# Native-Refugee Education Gap

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## I. Introduction

The educational integration of refugee children is a significant policy challenge, as these children often face barriers such as language acquisition, adaptation to new cultural environments, and the psychological effects of forced displacement (Dustmann et al., 2017; Aksoy et al., 2023, 2024; Tumen, 2023; Foged et al., 2024; Tumen, S. and Vlassopoulos, M. and Wahba, J., 2025).

As of 2023, nearly 15 million school-aged refugee children were under the mandate of the UNHCR, with over half lacking access to formal education. Enrollment data reveal substantial disparities: while the global primary school enrollment rate borders 100%, only 65% of refugee children attend primary school. At the secondary level, the rate drops further to 41%. Tertiary education enrollment has seen modest improvements, increasing from 1% in 2019 to 7% in 2023, but remains low relative to global averages (UNHCR, 2023).

These challenges are more pronounced in developing countries, which host approximately 75% of the global refugee population. Many of these countries face resource constraints that hinder the provision of quality education for both local and displaced students (World Bank, 2023). Addressing these gaps requires evidence-based policy interventions and sustained international support to improve access to education for refugee children.

This paper examines the education gap between Syrian refugee children and their Turkish peers, focusing on mandatory subjects such as Mathematics and the Turkish language. Using administrative data from Türkiye, we document how these gaps vary by grade level, gender, and years since arrival. Understanding these patterns is crucial for developing effective educational policies that support both refugee children and their host communities.

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## II. Data

Our primary data source is the administrative education records from Türkiye in 2011–2018, capturing education outcomes of Syrian refugee and Turkish students in four provinces (Ankara, Bursa, Gaziantep, and Şanlıurfa) at semester level. The data set includes end-of-semester scores, calculated as weighted averages of exams and other assessments, along with detailed individual- and school-level characteristics. We focus on students in grades 4 through 8, where formal grading on a 0–100 scale is implemented, excluding grades 1–3 due to the use of informal grading and grades 9 and above due to the limited sample size.

As stated earlier, our primary outcome variables are Turkish language and Mathematics. Turkish language scores serve as a proxy for communication skills in the local language and social integration, while Mathematics scores reflect cognitive and analytical abilities. On average, Syrian students score 57 in Mathematics, compared to 65 for Turkish students, and 58 in Turkish language, compared to 71 for Turkish students. These figures highlight significant disparities between the two groups.

## III. Empirical strategy

First, we examine how the education gap varies by grade by estimating Equations 1 and 2 using OLS:

$$\begin{aligned} Y_{isgycz} = {} & \beta_1 Syrian_i + \beta_{1g} Syrian_i \times Grade_g \\ & + \beta_2 Male_i + \beta_3 Age_{iy} + \beta_4 Age_{iy}^2 \\ & + f_{sgyc} + \varepsilon_{isgycz}, \end{aligned} \tag{1}$$

where $i$, $s$, $g$, $y$, $c$, and $z$ index students, schools, grades, academic years, classrooms,

and semesters, respectively. $Y$ is the end-of-semester Mathematics or Turkish language score, $Syrian_i$ is a dummy variable equal to 1 for Syrian refugee students and 0 for native peers, and $\varepsilon_{isgycz}$ is an error term.

Our fixed effects ($f_{sgyc}$) capture teacher, classroom, grade, and academic year attributes, proxying a wide range of factors such as classroom environment (e.g., room setup, resources, class size) and academic year dynamics (e.g., curriculum changes, cohort effects). Crucially, they also account for heterogeneity in teacher characteristics, including pedagogy, experience, evaluation methods, and grading patterns, such as leniency during periods of conflict in refugees' districts of origin. By addressing the interactions between these factors, the fixed effects effectively control for unobserved variations at the classroom, grade, and academic year levels. Standard errors are clustered at the school level.

Equation 1 decomposes the education gap by grade $g$ where $g = 4,5,6,7$.[1] The term $-1 \times \beta_1$ captures the education gap in grade 4, while the linear combination $-1(\beta_1 + \beta_{1g})$ represents the education gap in grade $g$ where $g = 5,6,7$. To investigate how these gaps may differ by gender, we estimate the following equation:

$$\begin{aligned} Y_{isgycz} = {} & \beta_1 Syrian_i + \beta_{1g} Syrian_i \times Grade_g \\ & + \beta_{2g} Syrian_i \times Grade_g \times Male_i \\ & + \beta_3 Male_i + \beta_4 Age_{iy} + \beta_5 Age_{iy}^2 \\ & + f_{sgyc} + \varepsilon_{isgycz}. \end{aligned} \tag{2}$$

Next, to examine how the education gap varies by years since arrival, we estimate Equations 3 and 4:

$$\begin{aligned} Y_{isgycz} = {} & \beta_{1a} YearsArrival_{ia} + \beta_2 Male_i + \\ & \beta_3 Age_{iy} + \beta_4 Age_{iy}^2 + f_{sgyc} + \varepsilon_{isgycz}. \end{aligned} \tag{3}$$

Equation 3 decomposes the education gap by years since arrival $a$. For native students, $a$ is set to 0, while for Syrian students, $a$ indicates 1, 2, 3, and 4 years since arrival in Türkiye. In this estimation, the omitted category comprises all native students (i.e., $a = 0$).[2] Equation 4 investigates heterogeneity by gender.

$$\begin{aligned} Y_{isgycz} = {} & \beta_{1a} YearsArrival_{ia} + \beta_2 Male_i \\ & + \beta_{2a} YearsArrival_{ia} \times Male_i + \\ & + \beta_3 Age_{iy} + \beta_4 Age_{iy}^2 \\ & + f_{sgyc} + \varepsilon_{isgycz}. \end{aligned} \tag{4}$$

## IV. Results

Figure 1 reveals a consistent narrowing of the education gap between refugee and native students as they advance through grades.[3] In grade 4, refugee students lag behind their native peers by approximately 10 points in Mathematics and 15 points in Turkish language skills. This gap steadily decreases through subsequent grades, reaching about 6 points in Mathematics and 10 points in Turkish language by grade 7. The Turkish language gap persistently remains larger than the Mathematics gap, suggesting that language barriers pose a more significant challenge for refugee students' academic integration. This may inhibit learning and lead to a negative feedback loop that slows down progress in Mathematics scores.

The gender analysis in Figure 1 shows that female refugee students demonstrate more substantial progress in closing the education gap compared to their male counterparts. While both male and female refugees begin with similar gaps in grade 4, female students show more marked improvement by grade 7. This pattern holds true for both Mathematics and Turkish language performance, indicating that female refugee students may be adapting more effectively to the educational system.

Figure 2 demonstrates that the education gap is most pronounced immediately after refugees arrive in the host country. In the first year after arrival, refugee students trail behind native peers by approximately 12 points in Mathematics and 18 points in Turkish language. However, this gap diminishes significantly over time, with the most dramatic improvements occurring in the first two years. By the fourth year after arrival, the Mathematics gap nearly disap-

[1] Given that grade 8 represents less than 5 percent of the refugee sample, we pool these students with those in grade 7.

[2] Due to the time span of the panel, Syrian students who have been in Türkiye for more than 4 years constitute less than 2 percent of the sample; therefore, $a = 4$ includes those who have been in Türkiye for 4 or more years.

[3] Additional analysis (not shown here due to space constraints) indicates that the observed narrowing of the education gap is not driven by differential attrition of students, such as lower-performing students disproportionately leaving the sample.

pears, while the Turkish language gap shrinks to roughly 2 points.

The gender analysis in Figure 2 reveals that female refugee students generally start with slightly smaller gaps and show more consistent improvement over time compared to their male counterparts. Female refugees nearly close the achievement gap by their fourth year in the country. In contrast, male refugees, while showing substantial progress, maintain a larger gap even after four years and demonstrate more modest improvement in their academic integration. These findings suggest that female refugee students are more successful in overcoming initial educational barriers and adapting to their new academic environment.

## V. Conclusions

This study of Syrian refugee students in Türkiye highlights two key patterns in refugee-native educational gaps: these gaps narrow with both grade progression and time spent in the country, with the most significant improvements observed in early grades and within the first two years of arrival. Female refugee students demonstrate notably stronger academic integration compared to their male peers. These findings emphasize the need for targeted, evidence-based educational interventions. Policies should focus on intensive language training and psychosocial support during the initial years of resettlement, as these have been identified as critical for successful integration (World Bank, 2023). Additionally, programs must address the specific challenges faced by male refugee students, such as reduced motivation and limited engagement in school activities.

Given that the majority of refugees are hosted in developing countries (EBRD, 2022), equitable resource allocation is essential to support both refugee and native students. At the same time, sustained international assistance remains vital to help host countries overcome resource constraints and promote long-term social and economic inclusion.

## REFERENCES

AKSOY, C. G., G. KHANNA, V. MARINO, AND S. TUMEN (2024): "Hometown Conflict and Refugees' Integration Efforts," Tech. Rep. 18918, CEPR Discussion Paper.

AKSOY, C. G., P. POUTVAARA, AND F. SCHIKORA (2023): "First time around: Local conditions and multi-dimensional integration of refugees," *Journal of Urban Economics*, 137, 103588.

DUSTMANN, C., F. FASANI, T. FRATTINI, L. MINALE, AND U. SCHÖNBERG (2017): "On the economics and politics of refugee migration," *Economic Policy*, 32, 497–550.

EBRD (2022): "Transition Report 2022-23: War, Conflict and Migration, Chapter 2," Transition report, European Bank for Reconstruction and Development, London, United Kingdom.

FOGED, M., L. HASAGER, G. PERI, J. N. ARENDT, AND I. BOLVIG (2024): "Language Training and Refugees' Integration," *Review of Economics and Statistics*, 106, 1157–1166.

TUMEN, S. (2023): "Refugees and the education of host communities: Evidence from the Syrian influx in Turkey," *Journal of Human Resources*, 58, 1217–1252.

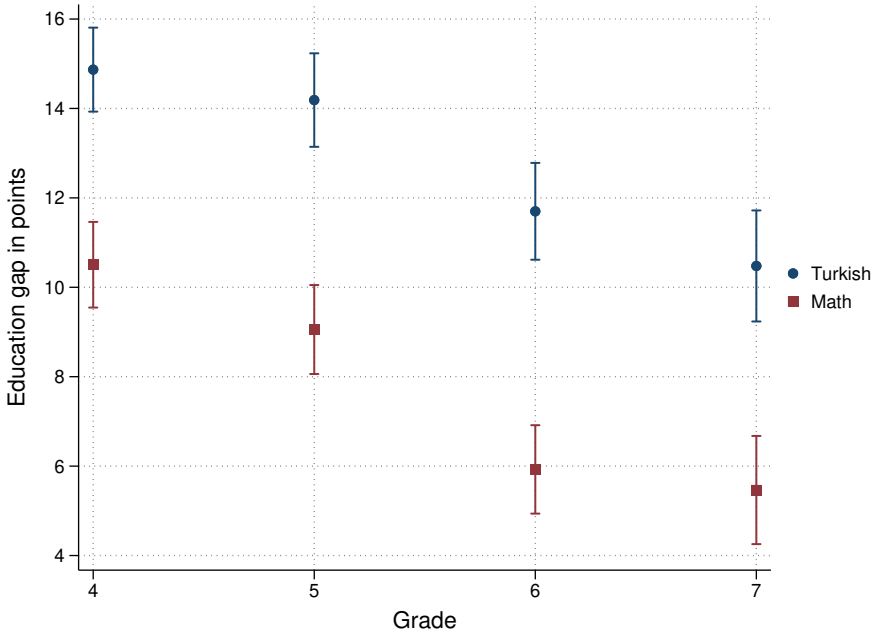
TUMEN, S. AND VLASSOPOULOS, M. AND WAHBA, J. (2025): "The Power of Language: Educational and Mental Health Impacts of Language Training for Refugee Children," IZA Discussion Paper #17593.

UNHCR (2023): "Unlocking Potential: The Right to Education and Opportunity," Education report, United Nations High Commissioner for Refugees, Geneva, Switzerland.

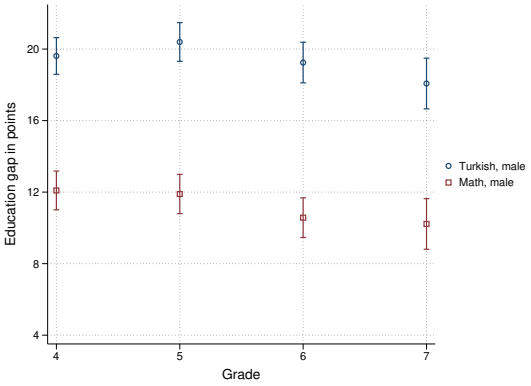
WORLD BANK (2023): "Forced Displacement and Education: Building the Evidence for What Works - Evidence Synthesis and Intervention Map," Technical report, World Bank, Washington, D.C.

Figure 1: Education Gap Narrows with Advancing Grades

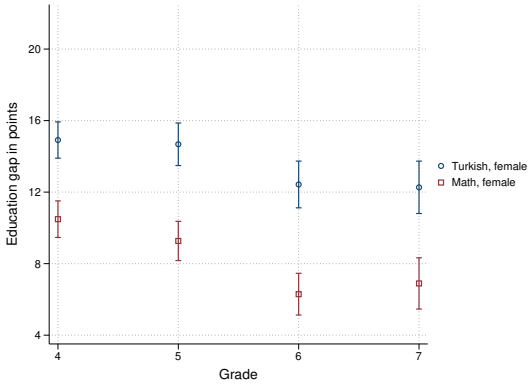
Panel A: Education gap between refugees and native peers




Panel B: Education gap for males



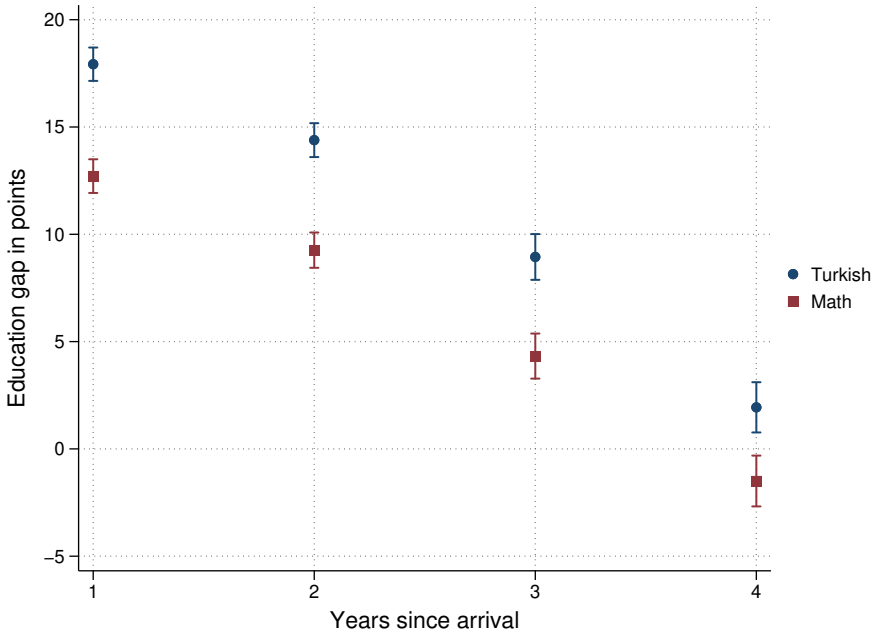

Panel C: Education gap for females



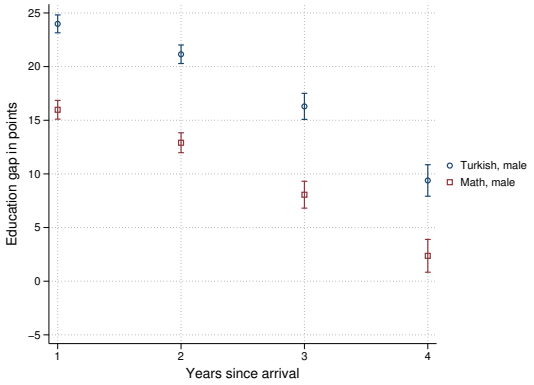

*Note:* Panel A of the figure presents the education gap, estimated using Equation 1. Panels B and C break this down by gender using Equation 2, which includes a triple interaction term: $Syrian_i \times Grade_g \times Male_i$. These estimates also account for the respective base effects, with native females serving as the reference group. Standard errors are clustered at the school level, and the error bars show 95% confidence intervals.

Figure 2: Education Gap is Widest at the Time of Arrival

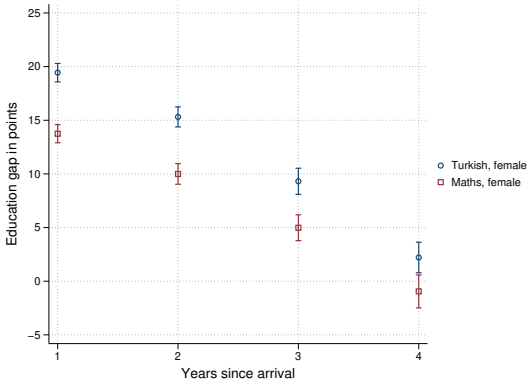
Panel A: Education gap between refugees and native peers




Panel B: Education gap for males




Panel C: Education gap for females




*Note:* Panel A of the figure presents the education gap, estimated using Equation 3. Panels B and C decompose this gap by gender using Equation 4, incorporating the interaction term $YearsArrival_{ia} \times Male_i$ along with the respective base effects. Standard errors are clustered at the school level, and the error bars show 95% confidence intervals.