MULTIDISCIPLINARY SCIENCE JOURNAL

RESEARCH ARTICLE
Published Online: October 5, 2025
https://doi.org/10.31893/multiscience.2026271

Gender approach and impact of parents' international migration on the academic performance of their left behind children in Morocco

Ahbala Salah[a] ✉ | **Aicha El Alaoui**[a] | **Aomar Ibourk**[bcd] | **Kamal Achdig**[a] | **Mohamed El Bouhali**[a]

[a]Multidisciplinary research laboratory in economics and management (LARPEG), Faculty of Economics and Management (FEG), sultan moulay slimane university, beni-mellal, Morocco.
[b]Laboratory for Innovation and Research in Quantitative Economics and Sustainable Development (LIREQ-2D), Cadi Ayyad University, Marrakech, Morocco.
[c]African Institute for Research in Economic and Social Sciences (AIRESS), Mohammed VI Polytechnic University; Policy Center for the New South, Rabat, Morocco.
[d]Policy Center for the New South, Rabat, Morocco.

Abstract This study aims to identify the effect of parents' international migration on the educational outcomes of children left behind in Morocco by their gender. However, it focuses on how the family environment and school characteristics affect the educational outcomes of children who are left behind. A sample was selected from the survey carried out in the rural areas of the province “Fquih Ben Salah” in Morocco's Béni Mellal-Khenifra region. This survey, carried out in 2020, involved 205 children from 16 primary schools. The results of the OLS model revealed that the academic performance of left-behind daughters surpasses that of their left-behind sons' counterparts. In addition, the Oaxaca–Blinder decomposition analysis revealed that 65.19% of the differences in children's school results in the first half of 2020 could be explained by factors such as repetition, class size, and father’s migration, which accounted for 29.99%, 13.38% and 14.64%, respectively. The empirical results also revealed that the sons left behind in Morocco are at risk of social exclusion, particularly in their family environment. Targeted interventions should be adopted to improve the educational outcomes of the sons left behind in Morocco by their migrant fathers. In addition, these interventions should help facilitate son–parent communication and promote support for mental health.

Keywords: left-behind children, international migration, educational outcomes, gender

1. Introduction

Since independence, Morocco has experienced a series of consecutive changes in its educational system, commencing with the National Charter for Education and Training in 1999, followed by the Emergency Plan in 2012 and then the Strategic Vision 2015--2030. These reforms have had positive results, especially those related to the improvement of school infrastructure and access to the educational system, while limited results have been achieved in terms of quality, as evidenced by the poor academic performance highlighted in various international reports, such as PNEA (National Program for Learning), TIMSS (Trends in International Mathematics and Science Study), PIRLS (Progress in International Reading Literacy Study), and PISA(Program for International Student Assessment), or by several national reports issued by HCERES (High Council for Education, Training, and Scientific Research). In addition to these outcomes, differences in academic achievement have arisen depending on gender, geographical location, or socioeconomic considerations.

The rural world in Morocco is considered one of the geographical areas for studying educational disparities, as a group of children live there who were left behind in Morocco by their parents, who chose to migrate abroad without being able to take these children with them on their first migration experience abroad, all to improve their well-being and that of their families in Morocco. This may affect their health and educational performance and create school inequality between them and other children, which is the basis for subsequent social inequalities.

These children were identified by UNICEF as "children left behind," which often refers to "children left in their country of origin or in their country of habitual residence, and who have been abandoned by adult migrants responsible for them"(UNICEF,2023).

In Morocco, the situation of these children remains largely undocumented, as is the case in many countries around the world. According to a 2018 UNICEF report, collecting reliable data on these children is particularly challenging. In the absence

 Received: May 6, 2025 | Accepted: September 29, 2025

of official national statistics, some insights can be drawn from the High Commission for Planning (HCP). The survey data reveal the following:

Seven percent of migrants had spouses who remained in Morocco as heads of household (HCP, 2020) (Table 4).

Only 45.1% of migrants were accompanied by at least one child during the initial migration (HCP, 2020).

In addition, most studies conducted in other parts of the world have shown differences and contradictions in the effects of parental migration on children's academic achievement (Ahbala et al., 2024; Antman, 2012; Bai et al., 2018; El Alaoui & Ahbala, 2024; Sawyer, 2016; Senaratna, 2012). What complicates matters further is the examination of the results of the few studies conducted to study the impact of this type of migration on the gender differences of these children left behind by their migrant parents, where contradictory results were found on the basis of gender(Antman, 2012; Lee & Park, 2010; Wu & Cebotari, 2018; Zhou et al., 2014).

This paper aims to answer the following question:

What is the impact of the international migration of parents on gender disparities in the academic performance of their left-behind children in Morocco?

To achieve this goal, we conducted this study through a survey of students in schools in the rural area of Fquih Ben Salah. To better understand the gender gap in the academic performance of these children, an analysis by the OLS model was followed by the Oaxaca- Blinder decomposition method.

The interest of this research lies in the exploration of an area that is still little studied in Morocco, namely, the influence of migration on children's human capital(Bouoiyour & Miftah, 2016; Ibourk & Bensaïd, 2014). In this way, it contributes to the debate on the impact of parental migration on the quality of education and gender inequalities among left-behind children, and in accordance with UNICEF (United Nations International Children Emergency Fund) recommendations, this work aims to contribute to the production of data related to these categories of children.

The objective of this study is to analyze the impact of the international migration of parents on the academic performance of children left behind in Morocco on the basis of their gender, taking into account family and school contexts. This study provides valuable information for governments, schools, and families to improve children's academic performance, particularly in Africa.

This study aims to verify two hypotheses:

H1: The daughters left behind outperform the sons left behind in Morocco.

H2: The gaps in educational performance between sons and daughters left behind in Morocco can be explained by parental migration status.

This paper is structured in six sections. After the introduction, the second section presents a literature review of studies examining the impact of parents' migration and their children's educational outcomes. The third section describes the methodology adopted, followed by the presentation of the results and their discussion. Finally, the overall conclusion summarizes the main findings of the study.

2. Analysis of studies on parents' migration and their children's educational outcomes

Parental migration is a decision often driven by economic constraints and employment opportunities, especially in resource-limited regions. This separation can have various consequences for children who have remained in the country, particularly in terms of school performance. However, the effects observed vary according to the geographical context, the gender of the child, and family structure. In this section, we present the different variations in research results regarding the overall impact of parental emigration on the academic performance of children who remain in their home country. Subsequently, we present divergent results regarding the impact of a parent's emigration on the academic performance of their children, who remain in their country of origin, depending on the child's gender.

2.1. Positive effects of parental migration

The positive effect of migration has been highlighted by several studies. Bai et al. (2018), in a study carried out in China on a sample of 13,000 students spread over 130 primary schools, reported that parental migration has positive and significant impacts on the academic results of their children left behind. Like Antman (2012), in a Mexican migrant project (MMP118), which consists of 34670 observations, the results show that the international migration of parents has positive effects on girls; however, internal migration does not have a significant effect on children's educational results.

These studies report similar findings regarding the positive impact of parental migration on the academic performance of left-behind children. This positive effect is attributed mainly to the increase in remittances sent by migrant parents. However, none of these studies incorporate qualitative data or offer concrete recommendations to effectively guide public policy or future research.

2.2. Negative effects of parental migration

Studies conducted in various regions of the world have shown the negative effect of parental migration on the educational performance of children who remain in the environment of origin. Lahaie et al. (2009), in a study from Mexico, multivariate results suggest that households in which respondents have a spouse who was a caregiver and who emigrated to the United States are more likely to have at least one child with academic problems. Like Cebotari and Mazzucato (2016), in a study of children aged 11--21 years in three countries, Ghana, Nigeria and Angola, an analysis of descriptive statistics revealed that children's responses to their parents' migration were linked to poor school performance. Thus, Giannelli and Mangiavacchi (2010) used a sample of 3640 households extracted from a living standards survey and reported that migration has a negative effect on the long-term school attendance of children left behind in the country. Another study by Dunusinghe (2021) presented strong statistical evidence suggesting that educational outcomes are lower among children whose mothers have migrated.

These studies report similar findings regarding the negative impact of parental migration on the academic performance of left-behind children, but they differ in how they interpret these results. In summary, the negative effect is commonly attributed to several factors: increased responsibilities placed on remaining family members, limited emotional or academic support, the low priority given to children's education by elderly caregivers, and reduced parental involvement. These factors are typically seen as direct consequences of parental absence. However, these studies also present certain limitations, such as the generalizability of findings, contextual diversity across cases, and the absence of qualitative and longitudinal approaches.

2.3. Children's educational choices

Research on the educational choices of migrant children left behind in the environment of origin shows both positive and negative results. This is due to economic (Kandel & Massey, 2002; Liang & Song, 2018), social (Lu, 2014; Zhou et al., 2014), cultural (Feliciano & Rumbaut, 2005) and personal (Xu et al., 2018) factors associated with the migration of parents. On the one hand, the positive effect of parental migration on their children's educational choices is explained by the role played by migrants' remittances in the educational outcomes of migrants' children (Kandel & Massey, 2002), whereas other studies have shown positive effects, but this is due to the educational aspirations of parents in relation to their children's educational choices (Feliciano & Rumbaut, 2005). On the other hand, following the separation of parents, other studies have shown negative effects on the educational aspirations of these children due to the deterioration of individual factors, such as the mental health of these children (Xu et al., 2018).

2.4. Analysis of the heterogeneity of the effects of the international migration of parents and their left-behind children by gender

Several studies (Antman, 2012; Cebotari & Mazzucato, 2016; Lee & Park, 2010; Lo & Maclean, 2015; Zhou et al., 2014) have shown heterogeneity in the effect of parental migration by gender. Indeed, the results of some studies have shown a more significant effect on the education of migrant girls who have remained in the environment of origin, whereas others have revealed a more pronounced effect on the education of the boys of migrants who have remained in the environment of origin.

Numerous studies around the world (Antman, 2012; Lee & Park, 2010; Meyerhoefer & Chen, 2011; Zhou et al., 2014) agree on the presence of stronger effects on the education of the daughters of migrants who remained in the country of origin. For Antman(2012), in a study carried out on a dataset extracted from the project (MMP118) composed of 324670 individuals, the international migration of the father has a significant effect on the number of years of schooling of girls, and the result has been explained by the opportunities available to families after the transfers, which have made it possible to invest more in the education of their daughters and consequently to continue the education of their daughters. Similarly, another study conducted by Lee and Park(2010) with a sample of 1577 children in the province of Kos in China revealed that only girls had a strong correlation with the best results in the experimental test and the migration of the father; these results were explained by the mother's role in creating a nurturing environment for the girls. In parallel, the study of Zhou et al. (2014) on a sample of 1010 children in Anhui and Jiangxi Provinces revealed that boys are more likely than girls to have lower educational results, and according to this study, it may be that boys are the most vulnerable to early stresses due to their father's migration. Another study conducted by Meyerhoefer and Chen (2011) indicated that there is a relationship between girls' academic delay and parental migration, and this result was explained by girls being occupied with household chores.

However, other studies (Cebotari & Mazzucato, 2016; Lo & Maclean, 2015; Zhou et al., 2014) have shown the existence of a stronger effect for migrant boys or the presence of neutral effects on both sexes (Antman, 2012). The study of Cebotari and Mazzucato (2016) was conducted in three countries, Ghana, Nigeria, and Angola, with a sample of 7171 children, and the results indicated that the boys left behind outperformed their female counterparts left behind in terms of academic performance. The authors justified these results by emphasizing that girls may be more affected by the emotional consequences of being separated from their migrant parents or by the investment placed in their families' education when parents are abroad. In the same vein, Lo and Maclean (2015) suggest that the effects of parental migration on child-rearing are greater for boys than for girls. Similarly, Santrock (1972) noted that boys are generally more affected by the absence of their fathers than girls are.

In addition to the results mentioned above, several studies have shown the existence of a neutral effect of parental migration. Antman (2012) reported that fathers' domestic migration did not have a statistically significant effect on the level of education of girls or boys.

To summarize the differences in the results related to the impact of parental migration on the school performance of their children left behind by their gender, these differences can be explained by the differences in the methods used as well as the contexts of the studies.

3. Materials and Methods

This section focuses on the survey and the models employed. The survey defines the participants, data, and variables used in this study, while the models include the regression basic model and the Oaxaca–Blinder decomposition method.

3.1. Survey

3.1.1. Data and Participants

The study used a paper questionnaire to interview 205 left-behind children by their parent migrant in primary schools in Fquih Ben Salah city of Morocco, with a sample size of 59.5% left-behind sons and 40.5% left-behind daughters. The sample was randomly selected from rural areas recognized by international migrants, and children from migrant parents' households were included. In this study, the control variables were selected on the basis of a literature review and the presence of a significant difference between the two comparison groups. Missing data are deleted. Multicollinearity was tested via the variance inflation factor (VIF). Table 4 shows that no VIF is above the critical level of 5.

3.1.2. Procedure

To obtain approval to conduct a study in schools, it was necessary to contact the provincial directorate of the Ministry of National Education, Primary Education, and Sports of Fquih Ben Salah at the beginning of 2020. Once written consent was obtained, contact was initiated with the primary school principals to facilitate the implementation of the questionnaires. The study was conducted during the months of January and February of the same year.

The province of Fquih Ben Salah is located in the central-western part of the Beni Mellal Khenifra region. It is bordered by the province of Khouribga to the north, the province of Beni Mellal to the east, the province of Azilal to the south, and to the west, the provinces of Settat (Casablanca Settat Region) and the province of Kellaa Sraghna (Marrakech Safi Region). According to the results of the national survey carried out by the HCP on international migration from 2018--2019, Beni Mellal-Khenifra was considered the region that belongs to the regions that experienced high levels of international migration, with a geographical concentration of 14.9% of households attached to migrants and 41.7% in rural areas.

3.1.3. Questionnaire

The data contain 3 parts: child characteristics, family characteristics and school characteristics. However, this study used the variables listed in Table 1. The outcome variables represent the average of eight school components: French language, Arabic language, scientific activity, Islamic, physical education, geography and history, art, and mathematics. The control variables include children's characteristics, family characteristics, and school characteristics. Children's characteristics include gender, social anxiety, age, satisfaction with friends, and environmental satisfaction. The gender variable is defined as whether the child is a boy or a girl. The level of anxiety is measured by 6 questions from the Anxiety Inventory in Children (Aluja & Blanch, 2002). On the other hand, environmental satisfaction is an index composed of three points from Huebner's multidimensional student life satisfaction scale (MSLSS) (Schnettler et al., 2017). The sex value is 1 if the child is female and 0 if the child is male.

Family characteristics include the identity of the migrant parent; the identity of the migrant parent is 1 when the father is the migrant and 0 otherwise.

School characteristics include the size of the class; the size of the class is 1 if there are more than 30 students in class and 0 otherwise. Table 1 summarizes the structure of the various interested questions in the student questionnaire.

3.2. Models

In this study, two models are designed to estimate the effect of parental migration on gender disparities in the educational outcomes of their left-behind children. The first model is a traditional OLS approach model that aims to explore the determinants of the academic performance of all migrant children remaining in Morocco. Then, regression models are developed for sons and daughters who are left behind in Morocco. Finally, to explain the differences in the school performance of these left-behind children according to their gender, the Blinder–Oaxaca decomposition approach, developed by (Oaxaca, 1973) andn (Blinder, 1973), was adopted.

Regression model:

$$y_i = \alpha + \theta_{gen} + x_i' B + \varepsilon_i \quad (1)$$

Where gen is the gender of a child left behind by his parents' work outside Morocco; X includes all control variables.

Table 1 Structure of the questionnaire addressed to students.

	Variable	Description
Children characteristics	Gender	Boy; girl
	Academic performance	Quantitative variable measured by the score obtained.
	Age	Measured in number of years.
	Social anxiety	An indicator composed of 6 items, in rows of 1 to 2 points, which are taken from the Multidimensional Scale for the Measurement of Social Anxiety in Children.
	Repeat	The student has Repeated a grade at least once.
	Satisfaction with friends	An indicator composed of 6 items, rows of 1 to 3 points, that are taken from the multidimensional scale of life satisfaction among children.
	Satisfaction with the environment	An indicator composed of 6 items ranged from 1 to 3 points, which are extracted from the multidimensional scale of life satisfaction for children.
Family characteristics	Parental migration status	Only father away internationally; others situations
School characteristics	Class size	More than 30 students in class; Other

Oaxaca–Blinder decomposition:

The decomposition of the OB can be explained as follows. First, we estimate the following equations for the academic performance of girls and boys separately:

$$yij = x_{ij}' B_{ij+\varepsilon_{ij},j} = Girls, Boys \quad (2)$$

Where Xij, including all control variables, is the same as the final model of the previous MCO estimate. According to the usual hypothesis, E [εij|Xij] = 0, j = GIRLS, BOYS. Thus, the average difference between these two groups is as follows:

$$GAP = \bar{y}_B - \bar{y}_G = \bar{x}_B \hat{\beta}_B - \bar{x}_G \hat{\beta}_G \quad (3)$$

This decomposition is called triple decomposition, where β_G and β_B are the estimated coefficients of the samples of left-behind girls and left-behind boys, respectively. Equation (5) uses the coefficients of the male sample as reference coefficients. Since we are primarily interested in the contributions of family and school quality, equation (5) can also be written as follows.

$$GAP = \left(\bar{x}_{Bc_P} - \bar{x}_{Gp}\right)' \beta_{rp} + \left(\bar{x}_{Bf} - \bar{x}_{Gf}\right)' \beta_{rf} + (\bar{x}_{Bsch} - \bar{x}_{Gsch})' \beta_{rsch} + unexplained\ part \quad (4)$$

Where p represents predetermined personal and family characteristics. f represents family characteristics, and Sch represents school characteristics.

4. Results

To identify the effect of the gender of left-behind children on their school performance, our analysis first involves the presentation of the results of the descriptive statistics, then the bivariate results, then the results of the OLS model, and finally, the analysis of the results of the Blinder–Oaxaca decomposition.

4.1. Results of descriptive statistics

Table 2 shows the descriptive statistics of the sample. It shows that sons left behind are more present than daughters left behind, with a total of 122 migrant boys, which represents a percentage of 59.5%, while 83 of the girls responded to this questionnaire, i.e., 40.5%. The average age of all migrant children is 11.51 years. The average score for all children of migrants is 6.77, with a standard deviation of 1.19. The average anxiety score is 0.39. The average scores for satisfaction with friends and the environment are 10.47 and 8.17, respectively.

Similarly, the table shows that. A total of 164 left-behind children live in families with a migrant father, which represents 80% of the total number of left-behind children, whereas 41 left-behind children live in families with a migrant mother or both parents are migrants, which represents 20%. Thus, the data show that 12% of the students mentioned that they continue their studies in classes with more than 30 students.

To better understand the distribution of school performance scores of migrant children who remained in Morocco, we used the kernel density curve. Figure 1 shows the academic success of Moroccan children whose migrant parents had left them

behind, with a focus on gender disparities; the results indicated an average difference of 0.53 points in educational performance.

Table 2 Univariate statistics.

	Variables description	Description	N/Mean	%/Standard deviation
Children characteristics	Academic performance	The Average grade obtained at the end of the first semester.	6.7788	1.1947
	Gender	0: Boy	122	59.5
		1: Girl	83	40.5
	Social anxiety	6 items scored for 1-to-2-point, that are taken from the Multidimensional Child Social Anxiety Scale.	.3951	.2956
	Age	Measured in number of years.	11.51	1.153
	Repeat	The student has Repeated a grade at least once.	,21	,415
	Satisfaction with friends	6 items scored for 1 to 3 points, that are taken from the Multidimensional Scale of Life Satisfaction for Children.	10.47	2.961
	Satisfaction with Environment	6 items scored for 1 to 3 points, which are taken from the Multidimensional Scale of Life Satisfaction in Children.	8,17	3.212
Family characteristics	Parental migration status	0: others situations	41	20
		1: Only father away internationally	164	80
School characteristics	Class size	0: Other	193	94.1
		1: More than 30 students in class.	12	5.9

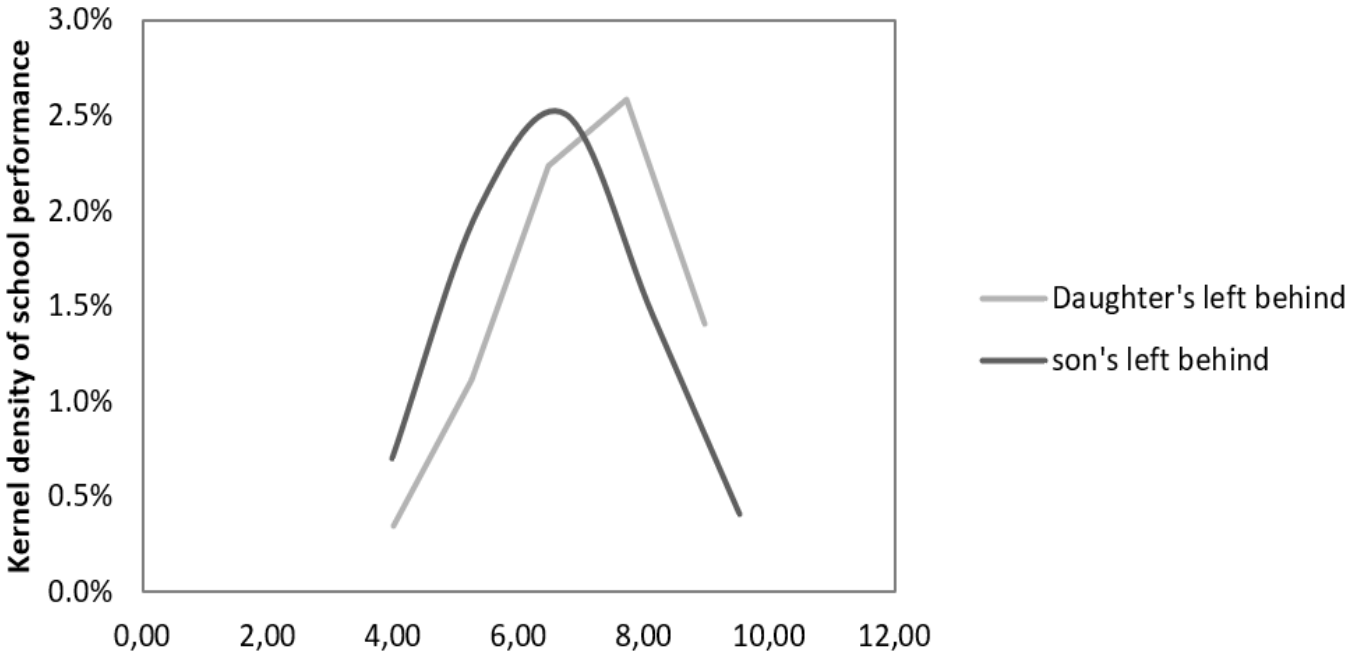

Figure 1 Gender distribution of the educational outcomes of left-behind children in Morocco.

Table 3 shows that, on average, left-behind daughters and left-behind sons are at 6.77 points. Moreover, left-behind daughters perform significantly better than left-behind sons do by approximately 0.58 points. In general, the differences are approximately 8.56%.

The first variables of the t test between the two groups are significantly different in all aspects.

Compared with left-behind daughters, left-behind sons tend to be less satisfied with their environment, more repetitious and more anxious. In addition, 75% of left-behind daughters are left in Morocco by their migrant fathers, whereas for left-behind sons, this percentage is significantly greater: 91%.

4.2. Regression model

Table 4 shows that left-behind sons cannot benefit from the father's migration. There is also a significant loss for the son left behind but not for the daughter left behind in terms of school characteristics.

Column (3) of of Table 4 clearly shows that the status of left-behind daughters is significantly and positively associated with children's educational performance. In addition, the following variables showed both positive and negative correlations with academic performance: father migration, grade repetition, and class size.

Left-behind daughters are more likely to perform well in school. A class of more than 30 students increases the likelihood of performing poorly in school. There is a negative correlation between class size and academic performance.

4.3. Oaxaca Blinder decomposition

To analyze the gap in educational performance between the children of migrants left behind by their gender, our analysis involves an overall decomposition and then an analysis of the contribution of differences in coefficients.

Table 3 Comparison of the mean characteristics of the two groups.

Variables	Two groups	Girl	Boy	T-statistic
School grade	6,778	7,152	6,524	-3,819***
Age of the Child	11,51	11,12	11,77	4,114***
Parental migration status				
only Father away internationally	.85	.75	.91	3.225***
Friend satisfaction	10,47	10,89	10,18	-1,696*
Habitat satisfaction	8,17	8,94	7,64	-2,897**
Class size				
More than 30 students in class	,06	,14	,00	-4.,518***
Repeated a grade at least once	,21	,10	,29	3,233***
Social anxiety	2,37	2,05	2,59	2,809**

Standard errors are shown in parentheses. ***p<0,01, **p<0,05 et *p<0,1.

Table 4 OLS results for different samples.

	Girl (1)	Boy (2)	Pooled (3)	VIF (global sample)
Girl			.408** (.166)	1.21
Student age	0.222 (.183)	-.021 (.095)	.009 (.083)	1.73
Parental migration status				
Only father away internationally	.850*** (.290)	-.076 (.398)	.535** (.243)	1.10
Repeat				
Repeated a grade at least once	-.958 (.442)	-.903** (.262)	-.934*** (.218)	1.64
Friend satisfaction	-.014 (.049)	-.042 (.044)	-.025 (.032)	1.36
Satisfaction habitat	.079** (.040)	.000 (.031)	.032 (.024)	1.36
Class size				
More than 30 students in class	-1.126 (.755)	-.814*** (.265)	-.819*** (.277)	1.37
Anxiety	-.003 (.105)	-.108 (.065)	-.064 (.057)	1.17
Constant	6.276*** (2.211)	7.933*** (1.062)	6.487 (1.023)	-
R square	0.222	0.226	0.247	-
Observation	83	122	205	205

Robust standard errors are shown in parentheses. ***p<0,01, **p<0,05 et *p<0,1.

4.3.1. Global decomposition

Columns (1) to (3) of Table 5 show the results of the decomposition of the educational performance of sons and daughters and the average pooled model of the two groups as a reference. Since the common model includes gender indicators as a control variable and contains information on both groups, we prefer the results in column (3) and use it as a basic discussion.

We can see that the parts explained amount to 0.379 standard deviations and represent 65.19% of the total differences. Father migration and repetition are essential contributors to the gain or loss of gender status. The contributions of repetition and father migration are 29.99% and 14.64%, respectively.

The results of the OB decomposition show that approximately 65.19% of the differences in scores can be explained by the observed characteristics. The most important elements are father migration, class size, and grade repetition, which are the most significant and powerful explanations for differences.

4.3.2. Contributions of coefficient differences

Table 6 presents the differences in the coefficients of the triple decomposition, with the results presented using both groups as reference groups. The differences in the coefficients are important because they reflect the different effects of the observed characteristics.

Table 6 shows that almost all differences in the size class and grade repetition coefficients are insignificant, with the exception of father migration. Therefore, the differences are significantly negative. This means that left-behind daughters benefit more than left-behind sons do from father migration; in other words, the father's migration affects girls and boys

differently, and this difference reduces the left-behind son's performance score compared with the daughters' performance score by 0.703 points.

Table 5 Oaxaca-Blinder decomposition.

	Girl Coefficients (1)	Boy coefficients (2)	pooled coefficient (3)
Group1	6.524	6.524	6.524
Group2	7.152	7.152	7.152
Observations	205	205	205
Gap ($y_{Boy} - y_{Girl}$)	-0.581	-0.581	-0.581
Explained	-.301***	-.255*	-.220**
	(.115)	(.152)	(.093)
Unexplained	-.327*	-.373*	-.408
	(.185)	(.198)	(.161)
Age	-.014	-.009	.006
	(.069)	(.098)	(.053)
Repeat			
Repeated a grade at least once	-.168**	-.178**	-.174***
	(.070)	(.093)	(.064)
Habitat satisfaction	-.000	-.102	-.042
	(.045)	(.065)	(.034)
Friend satisfaction	.030	.010	.018
	(.032)	(.034)	(.025)
Parental migration status			
Only father away internationally	-.012	.135**	.085*
	(.059)	(.063)	(.047)
Class size			
More than 30 students in class	-.077*	-.106	-.077**
	(.044)	(.074)	(.039)
Anxiety	-.058	-.002	-.035
	(.046)	(.048)	(.033)

Robust standard errors are shown in parentheses. ***p<0,01, **p<0,05 et *p<0,1.

Table 6 Threefold decomposition.

	Threefold	Threefold (reverse)
Group1	6.524	6.524
Group2	7.152	7.152
Observations	205	205
Gap ($y_{Boy} - y_{Girl}$)	-0.581	-0.581
Endowments	-.255* (.152)	-.301*** (.115)
Coefficients	-.327* (.185)	-.373** (.198)
Interaction	-.046 (.169)	.046 (.169)
Age	-.071 (2.059)	-.075 (2.179)
Repeat		
never repeated	.005 (.053)	.016 (.146)
Habitat satisfaction	-.701 (.494)	-.599 (.422)
Friend satisfaction	-.310 (.666)	-.290 (.622)
Parental migration status		
Only father away internationally	-.703** (.356)	-.851** (.428)
Class size		
More than 30 students in class	.011 (.027)	.040 (.097)
Anxiety	-.213 (.242)	-.270 (.306)

Robust standard errors are shown in parentheses. ***p<0,01, **p<0,05 et *p<0,1.

5. Discussion

Recently, the number of parents migrating to other countries has increased significantly. In this context, it is essential to determine the impact and degree of influence of parental migration on the educational outcomes of children left behind in contemporary Morocco. Using survey data, this study examines the effect of migration on children's human capital accumulation according to gender.

To analyze the factors that contribute to the loss due to family migration, the Oaxaca–Blinder decomposition method was also applied. Given the transformative impact of gender on children's environment, we focus on examining the role of

individual characteristics, family characteristics, and school characteristics. Nevertheless, families and governments can manipulate these factors.

One of the key findings reveals that the daughters left behind outperform their counterparts, the sons left behind. This result substantiates the work of other authors (Antman, 2012; Lee & Park, 2010; Meyerhoefer & Chen, 2011; Zhou et al., 2014), who rightly emphasized that sons left behind outperform their daughters left behind. However, some studies suggest a son's superiority (Cebotari & Mazzucato, 2016; Lo & Maclean, 2015).

It was also found that father migration significantly influences the performance of daughters who fall behind. This result is similar to the results of (Antman, 2012; Lee & Park, 2010).

Another important result concerns the role of fathers' migration. The OB decomposition method revealed that father migration is an important element in the performance gaps between left-behind sons and daughters; moreover, the coefficients of the decomposition showed a significant and negative difference, i.e., left-behind sons perform poorly when they are left in Morocco by a migrant father.

Before these results can be interpreted, it is important to highlight the importance of taking into account the broader social, economic, and political context (Cortes, 2008) in the analysis of the impact of migration on left-behind children. From this perspective, these results can be interpreted first as distinguishing Moroccan society in general from the province of Fquih Ben Salah in particular, according to the HCP, which has a high illiteracy rate among women in rural areas, reaching 41.40%, as well as a conservative society, especially in rural areas. These two factors can lead to mothers not being able to replace fathers in the upbringing of neglected boys, but they can create a nurturing environment for their daughters, thus confirming a study conducted by (Lee & Park, 2010), in addition to boys being more stressed after their father's migration. Indeed, the results of our study show that boys are more anxious and less satisfied with their environment and friends than girls are, which translates into poorer academic performance for them. These results confirm those of (Zhou et al., 2014) **.** These results can also be explained by the change in ideology induced by the migration of fathers to societies where girls' education is valued. This change in mentality can be transmitted to the families left behind, particularly through remittances.

In contrast, the differences observed in this study's results compared with those of others (Cebotari & Mazzucato, 2016; Lo & Maclean, 2015), which were conducted in Angola, Nigeria, Ghana, and Tajikistan, may be due to the differing characteristics that distinguish the various contexts in which these studies were conducted, particularly concerning the encouragement of girls' education in rural areas, especially since Morocco's education policy strongly supports girls' education at the primary level, particularly in rural areas. Indeed, according to the latest available data from the World Bank on the Primary Completion Rate (Female) index, Morocco records the highest rate at 106%, whereas this indicator reaches 68%, 92%, 90%, and 60% in Angola, Nigeria, Ghana, and Tajikistan, respectively, which could explain the absence of a negative impact on left-behind daughters in rural areas of Morocco due to the father's emigration.

There are two important policy implications for children left behind. First, since international father migration cannot improve the educational outcomes of left-behind sons in Morocco, targeted interventions should be adopted to improve the educational outcomes of left-behind sons in Morocco. In addition, these interventions should help facilitate son–parent communication and promote support for their mental health. To implement these implications, it is necessary for schools in rural areas to encourage extracurricular activities and provide teachers with training to offer psychological and academic support to these left-behind sons.

6. Conclusions

To quantify the impact of parents' international migration on the academic results of their children left behind in Morocco according to a gender approach, this study examined a sample of 205 students enrolled in Moroccan schools during the year 2020. For this analysis, two main methods were applied: the ordinary least squares regression model and the Oaxaca–Blinder decomposition method.

The main conclusion of this work is that it has confirmed two initial hypotheses: left-behind sons are worse performers than left-behind daughters in terms of their educational results, and fathers' migration plays a crucial role in these gaps.

Exploring the impact of parents' international migration on the academic performance of their children left behind in Morocco, according to their gender, is crucial for identifying challenges and developing effective solutions. By adopting well-targeted educational policies, we can strengthen a quality education system and subsequently contribute to achieving a desirable school of justice.

In Morocco, additional efforts may be needed to help the sons of migrants left behind, who are more vulnerable to poor academic performance due to the absence of fathers, which could affect their academic performance.

There are two important policy implications for children left behind. First, since international father migration cannot improve the educational outcomes of left-behind sons in Morocco, targeted interventions should be adopted to improve the educational outcomes of left-behind sons in Morocco. In addition, these interventions should help facilitate son–parent communication and promote support for mental health.

This paper has two limitations. The first constraint concerns the small sample size. The second concerns the number of variables related to the family characteristics used by the calculation of the contributions of a single-family variable.

Ethical considerations

Data collection was conducted with due regard to applicable ethical provisions. Written permission was obtained from relevant parties for observations. The questionnaires were completed voluntarily and anonymously.

Conflict of nterest

The authors declare that they have no conflicts of interest.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

Ahbala, S., Alaoui, E., Ibourk, A., & ACHDIG, K. (2024). Migration internationale des parents et performance scolaire de leurs enfants restés au Maroc : Analyse en modélisation multiniveau. *Alternatives Managériales Economiques*, *6*(2).

Aluja, A., & Blanch, A. (2002). The Children Depression Inventory as Predictor of Social and Scholastic Competence. *European Journal of Psychological Assessment*, *18*(3), 259-274. https://doi.org/10.1027//1015-5759.18.3.259

Antman, F. M. (2012). *Gender, educational attainment, and the impact of parental migration on children left behind*.

Bai, Y., Zhang, L., Liu, C., Shi, Y., Mo, D., & Rozelle, S. (2018). Effect of Parental Migration on the Academic Performance of Left Behind Children in North Western China. *The Journal of Development Studies*, *54*(7), 1154-1170. https://doi.org/10.1080/00220388.2017.1333108

Blinder, A. (1973). *Wage discrimination:Reduced for and structural estimates.* The journal of Human Ressources.

Bouoiyour, J., & Miftah, A. (2016). The Impact of Remittances on Children's Human Capital Accumulation : Evidence from Morocco. *Journal of International Development*, *28*(2), 266-280. https://doi.org/10.1002/jid.3147

Cebotari, V., & Mazzucato, V. (2016). Educational performance of children of migrant parents in Ghana, Nigeria and Angola. *Journal of Ethnic and Migration Studies*, *42*(5), 834-856. https://doi.org/10.1080/1369183X.2015.1125777

Cortes, R. (2008). *Children and Women Left Behind in Labour Sending Countries : An Appraisal of Social Risks.pdf*. New York: UNICEF.

Dunusinghe, P. (2021). Impact of Parental Migration on Children's Educational Performance : Evidence from Sri Lanka. *Journal of Education and Human Development*, *10*(1). https://doi.org/10.15640/jehd.v10n1a4

El Alaoui, A., & Ahbala, S. (2024). Effect of Parent's International Migration on the Educational Performances of Left-Behind Children in Morocco. *European Scientific Journal ESJ*, *25*. https://doi.org/10.19044/esipreprint.1.2024.p101

Feliciano, C., & Rumbaut, R. G. (2005). Gendered paths : Educational and occupational expectations and outcomes among adult children of immigrants. *Ethnic and Racial Studies*, *28*(6), 1087-1118. https://doi.org/10.1080/01419870500224406

Giannelli, G. C., & Mangiavacchi, L. (2010). Children's Schooling and Parental Migration : Empirical Evidence on the 'Left-behind' Generation in Albania. *LABOUR*, *24*(s1), 76-92. https://doi.org/10.1111/j.1467-9914.2010.00504.x

Ibourk, A., & Bensaïd, M. (2014). Impact des transferts de fonds des migrants marocains sur l'éducation de leurs enfants restés au Maroc. *Migrations Société*, *N° 155*(5), 13. https://doi.org/10.3917/migra.155.0013

Kandel, W., & Massey, D. S. (2002). The Culture of Mexican Migration : A Theoretical and Empirical Analysis. *Social Forces*, *80*(3), 981-1004. https://doi.org/10.1353/sof.2002.0009

Lahaie, C., Hayes, J. A., Piper, T. M., & Heymann, J. (2009). Work and family divided across borders : The impact of parental migration on Mexican children in transnational families. *Community, Work & Family*, *12*(3), 299-312. https://doi.org/10.1080/13668800902966315

Lee, L., & Park, A. (2010). *Parental Migration and Child Development in China*.

Liang, Z., & Song, Q. (2018). From the Culture of Migration to the Culture of Remittances : Evidence from Immigrant-Sending Communities in China. *Chinese Sociological Review*, *50*(2), 163-187. https://doi.org/10.1080/21620555.2018.1426988

Lo, W. Y. W., & Maclean, R. (2015). Governance challenges in the initiatives for out-of-school children in Tajikistan. *Educational Research for Policy and Practice*, *14*(2), 139-152. https://doi.org/10.1007/s10671-014-9170-z

Lu, Y. (2014). Parental Migration and Education of Left-Behind Children : A Comparison of Two Settings. *Journal of Marriage and Family*, *76*(5), 1082-1098. https://doi.org/10.1111/jomf.12139

Meyerhoefer, C. D., & Chen, C. J. (2011). The effect of parental labor migration on children's educational progress in rural china. *Review of Economics of the Household*, *9*(3), 379-396. https://doi.org/10.1007/s11150-010-9105-2

Oaxaca, R. (1973). Male-Female Wage Differentials in Urban Labor Markets. *International Economic Review*, *14*(3), 693. https://doi.org/10.2307/2525981

Santrock, J. W. (1972). Relation of Type and Onset of Father Absence to Cognitive Development. *Child Development*, *43*(2), 455. https://doi.org/10.2307/1127548

Sawyer, A. (2016). Is Money Enough? : The Effect of Migrant Remittances on Parental Aspirations and Youth Educational Attainment in Rural Mexico. *International Migration Review*, *50*(1), 231-266. https://doi.org/10.1111/imre.12103

Schnettler, B., Orellana, L., Sepúlveda, J., Miranda, H., Grunert, K., Lobos, G., & Hueche, C. (2017). Psychometric properties of the Multidimensional Students' Life Satisfaction Scale in a sample of Chilean university students. *Suma Psicológica*, *24*(2), 97-106. https://doi.org/10.1016/j.sumpsi.2017.06.001

Senaratna, B. (2012). Left-behind children of migrant women : Difficulties encountered and strengths demonstrated. *Sri Lanka Journal of Child Health*, *41*(2), 71. https://doi.org/10.4038/sljch.v41i2.4394

Wu, Q., & Cebotari, V. (2018). Experiences of migration, parent–child interaction, and the life satisfaction of children in Ghana and China. *Population, Space and Place*, *24*(7), e2160. https://doi.org/10.1002/psp.2160

Xu, D., Wu, X., Zhang, Z., & Dronkers, J. (2018). Not a zero-sum game : Migration and child well-being in contemporary China. *Demographic Research*, *38*, 691-726. https://doi.org/10.4054/DemRes.2018.38.26

Zhou, M., Murphy, R., & Tao, R. (2014). Effects of Parents' Migration on the Education of Children Left Behind in Rural China. *Population and Development Review*, *40*(2), 273-292. https://doi.org/10.1111/j.1728-4457.2014.00673.x