

## Effect of Parent's International Migration on the Educational Performances of Left-Behind Children in Morocco

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### Abstract

This paper focuses on examining the effects of parent's international migration on the educational outcomes of left-behind children. This, however, is with special emphasis on how family environment and school characteristics affects the educational achievements of left-behind children. A sample was selected from the survey conducted in Fkih Ben Salah, a small town in Morocco, within the Béni Mellal-Khénifra region. This survey, administered in 2020, included 407 children from 16 primary schools. The results of the propensity score matching method showed that the international migration of parents had a significant effect on the school performance of their left-behind children. Furthermore, the Oaxaca-Blinder decomposition analysis showed that 36.34% of the differences in the children's school performance during the first semester of the year 2020 can be explained by factors such as student-teacher ratio, class size, and socio-economic index of class, accounting for 12.82%, 38.47%, and 31.35%, respectively. The empirical findings also revealed that left-behind children are at risk of social exclusion, especially in public schools. Targeted interventions should be adopted to improve the educational outcomes of left-behind children. In addition, these interventions

should assist immigrant parents in facilitating their children's first journey and enhancing the student-teacher ratio.

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**Keywords:** Left-behind children, International migration, Educational outcomes, School quality

## Introduction

Over the past decades, international migration of families has become a mainstream component, especially in rural areas, small towns, and villages in Morocco. A noteworthy aspect of this migration is the inability of families, due to various reasons, to accompany their children, leading to their classification as Left-Behind Children (LBC). This situation has many effects on these children, notably affecting their health and educational performance. The regions most affected by this phenomenon include rural areas, mountainous villages, and small towns within the Moroccan context examined in this study. The reason behind this is primarily rooted in social and economic exclusion.

In Morocco, the condition of LBC is unknown. However, based on the finding from the 2018 national survey on international migration conducted by the High Commission for Planning (HCP)<sup>1</sup>, the position of left-behind children can be summarized as follows:

Firstly, there are 10 regions which have experienced international migration activity. This activity is geographically concentrated in three regions, namely Casablanca – Settat (23.3%), Beni Mellal-Khnifra (14.9%), and Rabat-Salé (12.4%)<sup>2</sup>, collectively hosting more than half of the households with migrants.

Secondly, 41.1% of migrants were accompanied by at least one child when they first emigrated. This percentage was higher for women than for men, who often left alone and were later joined by their wives and children.

Thirdly, 7% of migrants were spouses of heads of households who remained in Morocco<sup>3</sup>, and 1.5% were fathers of heads of households who remained in Morocco.

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<sup>1</sup> HCP is the Moroccan institution responsible for the production and publication of official statistics in Morocco .

<sup>2</sup> See page 17 of the HCP publication entitled Results of the National International Migration Survey 2018-2019, July 2020.

<sup>3</sup> See page 29 of the HCP publication entitled Results of the National International Migration Survey 2018-2019, July 2020.

Finally, with regard to financial transfers sent by migrants, it was specified that 17.5% of the beneficiaries of these transfers are spouses and 3.3% of the beneficiaries are children of these migrants<sup>4</sup>.

Studies conducted on this topic have shown mixed results about the effect of parental migration on the academic achievement of their children (Antman, 2012; Bai et al., 2018; Giannelli & Mangiavacchi, 2010; Lahaie et al., 2009; Sawyer, 2016; Senaratna, 2012). Some studies revealed positive effects on children's schooling (Antman, 2012; Bai et al., 2018), while others indicated negative or neutral effects (Arguillas & Williams, 2010; Dunusinghe, 2021; Giannelli & Mangiavacchi, 2010; Lahaie et al., 2009; Sawyer, 2016).

This paper aims to answer the following question: does the international mobility of parents have a positive or negative effect on the school performance of their children who remain in Morocco? And what part can the school play in improving academic performance of left-behind children?

The significance of this research lies in its investigation within a field characterized by numerous empirical studies examining both macroeconomic and microeconomic effects. In particular, scholars such as Karam and Decaluwe (2007), focus on labour market impacts, the OECD (2017) delves into developmental aspects, and others, such as Marzovilla and Mele (2015), Meyer and Shera (2017), as well as Tabit and Moussir (2017), explore effects on the foreign exchange market. However, limited attention has been given to assessing the influence of migration on the human capital of children in Morocco (Bouoiyour & Miftah, 2016; Ibourk & Bensaïd, 2014). Therefore, contributing to the discourse on the impact of migration on the educational quality for these categories of children would enhance the on-going debate. The main objective of this study is to identify how parent's international migration affects the educational performance of their LBC. Also, emphasis is placed on the relative importance of different contexts relating to children, including family and school characteristics. Furthermore, this paper provides important insights for governments, schools, and families regarding the implementation of appropriate interventions to improve children's academic performances, especially for African countries which suffer more due to parents' international migration and increasing number of LBC. There are eight sections in this article, which starts with a summary and a basic introduction. This is followed by an examination of relevant literature concerning studies that examined the impact of international parental migration on the educational outcomes of LBC. Subsequent sections include

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<sup>4</sup> See page 17 of the HCP publication entitled Results of the National International Migration Survey 2018-2019, July 2020

the methodology employed, the findings obtained, a detailed discussion, the overall conclusion, and finally, a list of the references cited during this study.

## **Background and Literature Review**

Parents are forced to migrate due to the limited resources available in their areas of origin to search for a better standard of living. This migration may result in ambiguity regarding the overall impacts on children, including economic and social effects, due to parental separation. The literature addressing this issue is in fact complex and sometimes contradictory, whether in a positive, negative or neutral context. According to Antman (2012), there exists a positive effect on a child's education. This is explained by the fact that pushing the father's migration earlier in his child's life can lead to an increase in the level of education up to one year when compared to the delay in migration until later.

Stark and Bloom (1985) interpreted the result of the positive impact by the improvement of socioeconomics of LBC when their parents send money transfers. The most important explanation of this positive effect indicates that migration decisions are taken mostly collectively between members of families in order to raise the level of well-being and escape from poverty and vulnerabilities.

In Morocco, Ibourk and Bensaïd (2014) emphasised that the effect of remittances from parents' migrants on LBC has a significant contribution to support education fee and improve educational performances. Bouoiyour and Miftah (2016) found that remittances can increase investments in education, which improves various indicators of educational attainments among children receiving remittances.

However, some studies indicate a negative effect of international parental migration on left-behind children. This effect is explained by the absence of one parent, which in turn affects the well-being of the children, leading to a lack of affection and parental attention (Taylor et al., 1996). The individual who is in charge of the children may face other responsibilities surpassing their own capabilities due to the absence of the other party. This circumstance could restrict their engagement with the children who intrude on their supervision. Similarly, the children themselves may not only bear the psychological burdens of separation, but may extend their responsibilities to include domestic chores (Jones et al., 2004).

## **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, propensity score matching, and the Oaxaca-Blinder decomposition method.

## ***Survey***

### ***Participants***

This study used a paper questionnaire that was administered to students in primary schools located in the city of Fkih Ben Salah. A sample of 407 children (205 LBC, 202 NLBC) was selected. The following procedure for sample selection was applied:

Firstly, the rural areas in Fkih Ben Salah that are recognized by international migration were identified, and the schools in which they are located were randomly selected. This was followed by a random selection of one class in each school. Children from households of parent migrants were then selected, along with an equal number of their peers in the same class. The sample was made up of 55% boys and 45% girls. The average age of the children was 11.45 years (SD=1.135, Min=10, Max=15). The required instructions for completing the form were provided and the children were instructed to complete it at home after parental consent.

### ***Procedure***

In order to acquire permission to conduct a survey in their schools, the provincial directorate of the Ministry of National Education, primary education, and Sports of Fkih Ben Salah was contacted in the beginning of 2020. After obtaining the written consent, contact was established with the primary school directors to facilitate the completion of questionnaires. The survey was carried out in January and February of the same year.

### ***Data***

The Béni Mellal-Khénifra region is among the regions of Morocco, affected by international migration<sup>5</sup>. This paper selected Fkih Ben Salah, as a small town in this region, which presents the highest level of international migration. According to results of the national survey on international migration, the Béni Mellal-Khénifra region ranks first nationally in terms of geographic concentration of households attached to migrants, with a percentage of 14.9%<sup>6</sup>. Based on place of residence, the concentration is even higher, particularly in rural areas as opposed to urban areas, with the Béni-Mellal-Khénifra region constituting 41.7% of households with migrant origin. The survey, conducted in the year 2020, specifically targeted children who have parent migrants abroad. The sample included 407 children, with 205 classified as LBC and 202 categorized as non-LBC.

### ***Variable Description***

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<sup>5</sup> See page 17 of the HCP publication entitled Results of the National International Migration Survey 2018-2019, July 2020.

<sup>6</sup> See page 17 of the HCP publication entitled Results of the National International Migration Survey 2018-2019, July 2020.

The dataset contains 3 parts: children characteristics, family characteristics, and school characteristics. However, this study utilized variables (Table 1).

Outcomes variables express the average of eight (8) academic components or subjects, namely French language, Arabic language, scientific activity, Islamic, physical education, geography and history, art, and mathematics.

Control variables include children characteristics, family characteristics, and school characteristics. Children characteristics include gender, depression, and environment satisfaction. The gender variable is defined as whether the child is a boy or a girl. The depression level is measured by 3 questions from children depression inventory (Aluja & Blanch, 2002). On the other hand, the environment satisfaction is an index consisting of three points from Huebner Multidimensional student's life satisfaction scale (MSLSS) (Schnettler et al., 2017). The gender value is 1 if the child is female and 0 if the child is male.

Family characteristics include mother's education, family investment, and environment satisfaction. Reading and writing ability is the measure of the mother's education. The family investment in their children's education is estimated through the variable known as "parental expectation". This variable is defined as the expectation of the parents regarding their child's attainment of a university degree or higher. School characteristics consist of the student-teacher ratio, socio-economic index of class, and the class size.

**Table 1.** Variables Description

|                                 | <b>Variables description</b> | <b>Description</b>   | <b>N/mean</b> | <b>%/SD</b>  |
|---------------------------------|------------------------------|--|---------------|--------------|
| <b>Children characteristics</b> | Academic outcomes            | The average obtained during the first session  | 6,98          | 1.15         |
|                                 | Gender                       | 0: male<br>1: Female   | 224<br>183    | 55<br>45     |
|                                 | Depression index             | 3 items, each assigned a score ranging from 0 to 3 points, were selected from children depression inventory. | .2572         | .22          |
|                                 | Status of parental migration | 0: children from parent non migrant (NLBC).<br>1: children from parent migrant (LBC).                        | 202<br>205    | 49.6<br>50.4 |
| <b>Family characteristics</b>   | Parental expectation         | 0: Other<br>1: Superior  | 25<br>382     | 6.1<br>93.9  |
|                                 | Mother's education           | 0:no<br>1: literate mother   | 191<br>216    | 46,9<br>53.1 |
|                                 | Environment satisfaction     | 6 items, each assigned a score ranging from 1 to 3 points, were selected from multidimensional               | 8.49          | 3.10         |

|                               |                               |   |           |              |
|-------------------------------|-------------------------------|---|-----------|--------------|
|                               |                               | student life satisfaction scale (MSLSS).  |           |              |
| <b>School characteristics</b> | Class size                    | 0: other<br>1: less than 20 students  | 359<br>48 | 88.2<br>11.8 |
|                               | Socio-economic index of class | 0: other<br>1: poor   | 379<br>28 | 93.1<br>6.9  |
|                               | Student–teacher ratio         | Number of students in the school divided by the number of teachers in the school. | 30.86     | 3.70         |

**Source: Estimated by the author**

### **Models**

This paper employed the Regression model, Propensity Score Matching, and Oaxaca-Blinder Decomposition method.

### **Regression Model**

The baseline model adopted is a simple OLS model as written below.

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

Where LBC is the status of a child left behind by their parents to work outside Morocco, and X includes all the control variables.

### **Propensity Score Matching**

Rosenbaum and Rubin ( 1983) proposed this method, which is described as follows:

Let  $y_{LBC}$  and  $y_{NLBC}$  be the outcome of LBC and NLBC, respectively.

The average treatment effect can be calculated as:

$$ATT = E(y^{LBC} | D = 1) - E(y^{NLBC} | D = 1) \quad (Eq.2)$$

Where D =1 for LBC and 0 for NLBC.

Thus, the ATT can be estimated with conditional independence assumption as:

$$ATT = E[y^{LBC} | D = 1, P_r(D = 1|x)] - E[y^{NLBC} | D = 0, P_r(D = 1|x)] \quad (Eq.3)$$

Where Pr (D=1|X) is the probability of being treated, which is conditional on X.

### **Oaxaca–Blinder Decomposition**

Oaxaca ( 1973) and Blinder ( 1973) proposed this method to determine how various factors contribute to gender income disparities. The OB decomposition can be explained as follows. First, the equations pertaining to academic performances are estimated separately for LBC and NLBC:

$$y_{ij} = x'_{ij}B_{ij+\varepsilon_{ij,j}} = LBC, NLBC \tag{Eq. 4}$$

Where  $X_{ij}$ , including all control variables, is the same as the final model in the previous OLS estimation. According to the usual assumption,  $E[\varepsilon_{ij}|X_{ij}] = 0, j = LBC, NLBC$ . Thus, the mean difference between these two groups is outlined below:

$$GAP = \bar{y}_{LBC} - \bar{y}_{NLBC} = \bar{x}_{LBC}\hat{\beta}_{LBC} - \bar{x}_{NLBC}\hat{\beta}_{NLBC} \tag{Eq. 5}$$

This decomposition is a three-fold decomposition, where  $\beta_{LBC}$  and  $\beta_{NLBC}$  are the estimated coefficients of left-behind and non-left-behind children samples, respectively. Equation (5) uses the coefficients for the NLBC sample as the reference coefficients. The primary focus lies in examining the contributions of family investments and school quality. Eq. (5) can also be written as follows.

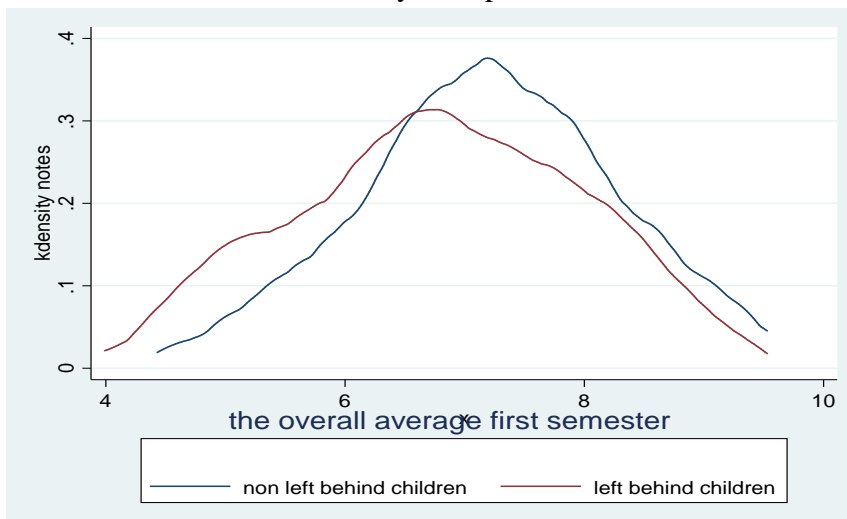
$$GAP = (\bar{x}_{NLBCp} - \bar{x}_{LBCp})'\beta_{rp} + (\bar{x}_{NLBCf} - \bar{x}_{LBCf})'\beta_{rf} + (\bar{x}_{NLBCsch} - \bar{x}_{LBCsch})'\beta_{rsch} + unexplained\ part \tag{Eq.6}$$

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

## Results

### Descriptive Statistic

According to the data collected, **Figure 1** indicates the academic performances of LBC and NLBC, demonstrating differences in average educational outcomes for children by 0.43 points.



**Figure 1.** Distribution of children’s academic performance  
**Source: Field data**



The results of the average comparison are shown in Table 2. It can be seen that, on average, NLBC and LBC have 6.99 points. At the same time, the NLBC significantly outperforms their LBC by approximately 0.43 points. Generally, the differences are about 6.15%.

Table 2 presents the results of the t-test between the two groups, showing that both are significantly different in all aspects. In terms of characteristics that would profit children’s educational outcomes, NLBC has more advantages.

The first category of variables reports the children characteristics. In contrast to LBC, NLBC exhibits a higher prevalence of females and greater levels of environment satisfaction, with a lower degree of depression.

The second category of variables presents the summary statistics of family characteristics. It is obvious that the literacy of the mother is significantly higher in LBC, with approximately 59% of literate LBC mothers, whereas only 47% of NLBC mothers are literate. In terms of family expectation, differences also exist. About 96% of NLBC parents expect their children to attend university, while the corresponding expectation among LBC parents is 92%. The third category reports the summary statistics of school characteristics. Evidently, the quality provided by NLBC is much higher than that of LBC. The student–teacher ratio in the LBC group is 31.45, while the NLBC group is 30.26. The percentage of the class with poor socio-economic index is 2% in NLBC, whereas that of LBC is about 11%.

**Table 2.** Comparison of Mean Characteristics of the Two Groups

|   | Two groups          | LBC               | NLBC              | t-statistic |
|---|---------------------|-------------------|-------------------|-------------|
| <b>Academic outcomes</b>                    | 6.9878<br>(.057)    | 6.7788<br>(.083)  | 7.2000<br>(.075)  | 3.748***    |
| <b>Gender = Female</b>                      | .45<br>(.025)       | .40<br>(.034)     | .50<br>(.035)     | 1.831*      |
| <b>Parental expectation = superior</b>      | .94<br>(.012)       | .92<br>(.019)     | .96<br>(.014)     | 1,827*      |
| <b>Mother’s education = yes</b>             | .53<br>(.025)       | .59<br>(.034)     | .47<br>(.035)     | -2,436**    |
| <b>Class size = less than 20</b>            | .12<br>(.016)       | .04<br>(.014)     | .20<br>(.028)     | 5.095***    |
| <b>Socio-economic index of class = poor</b> | .07<br>(.013)       | .11<br>(.022)     | .02<br>(.011)     | -3.545***   |
| <b>Environment satisfaction</b>             | 8.49<br>(.154)      | 8.17<br>(.224)    | 8.83<br>(.209)    | 2.154**     |
| <b>Depression index</b>                     | .2572<br>(.01103)   | .2832<br>(.014)   | .2309<br>(.016)   | -2.384**    |
| <b>Student–teacher ratio</b>                | 30.8635<br>(.18363) | 31.4537<br>(.262) | 30.2646<br>(.250) | -3.276***   |

Standard errors are shown in parentheses

Significance codes: \*\*\*p<0.01, \*\*p<0.05, and \*p<0.1

Source: Field data

**OLS Model**

OLS estimation results are shown in Table 3, when more control variables are added into the regression equation. Columns (1-3) show estimates of children academic performance. Column (1) contains only left behind characteristics. Step by step, personal predetermined, family, and school characteristics were systematically integrated. According to Table 3, it is evident from column 3 that the migration status is significantly and negatively associated with the children’s school performance. Also, the following variables showed both positive and negative correlations with educational outcomes: gender, class size, mother’s education, parental expectations, student-teacher ratio, socio-economic index of class, and depression index. Girls are more likely to perform well at school. A class with less than twenty students increased the probability of better results in school. Children from home with educated mothers have a higher probability for obtaining high scores in school. Children whose parents expect them to attain higher education are more likely to perform well at school. There is a negative correlation between the student-teacher ratio and educational outcomes. Socio-economic index of class is also negatively associated with educational outcomes. In addition, depressed children are more likely to perform poorly at school.

**Table 3.** Results of OLS Estimation

|   | <b>1</b>             | <b>2</b>               | <b>3</b>               |
|---|----------------------|------------------------|------------------------|
| <b>LBC</b>                                  | -.42117***<br>(.112) | -.3495185***<br>(.109) | -.2676761***<br>(.101) |
| <b>Gender= Female</b>                       |                      | .4261588***<br>(.107)  | .3230701***<br>(.094)  |
| <b>Depression index</b>                     |                      | -.7211026***<br>(.223) | -.7317311***<br>(.203) |
| <b>Environment satisfaction</b>             |                      | .0480103***<br>(.017)  | .015564<br>(.016)      |
| <b>Mother’s education = yes</b>             |                      | .3021261***<br>(.108)  | .2338976**<br>(.095)   |
| <b>Parental expectation = Superior</b>      |                      |                        | .4736201*<br>(.265)    |
| <b>Socio-economic index of class = poor</b> |                      |                        | 1.519818***<br>(.164)  |
| <b>Class size = less than 20</b>            |                      |                        | 1.018961***<br>(.119)  |
| <b>Student–teacher ratio</b>                |                      |                        | -.0455875***<br>(.013) |
| <b>Constant</b>                             | 7.19995***<br>(.075) | 6.589613***<br>(.198)  | 7.6470 ***<br>(.523)   |
| <b>R-squared</b>                            | 0.0335               | 0.1452                 | 0.3506                 |
| <b>Observations</b>                         | <b>405</b>           | <b>405</b>             | <b>405</b>             |

Robust standard errors are shown in parentheses  
 Significance codes: \*\*\*p<0.01, \*\*p<0.05, and \*p<0.1  
 Source: Field data

According to Table 4, it is evident that LBC cannot benefit more from mother’s education. In other words, mother's education does not significantly affect left-behind children. Family expectation also has no significant impact on left-behind children. Additionally, the characteristics of the school have significant benefits for NLBC, but not for left-behind children.

**Table 4.** OLS Results of Different Sample

|   | <b>NLBC</b>         | <b>LBC</b>          | <b>Pooled</b>        |
|---|---------------------|---------------------|----------------------|
| <b>LBC</b>                                  |                     |                     | -.2676***<br>(.101)  |
| <b>Class size = less than 20</b>            | 1.0715***<br>(.142) | .6848***<br>(.241)  | 1.0189***<br>(.119)  |
| <b>Socio-economic index of class = poor</b> | 1.7544***<br>(.222) | 1.4250***<br>(.209) | 1.5198***<br>(.164)  |
| <b>Gender = Female</b>                      | .2190***<br>(.131)  | .5055***<br>(.142)  | .3230***<br>(.094)   |
| <b>Environment satisfaction</b>             | .0205<br>(.024)     | .0028<br>(.023)     | .0155<br>(.016)      |
| <b>Student–teacher ratio</b>                | -.0268*<br>(.014)   | -.0731***<br>(.023) | -.0455 ***<br>(.013) |
| <b>Parental expectation = Superior</b>      | .5184*<br>(.160)    | .4327<br>(.381)     | .4736*<br>(.265)     |
| <b>Mother's education = yes</b>             | .3086**<br>(.122)   | .2167<br>(.152)     | .2338**<br>(.095)    |
| <b>Depression index</b>                     | -.9340***<br>(.278) | -.4324<br>(.314)    | -.7317***<br>(.203)  |
| <b>Constant</b>                             | 7.0396***           | 8.2630***<br>(.849) | 7.6470 ***<br>(.523) |
| <b>R squared</b>                            | 0.3408              | 0.3433              | 0.3506               |
| <b>Observation</b>                          | <b>202</b>          | <b>205</b>          | <b>407</b>           |

**Robust standard errors are shown in parentheses. Other variables are the same as those in previous tables**

**Significance codes: \*\*\*p<0.01, \*\*p<0.05, and \*p<0.1**

**Source: Field data**

***Results: Propensity Score Matching Method***

From model 1 in Table 5, the result of the local linear regression matching was extracted. It is evident that LBC performs significantly less in school performance. Specifically, NLBC outperforms LBC in terms of their scores by 0.321 standard deviation.

Based on the family level variable, the differences in children’s score turned to 0.402. However, after adding school characteristics, the difference turned to 0.283.

**Table 5.** Results of Propensity Score Matching Method

| Models  | Kernel    | Stratification Matching | One to one | Local linear matching |
|---------|-----------|-------------------------|------------|-----------------------|
| Model-1 | -0.376**  | -0.392**                | -0.311**   | -.3210**              |
| Model-2 | -0.439*** | -0.422***               | -0.434***  | -.4022***             |
| Model-3 | -0.254**  | -0.298 **               | -0.374**   | -.2830**              |

Significance codes: \*\*\*p<0.01, \*\*p<0.05, and \*p<0.1

Source: Field data

**Results: Oaxaca–Blinder Decomposition  
 Overall Decomposition**

**Table 6.** Oaxaca Blinder Decomposition Results

|                                      | LBC coefficient (1) | NLBC coefficient (2) | Pooled coefficient (3) |
|--------------------------------------|---------------------|----------------------|------------------------|
| Group 1                              | 7.19995             | 7.19995              | 7.19995                |
| Group 2                              | 6.7787              | 6.77878              | 6.77878                |
| Observations                         | 407                 | 407                  | 407                    |
| Gap ( $y_{NLBC} - y_{LBC}$ )         | .4211***            | .4211***             | .42117***              |
| Explained                            | .1165<br>(.089)     | .1340<br>(.093)      | .1534**<br>(.073)      |
| Unexplained                          | .3045***<br>(.110)  | .2870**<br>(.118)    | .2676***<br>(.099)     |
| Gender = Female                      | .0197<br>(.015)     | .0455<br>(.028)      | .0291<br>(.018)        |
| Mother's education = yes             | -.0370<br>(.021)    | -.0259<br>(.020)     | -.0280*<br>(.016)      |
| Index of depression                  | .0488*<br>(.025)    | .0226<br>(.020)      | .0382**<br>(.019)      |
| student–teacher ratio                | .0319<br>(.023)     | .0869**<br>(.035)    | .0542**<br>(.023)      |
| Class size                           | .1703***<br>(.042)  | .1088*<br>(.060)     | .1620***<br>(.036)     |
| Socio-economic index of class = poor | -.1534***<br>(.056) | -.1246***<br>(.040)  | -.1328***<br>(.040)    |
| Environment satisfaction             | .0136<br>(.016)     | .0018<br>(.015)      | .0102<br>(.011)        |
| Parental expectation                 | .0224<br>(.018)     | .0187<br>(.015)      | .0205<br>(.015)        |

Standard errors are shown in parentheses

Significance codes: \*\*\*p<0.01, \*\*p<0.05, and \*p<0.1.

Source: Field data

Columns (1-3) from Table 6 show the result of the decomposition of school performance of left-behind children, non-left-behind children, and pooled model over both groups as the reference coefficient, respectively. The pooled model includes parental migration indicators as a control variable and

contains information from both groups. The results of column (3) are preferred for this study’s baseline discussion.

Additionally, the explained part amounts to 0.153 standard deviations, constituting 36.34% of the total difference. Student–teacher ratio, class size, and socio-economic index of class are essential contributors to the gain or loss of parental migration.

The contributions of student–teacher ratio, class size, and socio-economic index of class account for 12.82%, 38.47%, and 31.35% of the gap, respectively. The family expectation is neither an important or significant factor.

The OB decomposition results show that approximately 36.34% of the differences in scores can be explained by observed characteristics. The most important elements include student–teacher ratio, class size, and socio-economic index of class, which are the most significant and powerful explanations for the differences.

### ***Contributions of Coefficient Differences***

Table 7 presents the coefficient differences of three-fold decomposition. Results are reported using both groups as reference groups. Emphasis is laid on the role of student–teacher ratio, class size, and class social. From Table 7, it is seen that almost all differences in the coefficients of class size and socio-economic index of class are insignificant, except for the student–teacher ratio per student. Therefore, the differences are significantly positive. This implies that NLBC benefit more than LBC from the student–teacher ratio. This may indicate the potential social exclusion of left-behind children, preventing their equitable access to student–teacher ratio in rural public schools.

**Table 7.** OB Decomposition of Coefficients (Three-fold decomposition)

|  | <b>Threefold</b>   | <b>Threefold(reverse)</b> |
|--|--------------------|---------------------------|
| <b>Group 1</b>                               | 7.1999             | 7.1999                    |
| <b>Group 2</b>                               | 6.7787             | 6.7787                    |
| <b>Observations</b>                          | 407                | 407                       |
| <b>Gap (<math>y_{NLBC} - y_{LBC}</math>)</b> | .4211***           | .4211***                  |
| <b>Endowments</b>                            | .1340<br>(.093)    | .1165<br>(.089)           |
| <b>Coefficients</b>                          | .3045***<br>(.110) | .2870<br>(.118)           |
| <b>Interaction</b>                           | -.0175<br>(.094)   | .0175<br>(.094)           |
| <b>Gender = Female</b>                       | -.1159<br>(.079)   | .0197<br>(.015)           |
| <b>Mother's education = yes</b>              | .0542<br>(.117)    | .0432<br>(.093)           |
| <b>Index of depression</b>                   | -.1420             | -.1158                    |

|   |                   |                   |
|---|-------------------|-------------------|
|   | (.130)            | (.106)            |
| <b>Student–teacher ratio</b>                | 1.4559*<br>(.830) | 1.4008*<br>(.799) |
| <b>Class size</b>                           | .0150<br>(.016)   | .0765<br>(.079)   |
| <b>Socio-economic index of class = poor</b> | .0369<br>(.053)   | .0081<br>(.012)   |
| <b>Environment satisfaction</b>             | .1451<br>(.266)   | .1568<br>(.288)   |
| <b>Parental expectation</b>                 | .0786<br>(.386)   | .0823<br>(.404)   |

Standard errors are shown in parentheses  
 Significance codes: \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , and \* $p < 0.1$   
 Source: Field data

## Discussion

In recent times, parent migrants to other countries have greatly increased. In light of this, it is critical to ascertain the impact and degree to which parental migration influences the educational outcomes of children who are left behind in present-day Morocco. Using data from the survey, this study examines the effect of migration on children’s human capital accumulation. The Oaxaca–Blinder decomposition method is also applied to analyse the contributors to the loss from family migration. Given the transformative impact of parental migration on children’s surroundings, attention is directed towards examining the role of family characteristics and school characteristics. Nonetheless, these factors can be manipulated by families and governments. It was also found that NLBC children significantly outperformed their LBC counterparts in terms of school’s performances. The results of the OB decomposition method further show that the student–teacher ratio plays the most important roles in bridging the gaps.

The following is a detailed discussion:

First, as this paper demonstrates, migration has no positive effect on the educational outcomes of children left behind. The results are consistent with previous findings (Antia et al., 2022; Song et al., 2018).

Second, it has been observed that LBC performance is significantly impacted by school quality. The OB decomposition method revealed that the two components of school quality are important elements of the gaps. Given the controversial report of Coleman (1968) and Hill (2017), the findings of this study demonstrate the value of educational investments in children’s growth.

Finally, the results may suggest potential social exclusions being practiced in public schools. In the coefficient decomposition, it is evident that the difference between the coefficients of student–teacher ratio is positive and significant (Table 5). This may imply that LBC children cannot enjoy the full

range of school services. Therefore, eliminating all potential social exclusions appears logical for enhancing LBC outcomes.

## **Conclusion**

In order to quantify the impact of parent's international migration on educational outcomes of left-behind children, this study examined a sample of 407 students enrolled in public primary schools in rural areas of the province of Fkih Ben Salah during the year 2020. In this analysis, the Regression Model, the Propensity Score Matching, and Oaxaca-Blinder Decomposition method were applied.

The main findings of this work include three aspects. First, PSM estimates indicate that children's academic performances are significantly associated with parental migration. Second, results from OB decomposition show that the contributions of student-teacher ratio, class size, and socio-economic index of class account for 12.82%, 38.47%, and 31.35% of the gap, respectively. LBC can lead to social exclusion in public schools. The results suggest that LBC may experience limited benefits, primarily due to receiving fewer opportunities for better school quality.

There are two important policy implications for left-behind children. First, since international family migration cannot benefit the academic outcomes of left-behind children, assistance should be provided to immigrant parents to ensure the inclusion of their children in the first journey. Second, Governments and public schools should try to eliminate social exclusion which children left-behind may suffer in schools through teacher-student ratio.

This article had two limitations. The primary constraint pertains to the calculation of the contributions of certain observed school investments, while the exclusion of other significant investments, such as per-student expenditure and extracurricular activities, remains unfeasible.

Future research should consider the causal relationship between student-teacher ratio and children's outcomes.

## **Human Studies**

This study received approval from the Provincial Directorate of the Ministry of National Education, Vocational Training, Higher Education, and Scientific Research of Fkih Ben Salah, with adherence to the principles outlined in the Helsinki Declaration.

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