

# Research on the Refugee Settlement and Integration

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## Abstract

This paper explores the role of high-skilled global immigration in the context of globalization, emphasizing its impact on labor supply, economic growth, trade, and more. Refugees, facing initial economic challenges, are compared to economic migrants. By analyzing the refugee history all over the world, focusing on refugee research in Denmark, the study reviews and employs Regression Discontinuity Design to assess the connection between language training and labor market integration. Analyzing data from several individuals and linked children, results highlight positive effects on earnings and employment, particularly in the long term. The study demonstrates that investing in language skills benefits refugees economically. In a concise summary, this research underscores the complex relationship between global immigration, economic dynamics, and policy implications.

## Keywords

Refugee, High-Skilled Immigration, Labor Market, Denmark, Labor Economics, Globalization, Global Immigration

## 1. Introduction

With the development of globalization, global immigration is becoming a general way for those high-skilled workers seeking a better life in a new country. Highly skilled employers play a starring role in today's high-tech and knowledge economy, they created many scientific innovations and made contributions to enhance the society's productivity. Also, despite this complexity, international migration is responsive to market forces, whether within legal frameworks or through illegal means when barriers persist. This phenomenon significantly affects labor supply, demographic characteristics, economic growth, trade patterns, income distribution, and political power distribution in both sending and

receiving countries.

Refugees typically face greater economic challenges, including lower earnings and education levels, compared to economic migrants upon arrival. Despite later experiencing increased labor force participation and employment rates, along with similar welfare participation rates as U.S.-born residents, [Bordo, Taylor, and Williamson \(2003\)](#) pointed out that refugees often enter the U.S. with limited human capital and language skills, leading to initial unfavorable labor market outcomes and higher welfare usage. Consequently, concerns arise that resources redirected to accommodate refugees might adversely impact native students in schools.

The international refugees who have been forced to leave their country due to a war or natural disaster went to Denmark to find a new life. As soon as the refugees join the local labor market, the research found that the employment and wage gap between them and natives or other immigrants is significant. The research combines two main parts: the first part provides the history of Denmark's reform, policy effect, and the importance of local language learning with the economy; the second part is the data part which shows that the relationship between language training of international refugees after settlement and labor market integration.

The study was designed using a Regression Discontinuity (RD) Design, and a random sample size was used for better checking and judging all the refugees and enhancing the result to be more accurate.

In this article, the motivation for computing the estimate of interest is to analyze the association between the refugees after completing language training via schooling or other teaching methods and integrating the labor market. To be more specific, the sample size the author used is a sample of 8558 individuals and also linked to 16,598 children as the children sample, which includes all refugees and reunified family members whose age range was between 18 and 49 years old; they are used for better observing the outcomes into the sample's teenage years; the sample was analyzed from 1999 to 2016 in Denmark. For the database of the main control and outcome variables, the research used administrative data from 7 different sources for tracking the detailed information. The outcomes for adults include education, employment, labor earnings, long-term impact, etc. Also, 2 types of outcomes are measured for second-generation refugees' schooling and crime.

The analysis proceeds in two steps. We try to develop a linear regression model for prediction to estimate a causal effect, which is the average treatment effect of the reform, related to language training discontinuity and linear dependence on admission dates with the cutoff date.

Next, the research provides data analysis about the association between language training and earning. Furthermore, the economic benefit the research did is the increase in salary and earnings among the treated groups, as well as government income tax increase, which proves that investing in the language skills of newly arrived refugees is an economically beneficial judgment.

In summary, we find a significant and positive effect on earnings and employment. The results can be separated into two parts. In the short run, there is no direct observable effect. However, in the long run, the reform is beneficial and improves the employment and labor market; the long-run impact could also be found among the children sample, where male children sample with schooling have less crime. Also, the improvement in refugees getting higher earnings after language training is significant.

The article is organized as follows to provide readers with a systematic and cohesive exploration of the economic impact of refugees in the United States. We commence with an introduction that frames the research question and the significance of our study. Following this, the second section offers a comprehensive literature review, highlighting key research findings and debates regarding the financial impact of refugee populations on host countries. The third section delves into our research methodology, outlining the data sources, variables, and statistical methods employed to conduct our analysis. In the fourth section, we present the empirical results of our study, discussing key findings and trends discovered during our investigation. The fifth section engages in a detailed discussion of the implications of our findings, shedding light on the broader economic and social context. Lastly, the paper concludes with a summary of our key findings, policy recommendations, and avenues for future research in this critical area of study.

## 2. The Historical Background

The economic incentives have consistently driven mass migrations, a fact substantiated by numerous studies. The pre-World War era of mass migration, characterized by relatively unrestricted international movement, provides an opportune period to scrutinize the underlying forces shaping migration patterns. The preference for certain traits among emigrants reflects the economic reasoning that guided their migratory decisions. David and Umut (2017) pointed out that while the young and unattached might display greater adventurousness and entrepreneurial spirit, possessing fewer commitments tied to their place of origin and thereby incurring lower migration costs, they also stood to gain the most from relocating. Opting to migrate as young adults allowed them to capitalize on the benefits over a significant portion of their working lives while minimizing losses from foregone earnings during transit, job search, and adaptation in the new locale. Selecting to migrate while unattached further curtailed direct expenses associated with the move. Unskilled emigrants also held minimal investments in technology- or location-specific human capital, hence encountering fewer setbacks in terms of economic returns from such skill acquisition.

### 2.1. The Refugee Wave History from Europe to Africa

The discovery of the Americas set off a wave of migration, both voluntary and involuntary, from Europe and Africa. However, this initial migration was rela-

tively small compared to what would follow. The challenging conditions and inadequate economic gains deterred mass migration. High transportation expenses, along with financial and life-related risks and uncertainties, limited migration primarily to the wealthy and the adventurous. Although migrations of religious groups and pioneers gradually increased, their numbers were overshadowed by those brought through contracts or coercion.

By the end of the 18th century, approximately eight million individuals had traveled to the New World. Among them, a vast majority, around seven million, were brought as slaves from Africa. Additionally, convicts from Great Britain and indentured servants from Western Europe, whose migration expenses were covered by others, contributed to this number. Coercion and contractual agreements were the primary methods through which the New World sourced its labor force during this period. The majority of migrants arrived as a result of these arrangements, marking a significant phase in the history of labor migration to the Americas.

Maas (2017), and Michael and Jennifer (2017) delve into the economic consequences of refugees in the United States. One of its key objectives is to challenge the prevalent notion that refugees impose a financial strain on taxpayers. To achieve this, the research scrutinizes data spanning refugees' initial two decades in the country. The outcomes of the investigation reveal that refugees arriving as adults between 18 and 45 years of age not only offset the costs of relocation benefits and public assistance but also contribute a surplus in taxes.

The collective immigration flow to North America and Oceania underwent a gradual increase, reaching approximately one million individuals per year during the 1990s. While the absolute numbers bear resemblance to those witnessed in the era of mass migration a century ago, their proportional significance relative to the host countries' populations is notably diminished. For instance, the annual immigration rate to the United States declined from 11.6 immigrants per thousand population in the early 1900s to 0.4 immigrants per thousand population in the 1940s, before rebounding to 4.0 immigrants per thousand population in the 1990s. The proportion of foreign-born individuals in the population decreased from 15 percent in 1910 to a low point of 4.7 percent in 1970, then gradually ascended to 8 percent in 1990 and 10 percent in 2000.

## **2.2. The Refugee Settlement History in Asia**

The 19th century witnessed the globalization of the political landscape, propelled by European colonization in Asia, Africa, and the Pacific and Indian Ocean islands. This expansion led to heightened intercontinental trade, as colonies produced primary goods such as sugar, rubber, jute, and tin, predominantly for export to Europe and North America. The establishment of colonial plantation agriculture, mining, transportation, and communication spurred the demand for inexpensive and adaptable labor. In the absence of slavery, colonial governments, and businesses sought alternative means to secure labor for these endea-

vors. Asia, particularly India, China, and Japan, emerged as a new source of labor, with indentured servitude or contract labor reemerging as a method of financing migration.

The abundance of affordable, unskilled labor in Asia presented an opportunity; however, the economic hardship faced by Asian laborers posed a challenge to financing migration. To address this, indentured servitude or contract labor was reintroduced. This approach aimed to provide both the means to finance migration and a system to connect laborers with employment opportunities through established information networks. Contracts, often spanning five years for Indian workers, allowed some migrants to accumulate resources during their tenure, facilitating their return home upon contract completion. Nonetheless, the poverty that compelled many into indentured servitude persisted, alongside India's oppressive caste system.

In the wake of these circumstances, certain indentured servants managed to secure land or engage in part-time plantation work, while a substantial segment (potentially accounting for around three-quarters in various regions) opted to remain in their new destinations. This led to the establishment of Asian communities across East Africa, Southern Africa, North America, Latin America, and Oceania. Additionally, the migration patterns gave rise to non-indigenous Asian communities in Southeast Asia.

### 2.3. The Refugee Settlement in Europe

A pivotal phenomenon demanding explanation within emigration theories is the following: At the advent of modern economic growth in Europe, national emigration rates often displayed a pattern of gradual increase, followed by a peak, and subsequent decline. This "life cycle" of emigration has been recognized across various European countries before World War I.

As income levels rose, loosening the constraints of the "wealth factor," resources became available to support migration. Demographic expansion, a decreasing labor force proportion engaged in agriculture, and the resulting augmentation of the existing pool of emigrants collectively amplified emigration by approximately four individuals per thousand during the upswing of the emigration cycle. Nonetheless, as Uprety (2019) said, the narrowing wage disparity, characterized by Europe's real wages converging with those of the New World, exerted a counteracting influence. Ultimately, the peak was surpassed as the persistent convergence of real wages superseded the diminishing effects arising from industrialization, population growth, and the accumulation of migrant stock.

During the period from 1870 to 1914, Peters (2021) figures out that the Scandinavian countries and even Italy experienced a substantial phenomenon known as real wage catch-up with Great Britain and the United States. Scandinavia, in particular, witnessed the growth of real unskilled wages at a rate twice as rapid as those in the New World and considerably above the European average. Notably,

emigration only accounted for a portion of this remarkable wage convergence, approximately one-fifth for Sweden and Denmark, and nearly one-half for Norway. Other influential factors, including industrialization, trade expansion, advancements in education, and the accumulation of capital, contributed to the remainder of this trend.

In contrast, Spain and Portugal's lack of industrialization resulted in a divergence of real wages, despite the influence of emigration in the opposite direction. Nevertheless, when examining the Atlantic economy as a whole, [Klein, Moser and Urban \(2010\)](#) discern that the absence of mass migrations would have led to a significant amplification in the international spread of real wage rates. Instead of diminishing by 9 percent, the gap between real wage rates in the New and Old Worlds would have surged by 167 percent. This underscores the pivotal role that mass migrations played in curbing the potential widening of wage disparities across economies during that period.

[Keller and Utar \(2016\)](#) have investigated the impact of refugee immigrants on labor market outcomes, while recent analyses have explored how immigrants affect incumbent students' educational achievements, yielding varied results. However, the distinct departure circumstances of refugees and immigrants could lead to disparate effects on native communities. This differentiation arises from the fundamental dissimilarities in how these groups left their home countries.

Refugees in Denmark exhibit similar economic performance and crime rates to refugees in various other European nations ([Brell, Dustmann, & Preston, 2020](#); [Bell, Fasani, & Machin, 2013](#)). From 1999 to 2016, about 2 percent of adult refugees faced criminal convictions compared to 1 percent of the native population, while refugee children displayed higher crime probabilities than their native-born peers. These trends are reflective of refugee patterns across EU countries, implying that the findings in this study likely extend to the broader context of second-generation refugee schooling and integration in Europe.

This study ([Arendt, Bolvig, Foged, Hasager, & Peri, 2020](#)) investigates the impact of reform on refugees in Denmark by examining their family structures, fertility, and outcomes for the second generation. Although no effects were found on marriage probability or fertility, the research reveals that children of treated refugees were more inclined to complete lower secondary school and the final exam. These effects were consistent across various birth cohorts (1990-2001) but were more pronounced and statistically significant for boys. Furthermore, among boys whose parents were treated while they were below school age, a significant reduction in property and violent crime convictions was observed between ages 15 and 18. Notably, these effects were not observed for girls, who generally exhibit lower crime rates and higher completion rates for lower secondary schools.

This study seeks to address a notable gap in the existing literature on the economic impact of refugees in Denmark. While there is a substantial body of research on immigration's fiscal effects, limited attention has been devoted specif-

ically to refugees. Our research aims to bridge this gap by focusing on refugees' financial contributions over their first 20 years in the country. Prior studies have often painted a simplified narrative of refugees mostly based on U.S. data. However, we contend that this narrative overlooks the nuanced dynamics of refugees' economic integration in a small European country—Denmark. Our study contributes to the literature by providing empirical evidence that challenges the prevailing perception of refugees' financial impact, shedding light on their ability to become net fiscal contributors to the host country.

### 3. Data and Empirical Strategy Review

According to the Gauss-Markov theorem, there are 5 assumptions of the linear regression model. The Gauss-Markov assumptions undertake the validity of ordinary least squares for estimating regression coefficients, furthermore, checking how well our data fits these 5 assumptions is important for estimating regression coefficients. In the following analysis part, these five assumptions are going to be discussed in depth according to the refugees' language education experiment.

The first assumption is the true model is linear (linearity), which means the parameters we are estimating using the ordinary least square method must be linear. In other words, there exists a linear relationship between the independent variables  $x(s)$  and the dependent variable  $y$ . It also consists of some problems with there being no omitted variables, and the error could not be determined and fully explained. The estimated linear regression model is shown as follows:

$$Y_{it} = a + rD_i + B_1(x_i - c) + B_2D_i(x_i - c) + e_{it};$$

This local model only assumed linear trends on either side of the threshold date. The dependent variable  $Y_{it}$  is the effect of the reform on the outcome of interest, and two linear terms related to beta1 and beta2 represent the linear dependence of outcomes on admission dates measured correlated with the cutoff date. The authors did not consider a non-linear relationship. Also, the MSE used is heteroskedasticity-robust standard errors. However, if the  $X$ s you observe are a random sample of all  $X$ s in the population practically, in fact, we cannot get a better linear predictor of the  $Y$ s than those from our model.

Next, the second assumption is random where the data set used must be randomly sampled from the population, which is the non-stochastic  $X$  matrix given. Practically, if two or more of the  $X$  variables in the model are highly correlated with each other, then it is harder to find out which one is appropriate and useful for  $y$ . Therefore, a better way to avoid redundant independent variables by getting many more datasets is necessary for independent variation in the co-linear variables. In the research paper, the sample size is large, and the sample sources are various. First of all, the full sample used is all refugees restricted to the age, who were between 18 and 49 years old at the time who were granted asylum, including 18 years in total after the Denmark reform, and also included those family-reunified members of the immediate family. Also, another sample used for better-observing school education and social factors effect is called the children



sample, which was the children born before or after the reform. In total, the sample size used is 8558 refugees and 16,598 children sample. In the area of database sourcing, the research used 6 types of sources to find the data related to refugees before settlement such as crime, identification of refugee status and immigration; and data after settlement such as labor market and earnings; and also, database related to Danish training tracking level (1, 2, 3). The design used is RD design, which is randomly assigned around the threshold date. A random sample size is used to check for all observable characteristics of refugees. The summary data statistics are shown below (Table 1).

Overall, the second assumption holds.

Then, the third assumption is non-collinearity, which means the regressors being calculated are not perfectly correlated with each other, which is the  $N \times X$  matrix in 1 has rank  $K$ . In the research article, the variables used are refugee date status as  $x_t$ , and the treated group is individual refugees with a full “package” with reform including language training integration. The authors did mention that this assumption holds. The data given is non-constant at all; the relation between each explanatory variable is not significant. The correlations between variables are shown below (Table 2).

**Table 1.** Summary statistics of main outcomes.

	Mean	S.D.
	(1)	(2)
Panel (a). The Adult Refugees		
Earnings	8.60	12.41
Employment	0.20	0.26
Task Complexity	-1.07	0.90
Top-Three Occupations:		
Personal and Protective Services	0.31	0.46
Sales and Services	0.31	0.46
Machine Operating and Assembling	0.21	0.40
Obtained Education in Denmark, Year 18	0.13	0.33
Left Initial Municipality, Year 18	0.57	0.49
Criminal Convictions	0.03	0.70
Convictions for Shoplifting(Supermarket)	0.01	0.03
Panel (b). The Children of the Refugees		
Took Any Exam in Lower Secondary School	0.78	0.42
Graduated Lower Secondary School	0.77	0.42
Enrolled in Upper Secondary School	0.80	0.40
Charged with a Crime	0.33	0.47
Convicted of a Crime	0.29	0.45



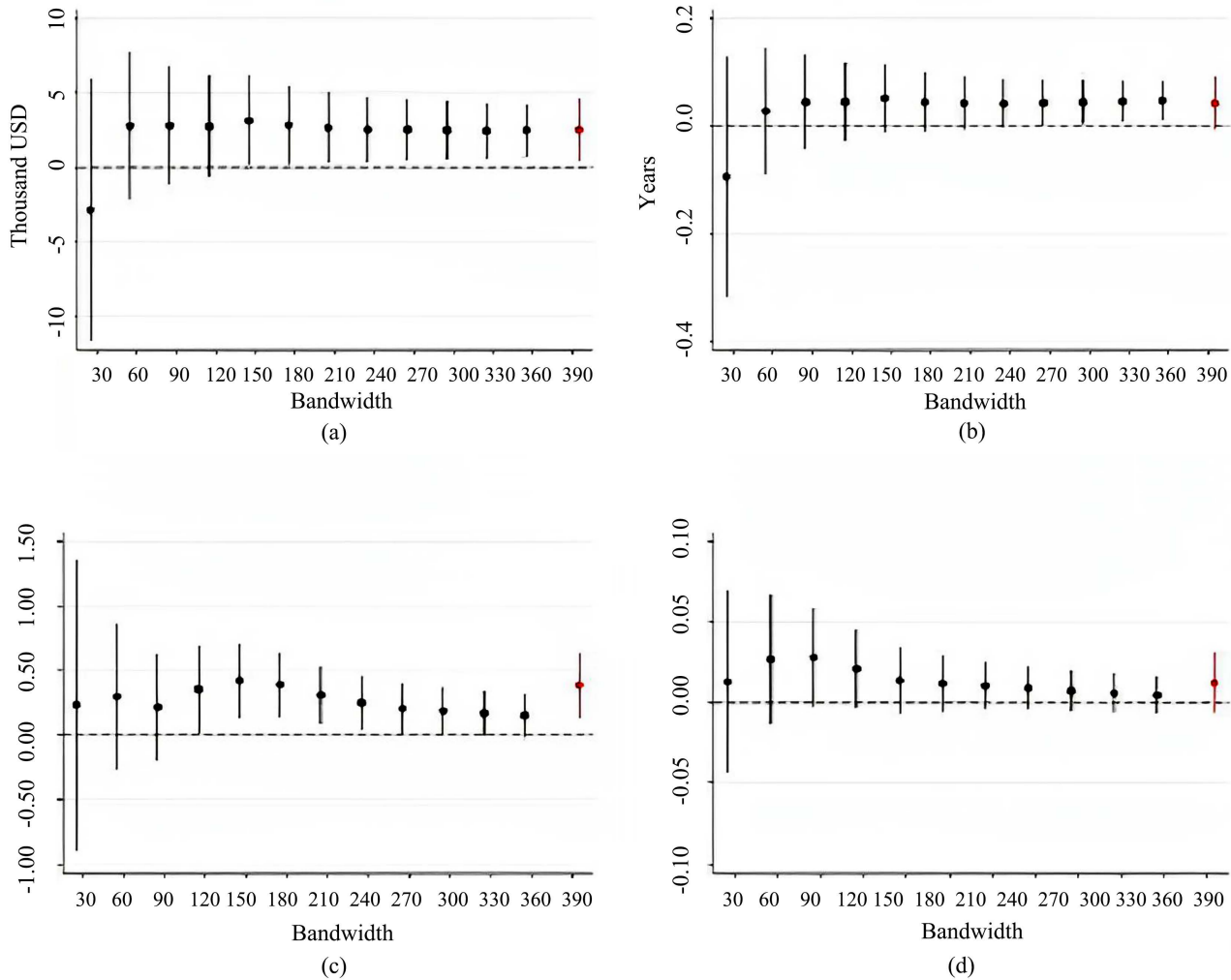
**Table 2.** Heterogeneous effects, interactions.

	Earning	Employment	Task Complexity
	(1)	(2)	(3)
Panel (a). Alphabet of Mother Tongue			
RD	4.112*** (1.154)	0.074*** (0.031)	0.356** (0.179)
Latin Alphabet	2.949** (1.271)	0.085** (0.035)	-0.263 (0.180)
Interaction Term	-4.654*** (2.198)	-0.087 (0.053)	0.077 (0.249)
Constant	6.381*** (0.838)	0.149*** (0.019)	-1.234*** (0.110)
Panel (b). Initial Placement			
RD	1.205 (1.450)	0.005 (0.031)	0.288* (0.155)
Urban Area	-2.495* (1.286)	-0.052 (0.033)	-0.013 (0.180)
Interaction Term	3.533 (2.255)	0.106** (0.053)	0.164 (0.256)
Constant	8.386*** (0.853)	0.203*** (0.020)	-1.319*** (0.110)

The fourth assumption is homogeneity, which means the regressors are not correlated with the error term. The expectation value takes condition on the regressors of the error term is zero ( $E(e|X) = 0$ ). In the research, the authors have considered this assumption. When analyzing the sample with adult refugees, the author used robust standard errors as it is very useful in social sciences since the structure of variation is unknown, but the disadvantage is the variation is the same for each observation, they will be shield off. The mean squared error optimal bandwidth varies, and RD estimates are robust to bandwidth.

As shown in **Figure 1**, the data used performs robustly around the mean square error optimal one with reasonable bandwidth. The assumptions in this part hold.

The last assumption is homoscedasticity, which means no matter what the values of our regressors could be; the error of the variance is constant. In addition, this assumption is useful for the ordinary least square regression to be efficient and for the standard errors to be unbiased. As we mentioned before, the error here used is a robust standard error. However, the authors here did not



**Figure 1.** Sensitivity to choice of bandwidth. Notes: The red dots and bars are the RD estimates and 95-percent confidence interval of the RD estimates. (a) Earning; (b) Employment; (c) Task complexity; (d) Criminal convictions.

mention the error of the variance. In reality, the residuals have constant variance at different  $x$  is necessary for the data as we can see in the figures shown, which directly affects the main result of the influence of Danish education. This assumption should hold.

#### 4. Conclusion

Overall, the main purpose of this research is to find the necessary relationship between language training and refugees (both first generation and second generation) to live better and have a better job in Denmark after reform in both short run and long run determination by using regression modeling.

In the data analysis, it is important to consider all five assumptions, such as the linearity of the true model and random sampling from the population, in order to improve the analysis and obtain more accurate results. When discussing the crime rate, the authors only provided results with the male children as the

dataset and figure for female children are not robust enough. In addition, the standard error and correlation between female children and language training should be fully explained in depth.

As a result, the analysis is convincing till now, and it could be much better if the research could track more generations or new refugees' samples to get a more accurate result or even more countries.

Another research stated that the findings derived from analyzing various refugee waves corroborate the prevailing consensus that the influence of immigration on the average native-born workforce remains modest. Such evidence does not substantiate assertions of substantial adverse effects on workers with educational attainment below the high school level.

The impact of international migration is profound, influencing labor supply and demographic characteristics in both sending and receiving nations. It carries implications for economic growth, trade patterns, income distribution, and even the distribution of political power within and between countries.

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## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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