in this survey with the 2009 reformation, we use the data sets between 2009 and 2021 in this research.

The main contribution of cross-sectional studies is to reveal the effect of duration passed in the destination country on wages for the foreign-born population. They mainly focus on the "years since migration" to analyze the impact of the number of residing years on labor market assimilation. While investigating the effect, these studies are based on the Immigrant Assimilation Hypothesis (IAH). IAH suggests that the number of years of residence in the destination country helps immigrants assimilate economically. From this point of view, the years since migration variable is a valuable estimator for IAH.

Chiswick (1978), the author of one of the pioneer papers about economic assimilation, named this effect "Americanisation" for immigrants in the U.S. According to the outcomes of this study, immigrant white males earn 1 percent lower than the equivalent native-born males in terms of human capital. Furthermore, he determined the takeover point at which immigrants' earnings

equalized natives. This point is around 10-15 years of U.S. residency for immigrants. Also, there was initially an approximately 30% wage gap between similar natives and immigrants in Germany (Beyer, 2019). Schumacher (2011) estimated a similar relationship for immigrant nurses in the U.S. As a result, the disadvantage of the foreign-born population in a destination country is a stylized fact for migration economics literature. Besides, lessening this disadvantage with longer residing duration in the destination country is another common result. On the other hand, another typical result of the recent research is a slowing down in the assimilation pace for new immigrants. Beyer (2019) for Germany, Borjas (2015) for the U.S., and Accetturo and Infante (2010) for Italy find that slowing down in the economic assimilation process.

Nonetheless, there are also some contentious pieces of information on this relationship. Abdulla (2020) considers no initial negative wage gap for the foreign-born population in Brazil, Mexico, and Venezuela. In addition, Gathmann and Keller (2018) provide unfavorable results about IAH with time passed in the destination country unless citizenship is granted. Lastly, Takenaka et al. (2016) found a slightly negative relationship between the years passed in Japan and the earnings of foreign-born.

A comprehensive understanding of immigrants' assimilation requires a wide range of approaches. Notwithstanding, the standard method evaluates earning assimilation by the degree to which recent immigrants achieve wage parity with the native population and the earlier immigrants based on the labor market outcomes (Chiswick, 1978; Borjas, 1985). In this study, we investigate the wage assimilation process and the marginal effects of the human capital structure differences on labor force participation and employment for a holistic comprehension of the labor market assimilation between natives and immigrants. Few studies examine multi-dimensions of the labor market outcomes and present a broad-scale assimilation analysis. In addition to this comprehensive approach, this paper also provides new empirical perspectives on the economic assimilation of the foreign-born population. These studies are mainly performed in developed countries like the U.S., the U.K., and Germany, but this study aims to supply new insights from a developing country. This study will contribute to the literature in these ways.

The article proceeds as follows to demonstrate how foreign-born people assimilate economically in Türkiye. In the first part, we describe the context of our methodology and data set. In the second part, we elaborate on our summary statistics and then review the regression estimation results, which reveal Türkiye's economic assimilation process. In conclusion, we point to the implications of our findings for the broader study of economic assimilation in Türkiye.

## **2. DATA AND METHODOLOGY**

This paper explores the assimilation of foreign-born males into the Turkish labor market. It uses the microdata sets of the Labour Force Survey (LFS) conducted by the TurkStat in this manner. The primary aspiration of this survey is to help reveal the structure of the labor force and issues in Türkiye's labor market. This survey involves information about labor market indicators as well as demographic information.

The LFS questionnaire was re-examined in 2009, which started in 1988, and subjected to some vital changes for this study. With this revision, foreign-born people have become the subject of this survey. This study uses the cross-sectional data sets from 2009 to 2021 to compare the labor market outcomes of native and foreign-born males and evaluate labor market assimilation. In this section, we explain our variables and their limitations first. Then, we explore our methodological approach. Finally, we represent our summary statistics as an insight into the data set.

## 2.1 Data

We use three dependent variables: status of labor force participation, employment, and the natural logarithm of real monthly wages, which facilitate holistically comprehending economic assimilation. Table 1 provides definitions of dependent variables. All of these are derived from the responses of household members in the LFS. These three variables could help us to apprehend the assimilation into three steps. First, participating in the labor force is the first step of labor market integration (Bellemare, 2007). It is clear that the economic assimilation process of an immigrant who does not participate in the labor force will not start (Gorodzeisky & Semyonov, 2017). Afterward, employment is the next step in economic assimilation because it is the only way of accumulating local experience and noticing the differences in the labor market structure (Husted et al., 2001). Eventually, wage parity between native and foreign-born people is the ultimate indicator of labor market assimilation.

By these three-step analyses, the labor force participation status (LFP) and employment status (Emp) variables, which are binary, are generated using the LFS. Also, we utilize wages as a dependent variable in the economic assimilation analysis. It is defined by using monthly wage observations from HLFS. Besides, we prefer the natural logarithm of wages because coefficients in the logarithmic scale can be precisely interpreted as approximate percentage differences (Gelman & Hill, 2017, p. 60). Because of the use of microdata sets for thirteen consecutive years, wages must be adjusted by the Consumer Price Index (CPI). We adjust all years' wages according to 2021 prices.

Independent variables, such as years since migration and being foreign-born, reveal where they are in the integration process for foreign-born people, which we are named as critical independent variables. Table 1 provides definitions of these. These variables allow us to explain the process of economic assimilation in Türkiye. "Years since migration (YSM)" is derived from the "survey year minus arriving year to Türkiye" operation. Years since migration might be a proxy for the effects of acquiring experience and skills in the destination country on labor market assimilation in case of data scarcity (Chiswick, 1978). This variable could provide a standpoint for Türkiye's foreign-borns' economic assimilation process. It may help to identify that equalizing wage parity is the takeover point for foreign-born males. Also, it can illustrate the effect of each year, which is resided in Türkiye, on foreign-borns' labor market outcomes. The latter describes the effects of foreign-born labor on the labor market outcomes against natives who qualified similarly. This case may be related to the issue of skills and qualifications not being easily transferred to the destination country. If there is a low transferability problem, the foreign-born population is evaluated as undervalued regarding skills and qualifications.

Finally, we use control variables to observe the effect of the characteristics of the respondents. These variables are age, marital status, and six different binary variables to observe education generated from LFS. The definitions of these variables are briefly given in Table 1. With these variables, the effect of critical variables can be seen more concisely because the impact of the control variables can differ for native-born and foreign-born males. These differences could be related to transferability problems of skills and qualifications or different characteristics of natives and foreign-born.

There are also some limitations because of data structure. These challenges have affected critical independent, and control variables. First, foreign-borns' origins cannot be differentiated from the available data set. This situation is an obstacle to grasping the differences that occur depending on the source of foreign-borns. For example, some origins may be related to more transferability problems. In addition, there is no information about the proximity of foreign-borns' languages to Turkish or the foreign-borns' Turkish language fluency. Although YSM might represent an increase in Turkish language fluency, this cannot be observed with certainty. Higher Turkish fluency could help improve transferability and make adaptation into the labor market easier.

**Table 1:** Definitions of Variables

Variables	Definitions
Dependent Variables	
Labour Force Participation Status	If the respondent participates in the Labour Force, it takes the value of 1, 0 otherwise.
Employment Status	If the respondent is employed, it takes the value of 1, 0 otherwise.
Natural Logarithm of the Real Monthly Wage	It is a natural logarithm of the monthly wage that is adjusted by inflation for each observation.
Critical Independent Variables	
Years Since Migration	It is equal to the difference between the year that survey was conducted and the year of migration.
Being Foreign-Born	If the respondent is foreign-born, it takes the value of 1, 0 otherwise.
Control Variables	
Age	It equals the last completed age.
Education Dummies	
Non-Graduated	If the respondent has not any degree, it takes 1; otherwise, 0.
Primary School	If the respondent has a primary school degree, it takes 1; otherwise, 0.
Middle School	If the respondent has a middle school degree, it takes 1; otherwise, 0.
High School	If the respondent has a high school, it takes 1; otherwise, 0.
Vocational High School	If the respondent has a vocational high school, it takes 1; otherwise, 0.
Higher Education	If the respondent has a graduate or a post-graduate degree, it takes 1; otherwise, 0.
Marital Status	If the respondent is married, it takes the value of 1, 0 otherwise.

On the other hand, schooling years are incalculable because there are inconsistencies in the answers about the graduation degree. However, they are an essential control element in estimating labor market outcomes. The higher education option as an answer to the question about education degree in the questionnaire includes all degrees between an associate degree and a Doctor of Philosophy (PhD) degree simultaneously. In addition, primary school education in Türkiye has been shortened from five to four years, and middle and high school education has been extended from three to four years due to several legal reforms. The schooling years variable is now inconsistent due to these

modifications. Furthermore, this study does not employ the labor market experience variable, whose significance was stressed by Mincer (1974), because measuring the years of schooling is impossible. Another future factor that hinders the reliable calculation of these variables in the coming years is Türkiye's frequently changed school starting age in recent years.

Nevertheless, despite these data limitations, this research provides a sufficient methodological framework to understand foreign-borns' integration into Türkiye's labor market. We tried to overcome the lack of language information with the YSM as a proxy. Also, labor market experience and schooling years variables are substituted with age and education dummy variables. Lastly, we use the being foreign-born variable to understand the average undervaluation of foreign-borns' skills and qualifications.

## 2.2 Methodology

The methodology of this study is based on Chiswick's approach (1978). The empirical analysis uses the human capital-earnings function to estimate the effect of integration on labor market outcomes. This approach assumes that natives only invest in country-specific human capital. There are two estimation equations, one for native and the other for foreign-born males. We use these two equations to estimate three different dependent variables. These are labor force participation, employment status, and the natural logarithm of monthly real wages. Our main estimation equations are available below.

The estimation method for these equations depends on the dependent variable. If the dependent variable is labor force participation or employment status, we use logistic regression. On the other hand, when we estimate these equations for wage levels, we use the least squares method.  $Y$  represents the dependent variables in these equations. Also,  $\beta$  represents the coefficients of independent variables. The subscript  $i$  symbolizes observations. The other subscript  $n$  means native-born males, and  $f$  means foreign-born males.  $k$  signifies each dummy variable from a category, such as educational dummies.

$$Y_{n,i} = \beta_0 + \beta_{n,i,k} Education_{n,i,k} + \beta_6 Age_{n,i} + \beta_7 Age_{n,i}^2 + \beta_8 Marital Status_{,i} + u_{n,i} \quad (1)$$

The first equation estimates native males' labor market outcomes. Equations in this paper utilize a group of binary variables for six different levels of education, and the non-graduated group is the reference binary variable in this equation. Moreover, age and age square are included in the regression equations as the independent variable. We use the age variable in this fashion to examine the declining marginal effect of aging and, as a proxy, the decreasing effect of each piece of additional experience acquisition on labor market outcomes. In summary, these interdependent variables demonstrate the parabolic effect of age on labor market outcomes. Additionally, the final independent variable in Equation 1 is the binary variable representing married status.

We utilize Equation 1 in regression analysis to estimate native-born males' labor market outcomes. When the dependent variable is labor force participation or employment status, these equations are estimated using logistic regression. The ordinary least squares estimation method is used to estimate wages. Using these estimation methods, labor market outcomes are estimated for native-born males, and the effects of each variable are identified.

Equation 2 estimates the labor market outcomes for foreign-born males in Türkiye. This equation contains the control variables: educational degree dummies, age, age square, and marital status. The expression  $\beta_f$  indicates these control variables,  $c$  Cf,  $i$ . This equation also contains years since migration variables to estimate the economic assimilation effect.

$$Y_{f,i} = \beta_0 + \beta_{f,c} C_{f,i} + \beta_9 YSM_{f,i} + \beta_{10} YSM_{f,i}^2 + u_{f,i} \quad (2)$$

The main goal of this equation is to examine the impact of years since migration on the labor market outcomes of male foreign-born individuals in Türkiye. This equation employs a quadratic approach to the YSM variable. It shows the diminishing effect of each additional residing year on foreign-borns' labor market outcomes in Türkiye. This quadratic shape presents the nonlinear profile of economic assimilation. It is used as a proxy for Turkish language fluency, acquisition of destination or firm-specific skills, and establishment of a local network. In addition, by estimating YSM, the takeover point for foreign-born males can be defined in terms of wages.

$$Y_i = \beta_0 + \beta_c C_i + \beta_{11} \text{Being Foreign} - \text{Born}_i + u_i \quad (3)$$

Equation 3 is estimated for all male respondents who are natives and foreign-borns together. The control variables and the methodological approach of equation 3 are the same as the previous ones. The expression  $\beta_c C_i$  indicates control variables and coefficient values. The primary aim of this equation is to observe the effect of being foreign-born on market outcomes. This variable helps understand the undervaluation of foreign-born males' skills or not.

After these estimation processes, we also analyze the marginal effect for labor force participation and employment status. With this analysis, the marginal effects of independent variables can be identified. In addition, uncovering the wage levels of foreign-born and native males is crucial for analyzing whether or not economic assimilation occurs for foreign-born males. Besides, as mentioned, this paper aims to identify the wage gap between native and foreign-born males and the takeover point. We calculate the wage gap and takeover point thanks to the wage levels. The regression estimation results and mean values of each variable are essential elements for determining the wage levels of native and foreign-born males. This paper calculates the wage gap and takeover point using these values on estimation equations for each group.

Consequently, this estimation allows observing where the native males are in terms of labor market outcomes and examining the response of foreign-born males' labor market outcomes to the economic assimilation process using the variable of years since migration for foreign-borns. In addition, these equations enable us to examine how being an immigrant impacts labor market outcomes compared to their native counterparts.

### 3. RESULTS

#### 3.1 Summary Statistics

This section provides the summary statistics of our variables into three categories: native males, foreign-born males, and all male respondents. Differentiating summary statistics by native and foreign-born males is a vital point of departure for regression analysis. This section focuses on the mean value differences between native and foreign-born males. Table 2 displays the mean values of each variable for each category.

**Table 2:** Summary Statistics

	Native Males	Foreign-Born Males	All Male Respondents
No of Obs	2,173,856	34,382	2,208,243
Labour Force Participation (%)	.7455	.7122	.7451
Employed (%)	.6728	.6248	.6721

LN Real Wages (TL)	7.8169 (n=898,042)	7.8164 (n=15,947)	7.8169 (n=913,989)
YSM	N.A.	20.771	N.A.
Being Migrant (%)	N.A.	N.A.	.015
Education (%)			
Non-Graduated	.052	.082	.052
Primary School	.323	.166	.320
Secondary School	.247	.218	.246
High School	.115	.164	.116
Vocational High School	.106	.173	.107
Higher Education	.155	.196	.156
Age	37.905	39.289	37.927
Marital Status (Married=1) (%)	.664	.697	.664

The mean value differences between native and foreign-born males for three primary labor market outcomes reveal two different results. The mean values for labor force participation and employment status differ for native and foreign-born. Native males' labor force participation proportion is more than 3 percent higher than foreign-borns. The percentage gap in employment for native and foreign-born males is slightly below 5 percent in favor of natives. While natives have higher ratios in the first two labor market outcomes on average, the difference between means value for wages is unimportant, and this gap cannot be figured with percentiles. In short, the mean value of wages seems equal for native and foreign-born males in Türkiye.

There are also other differences between native and foreign-born males. The distribution of educational degrees is notably different. Albeit more than 50 percent of foreign-borns have at least a high school degree, this ratio is smaller than 40 percent for native males. On the other hand, more than 60 percent of natives have a secondary school or a lower degree. As can be seen, there is a crucial educational difference in favor of foreign-born males. Besides, the average age is two years higher for foreign-borns than native males. This could mean an advantage in working experience on behalf of foreign-born males. In addition, the marriage ratio for foreign-born males is higher than for natives. This could enhance labor market outcomes for foreign-born people.

Finally, the sample proportion of foreign-born males in all-male respondents equals 1.5 percent. It seems a slightly tiny ratio, but the total number of respondents is not unimportant, and this proportion is equal to thirty-four thousand foreign-born male respondents. These respondents have resided in Türkiye for more than 20 years on average. This is important because the mean value of dwelling duration for foreign-born males is a critical determinant of economic assimilation.

Consequently, these summary statistics provide clues about the labor market integration of foreign-born males. According to these statistics, foreign-borns encounter significant hurdles to participating in the labor force and finding employment opportunities. Conversely, the mean value of wages for native and foreign-born males is equal. The possible effects of independent variables on these labor market outcomes will be assessed using regression analysis.

### 3.2. Regression Estimation

In this section, we display the results of our regression estimates in different tables for each dependent variable. Each table includes three regression estimations for different sampling scopes:



native males, foreign-born males, and all respondent males. With these three different sampling approaches for three diverse dependent variables, we would observe the effect of each variable on other groups and dependent variables.

Table 3 presents the results of regression estimations for labor force participation. Coefficient values and p-values for each coefficient can be controlled from the table. Instead of repeating coefficient values, we focus on marginal effect analysis while explaining estimation results. The first two columns are for native males. According to the results of marginal effect analysis, age has a decreasing positive effect on labor force participation for natives. According to the reference group, all educational degrees have a positive marginal impact on labor force participation probability. With an exception, this effect gradually increases from a lower degree to a higher degree. However, the effect of a high school degree on labor force participation probability is negligible and close to zero. Being married has a positive impact on labor force participation for native males.

**Table 3.** Results of Regression Estimation for Labour Force Participation

Dependent Variable: Labour Force Participation	Natives	Marginal Effects	Foreign-Borns	Marginal Effects	All Men	Marginal Effect
Age	.412*** (.0009)	.063*** (.0001)	.322*** (-.007)	.058*** (.0013)	.411*** (.0009)	.063*** (.0001)
Age <sup>2</sup>	-.005*** (.00001)	-.0008*** (.0000)	-.004*** (.00008)	-.0008*** (.00002)	-.0055*** (.00001)	-.0008*** (.0000)
Education (Ref: Non-graduates)						
Primary School	.420*** (.008)	.061*** (.0011)	-.332*** (.062)	-.063*** (.0124)	.406*** (.008)	.060*** (.0011)
Middle School	.459*** (.008)	.066*** (.0011)	-.506*** (.056)	-.098*** (.0116)	.430*** (.008)	.062*** (.0011)
High School	.036*** (.008)	.005** (.0013)	-.779*** (.058)	-.158*** (.013)	-.034*** (.008)	-.002** (.0013)
Vocational High School	.640*** (.009)	.084*** (.0010)	-.301*** (.063)	-.057*** (.0126)	.611*** (.009)	.081*** (.001)
Higher Education	.899*** (.009)	.114*** (.0009)	.259*** (.065)	.0448*** (.0107)	.882*** (.009)	.112*** (.0009)
Marital Status (Married=1)	1.036*** (.006)	.1766*** (.0011)	.925*** (.042)	.181*** (.008)	1.034*** (.006)	.1767*** (.0011)
YSM	NA	NA	.039*** (.003)	.0071*** (.00056)	NA	NA
YSM <sup>2</sup>	NA	NA	-.0005*** (.00005)	-.00009*** (.00001)	NA	NA
Being Immigrant	NA	NA	NA	NA	-.336*** (.014)	-.057*** (.0026)
Constant	-6.183***	NA	-4.061***	NA	-6.129***	NA

	(.017)		(.119)		(.017)	
Pr(LFP)	NA	.8094	NA	.7634	NA	.8086
Pseudo R <sup>2</sup>	0.238	NA	0.2263	NA	0.2374	NA
N	2,171,243	NA	34,323	NA	2,205,585	NA
*** p-value<0.01 ** p-value<0.05 * p-value < 0.1						

The subsequent two columns show the results for foreign-born males. The marginal impact of age on labor force participation probability for foreign males is decreasingly positive, similar to that of natives. However, the positive impact of age for them is smaller than for natives. University or higher degrees have a positive marginal effect on LFP probability by the reference group. All other educational degrees have a negative marginal impact on LFP probability, according to the non-graduate group, for foreign-born males in Türkiye. Besides, a high school degree is the worst for foreign-borns in Türkiye. Being married has a positive impact on foreign-born males' LFP probability. Lastly, the number of years of residence in Türkiye has a decreasing positive marginal effect on LFP probability for foreign-born males.

The last two columns demonstrate the results for all male respondents. The prominent result of these columns is a negative marginal effect coefficient of being foreign-born on LFP probability. It means that between two similar males, one has a higher probability of participating in the labor force because of being native. Other effects are identical to the first two columns because the proportion of natives among all respondents is substantial. Age has a decreasing positive impact on LFP probability. All educational degrees have a positive marginal effect on LFP probability except for a high school degree per the reference group. A high school degree's negative marginal effect coefficient is close to 0. To conclude, being foreign-born in Türkiye is a clear disadvantage in the probability of labor force participation. It might be lessened with longer years residing in Türkiye.

Table 4 displays the results of regression estimations for the employment ratio. First of all, the results for employment status are similar to those for the LFP. Determinants of employment for native males are in the first two columns. According to the results of marginal effect analysis, age has a decreasing positive effect on employment for natives. All educational degrees have a positive marginal impact on employment probability by the reference group. However, the effect of a high school degree on employment probability is smaller than that of a primary degree. Being married has a positive impact on employment for native males.

The following two columns show the estimation results for foreign-born males. Again, the pattern of estimation results for employment is similar to the LFP. The marginal impact of age on employment probability for foreign males is decreasingly positive. Only higher education degrees have a positive marginal effect on employment probability by the reference group. According to the non-graduate group, all other educational degrees have a negative marginal effect on employment probability for foreign-born males in Türkiye. Being married has a positive impact on foreign-born males' employment probability. The number of years of residence in Türkiye has a decreasing positive marginal effect on employment probability for foreign-born males.

**Table 4.** Results of Regression Estimation for Employment Status

Dependent Variable: Employment Status	Natives	Marginal Effects	Foreign-Borns	Marginal Effects	All Men	Marginal Effect
Age	.322*** (.0008)	.066*** (.0001)	.234*** (-.006)	.053*** (.0015)	.321*** (.0008)	.066*** (.0001)
Age <sup>2</sup>	-.004*** (.000009)	-.0008*** (.0000)	-.003*** (.00007)	-.0008*** (.00002)	-.004*** (.000009)	-.0008*** (.0000)
Education (Ref: Non-graduates)						
Primary School	.435*** (.007)	.086*** (.0014)	-.338*** (.055)	-.079*** (.013)	.421*** (.007)	.084*** (.0014)
Middle School	.564*** (.008)	.108*** (.0013)	-.537*** (.051)	-.126*** (.012)	.535*** (.007)	.103*** (.0013)
High School	.268*** (.008)	.052*** (.0015)	-.664*** (.053)	-.158*** (.013)	.246*** (.008)	.048** (.0015)
Vocational High School	.751*** (.008)	.134*** (.0012)	-.355*** (.057)	-.083*** (.0131)	.722*** (.008)	.130*** (.0012)
Higher Education	.923*** (.008)	.162*** (.0012)	.075* (.056)	.016* (.012)	.904*** (.008)	.160*** (.0012)
Marital Status (Married=1)	1.049*** (.005)	.227*** (.0011)	.998*** (.036)	.234*** (.008)	1.047*** (.005)	.227*** (.0011)
YSM	NA	NA	.058*** (.002)	.013*** (.00064)	NA	NA
YSM <sup>2</sup>	NA	NA	-.0007*** (.00005)	-.0001*** (.00001)	NA	NA
Being Immigrant	NA	NA	NA	NA	-.377*** (.012)	-.083*** (.0029)
Constant	-5.473*** (.015)	NA	-3.388*** (.112)	NA	-5.423*** (.015)	NA
Pr(LFP)	NA	.7096	NA	.6493	NA	.7086
Pseudo R <sup>2</sup>	0.179	NA	0.171	NA	0.178	NA
N	2,171,243	NA	34,323	NA	2,205,585	NA
*** p-value<0.01 ** p-value<0.05 * p-value < 0.1						

The last two columns demonstrate the estimation results for determinants of employment for all male respondents. The vital part of these columns is the negative marginal effect of being foreign-born on employment probability. It means that between two similar males, one is less likely to be employed because of being foreign-born. Other results are identical to the first two columns. Age has a decreasing positive impact on employment probability. All educational degrees have a positive marginal effect on employment probability by the reference group, and a high school degree affects

employment probability very slightly. To conclude, being foreign-born in Türkiye is a disadvantageous status in terms of employment probability. It can be lessened with longer years residing in Türkiye.

Estimation results for wages are available in Table 5. Results for wages are slightly different from the former two dependent variables. There is a diminishing positive impact of age on wages, but this effect is weaker for foreign-born males. Estimated educational degrees affect wages positively by a reference group with an exception. A primary degree has a negative impact on wages for foreign-born males. However, the positive effects of educational attainment are higher for native-borns than foreign-born males. This could be related to the bonus for education in Türkiye and problems about the validity of education in foreign countries in Türkiye. Also, being married is positively associated with wages, but there is no difference between native and foreign-born people.

The effect of the number of years of residence in Türkiye on wages differs from the former two estimations. The coefficient value of residing years in Türkiye is positive and statistically significant, but the square of years since the migration variable is statistically insignificant. As a result, the positive impact of residing years in Türkiye is clear, but this positive relation's increasing or decreasing feature is unclear. Finally, being foreign-born in Türkiye is negatively related to wages.

**Table 5.** Results of Regression Estimation for Wages

Dependent Variable: Log Wages	Natives	Foreign-Borns	All Men
Age	.079***(.0003)	.044***(.002)	.078*** (.0003)
Age <sup>2</sup>	-.0008*** (4.11e-06)	-.0005*** (.00002)	-.0008*** (4.07e-06)
Primary School	.030***(.0073)	-.055***(.017)	.024***(.003)
Middle School	.218***(.003)	.054***(.016)	.210***(.003)
High School	.352***(.003)	.172***(.017)	.344***(.003)
Vocational High School	.403***(.003)	.178***(.017)	.393***(.003)
Higher Education	.858***(.003)	.728***(.016)	.851***(.003)
Marital Status (Married=1)	.093***(.001)	.088***(.0105)	.093***(.001)
YSM	NA	.006***(.0009)	NA
YSM <sup>2</sup>	NA	7.66e-06(.00002)	NA
Being Immigrant	NA	NA	-.039***(.003)
Constant	5.729***(.006)	6.503***(.041)	5.749***(.006)
R <sup>2</sup>	0.412	0.377	0.410
N	898,042	15,945	913,989
*** p-value<0.01 ** p-value<0.05 * p-value < 0.1			

### 3.3 Wage Levels and the Wage Gap

This subsection computes the wage difference between native-born workers and foreign workers. The methodology section addressed the methodological approach used for these computations. Firstly, we estimate the wage level and disparity for average male native and immigrant respondents.

We also calculate the takeover point for immigrants. Chiswick (1978) states that the takeover point comes when immigrants outperform natives in terms of years since migration in labor market outcomes. Stated differently, this threshold represents the number of years after immigration that the average wage of an immigrant catches up to that of an average native. This section also explains the impact of being a foreign-born person on labor market outcomes.

Immigrant status negatively affects labor market results (Chiswick, 1978; Borjas, 1985). The impact of immigration on the labor market outcomes is demonstrated by regression results obtained for all men. Table 3 illustrates the relationship between being an immigrant and a lower likelihood of entering the labor force in Türkiye compared to natives who have similar characteristics. Table 4 shows this detrimental effect on employment. Together with this, Table 5 also shows a negative correlation between immigration status and wages. There is a 3.7% wage disadvantage for immigrants compared to native-born workers. This means that immigrant status causes a 3.7 percent wage penalty.

There could be some reasons for this penalty. Due to differences in Türkiye-specific abilities, such as lack of company or country-specific knowledge or illiteracy in the Turkish language, being an immigrant status results in different labor market outcomes than natives. Additionally, unfamiliar with the labor market may result in a more prolonged job search. Furthermore, codes and regulations in Türkiye may make it more challenging to hire immigrants in the labor market. However, this gap can be filled by spending years in Türkiye and gaining local knowledge and abilities. This probability may be observed with the years since migration (YSM) variable in this study.

YSM can be considered a proxy variable for acquiring firm, sector, and Türkiye-specific skills, enhancing Turkish language proficiency, and establishing the labor market network. Years of residency in Türkiye have a decreasingly positive impact on immigrants' outcomes. While earnings in Türkiye rise with each residing year, the magnitude of the positive effect of these gains diminishes with time. In Türkiye, the marginal impact of years since migration peaks at around 100 years after migration by the estimation results and then diminishes. There is no practical limit to the beneficial effect of living years in Türkiye on immigrants' income, as this limit cannot be reached within the average life expectancy.

Lastly, we compute the takeover point for immigrants. The estimated coefficient and the mean values of each variable are entered into equations 1 and 2. This computation shows the average salary levels for both native-born people and immigrants. After determining the average salary difference between native-born workers and immigrants, the takeover point can be calculated in terms of years since migration by modifying the YSM and square of the YSM.

The takeover point shows the number of years after immigration that immigrants' salaries equalize with native wages without causing further changes to other characteristics. The YSM represents all assimilation mechanisms that determine this point in this approach. The natural logarithm of an average native male's monthly salary is roughly 7.801 Turkish Liras, whereas the estimated earnings of a newly arrived immigrant man in Türkiye is approximately 7.664 Turkish Liras. There is about a 20% difference between natives and recently arrived foreign-borns. This difference narrows with the number of years of residing in Türkiye, albeit slowly.

For the average immigrant in Türkiye, the income disparity closes at some point between the 20th and 25th years of migration. After that, immigrants' wages are estimated to have increased, and they begin to earn more than equivalent natives. This result may be relevant to Türkiye's internal wage determination process (Özyiğit et al., 2019). In addition, Türkiye's average YSM of immigrants is marginally higher than twenty-one years. As a natural logarithm, this implies an average monthly income of 7.818 Turkish Liras for immigrants, meaning that the natives are paid 8 per thousand less

than them. In short, it might be claimed that, in terms of wages, an average immigrant to Türkiye could effectively integrate into the Turkish labor market after more than 20 years of residency.

In summary, having an immigrant status negatively influences labor market outcomes in Türkiye. However, these adverse effects ended after several years spent in Türkiye. The probability of employment and labor force participation declines with the foreign-born status. Compared to equivalent natives, the wages of immigrants are 3.7% lower. As a result, about 20–25 years after migrating, immigrants with average features can integrate into the Turkish labor market.

#### **4. CONCLUSION**

The primary result is that the economic integration of immigrants occurs with the spending years in Türkiye for all labor market outcomes. An average qualified immigrant earns less than an equivalent native after migration to Türkiye. In line with the hypothesis that years spent in the destination country are helpful for integration, the earning disparity ends with the residing years in Türkiye. The regression and computation results show that the takeover point occurs between 20-25 years after migration. Moreover, the number of residency years in Türkiye benefits all labor market outcomes for foreign-born males. In other words, the years that immigrants spend in Türkiye contribute to improving their labor market results and indicate that they are sustaining economic adaptation within the country.

This study applies theoretical and empirical frameworks about immigrant assimilation in the Turkish labor market, but it has some limitations. The first limitation is that HLFS does not contain information about the source country. Secondly, education cannot be definable regarding schooling years because of some legal changes and data limitations. Despite these limitations, this paper goes beyond the general tendency of focusing on the wage gap and whether it is lessened in the literature. Additionally, we analyze the effect of immigrant status on the LFP and employment in this study. This methodological approach is novel for developed countries' labor markets for the immigrant assimilation hypothesis (IAH). Moreover, given that most previous literature on IAH has focused on high-income and industrialized countries such as the U.K., USA, France, and Germany, this study provides new data supporting IAH from Türkiye, a developing country.

Many potential study issues remain unanswered despite all efforts and results, and they are awaiting investigation in subsequent studies. The primary investigation could be testing IAH with the pooled cross-sectional approach for Türkiye. This different approach to IAH can reveal different results and provide new perspectives on immigrants' labor market achievements. The extent of the immigrants' assimilation mechanisms may be shown by designing a different potential research. Nevertheless, the HLFS data set's structure made it impossible to evaluate the mechanisms for this study. These potential research projects will contribute to a more comprehensive understanding of immigrants' adaption in Türkiye.

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