World Development Perspectives 5 (2017) 34–43

Contents lists available at ScienceDirect

World Development Perspectives

journal homepage: www.elsevier.com/locate/wdp

Parents' education and literacy skills: Evidence on inequality of socioeconomic status in Arab countries

Donia Smaali Bouhlila

University of Tunis El Manar, Faculté des Sciences Economiques et de Gestion de Tunis, Laboratoire Prospective, Stratégies et Développement Durable (PS2D), Tunisia

ARTICLE INFO

Article history:
Received 29 January 2016
Revised 1 February 2017
Accepted 2 February 2017

ABSTRACT

The international comparative assessments of students' achievement have revealed that students in MENA countries have meager literacy skills compared to their peers in other countries. The success of these countries in expanding access to schooling has not been followed by a similar access in equipping students with cognitive skills which are deemed to be important in this knowledge economy. In addition to the low achievement, the persistent inequalities in this region may contribute in the longer run to widen the gap between students from higher socioeconomic groups and those from low socioeconomic groups. A recent study conducted by Isfahani, Belhaj Hassine, and Assaad (2014) shows that a large share of inequality in achievement in MENA countries is due to family background and community characteristics. This study aims to contribute to the growing and rare research papers on inequalities in MENA region. It addresses the disparities in test scores of students in four MENA countries that took part in PISA 2012 assessment, by examining the impact of socioeconomic factors on these scores. Following Martins and Veiga (2010), the study uses two different methodologies. The first one assesses the impact of each component of SES students' achievement including the school SES composition using hierarchical linear models (HLM). The second one is inherited from medical studies and makes use of the decomposition of the concentration index. The results suggest that parents' education and school socioeconomic status are positively linked to academic achievement and both of them contribute to the socioeconomic-related inequality in achievement in all countries under study. They are the main, if not the sole drivers of inequality.

1. Introduction

Equity has long been considered an important goal in the education sector. Yet, inequalities persist between the advantaged students, in terms of wealth and socioeconomic status (SES), and the disadvantaged students. As equity research became increasingly applied, international organizations and governments begin to focus more and more on policies and programs to reduce inequities and to ensure more social justice. Common to education research and policy interventions, is the concern that there is a differential impact with respect to students' outcomes based on socioeconomic status. A huge literature exists regarding the impact of socioeconomic variables on students' achievement. Indeed, it is widely acknowledged that learning is influenced by family background and by the home environment. Although there is no consensus on how to measure the socioeconomic status, evidence supports that parents' education is the main driver of students' achievement. Several explanations for the existence of this pronounced effect on children' acquisition of human capital, have been advanced. The most widespread is that more educated parents perceive that the returns to education are higher for their children. Similarly, school composition contributes to widen disparities in achievement since high-educated parents are likely to enroll their children in schools with higher SES. The latter are found to achieve better results (OECD, 2004; Summers & Wolfe, 1977; Thrupp, Lauder, & Robinson, 2002). It is worthy to note that the persistence of SES inequalities and their impact on students' outcomes raises concerns about the intergenerational mobility. Poor-performing students are those who are less likely to have different promising employment opportunities in the future. This constitutes a prejudice not only for individuals but also for the whole society or country which depends more and more on its human capital.

A recent study conducted by Isfahani et al. (2014) shows that a large share of inequality in achievement in MENA countries is due to family background and community characteristics. This study aims to contribute to the growing research papers on inequalities in four Arab countries. It addresses the disparities in test scores of students in these countries that took part in PISA 2012 assessment, by examining the impact of socioeconomic factors on these scores. Following Martins and Veiga (2010), the study uses two different methodologies. The first one assesses the impact of each component of SES on students' achievement including the school

E-mail address: donia.smaali@fsegt.utm.tn

http://dx.doi.org/10.1016/j.wdp.2017.02.006
2452-2929/

SES composition. The second one is inherited from medical studies. It aims to measure the extent of SES inequalities responsible for test score disparities. For this purpose a concentration index is calculated and then decomposed into different determinants in order to show the total contribution of each SES variable to the total socioeconomic related achievement inequality in each country.

The paper is structured as follows: in the next section, we briefly describe the methodologies used. Section three discusses the different results and finally section four concludes and provides some insights into policy implications.

2. Methodology

2.1. Hierarchical linear models

In the first part of this study, we are interested in the relationship between school socioeconomic status (SES) and students' academic performance. Given that PISA data has a hierarchical structure and knowing that, students' test scores within the same school may be correlated due to exposure to the same teacher or textbooks or due to the similar socioeconomic level of the students,[1] we use the hierarchical linear models (HLM) methodology. Following the steps of this methodology, we first estimate "an empty model" which has no predictors in it. Then we estimate the conditional HLM. Moreover, the total variability in the student's performance is partitioned into two pieces: that which lies between schools and that which is within schools.

2.2. Concentration index

The concentration index quantifies the degree of inequality related to socioeconomic status in an outcome variable. Many applications are possible for the concentration index. It gained celebrity in health studies where it is widely applied in different contexts; child mortality, child malnutrition, child immunization, adult health... (Gwatkin, Rustein, Johnson, Pande, & Wagstaff, 2003; Morasae et al., 2012; Van Doorslaer et al., 1997; Wagstaff, 2000; Wagstaff, van Doorslaer, & Watanabe, 2003). In this study, and in line with Martins and Veiga (2010), the concentration index is used as the measure of socioeconomic inequality in PISA evaluations. Following Jenkins (1988), Kakwani (1980) and Lerman and Yitzhaki (1989), It is computed in terms of the covariance between PISA score (in one of the tests) and the fractional rank in the living standard distribution:

$$CI = \frac{2}{\mu} cov_w(A_i, R_i) \quad (1)$$

where A_i and R_i are respectively, the achievement of the ith student and the fractional rank of the ith student (for weighted data)[2]. μ is the (weighted) mean of the achievement of the sample and cov_w denotes the weighted covariance.

In this context, when the concentration index is null, all socioeconomic groups report the same relative share of students' achievement and there is no inequality in performance related to socioeconomic status (SES). If instead, the CI is negative, it denotes the existence of inequalities in students' performance favoring students with low SES. By contrast, a positive value of the CI highlights the existence of inequalities in students' performance favoring the higher socioeconomic groups. We estimate the concentration index as proposed by Kakwani, Wagstaff, and van Doorslaer (1997). Knowing that the socioeconomic status is only one component of the overall inequality in education measured by the Gini index, the extent to which socioeconomic dimension contributes to the overall inequality is computed through the ratio CI/G.

2.3. Decomposition of the concentration index

In order to determine the contribution of each variable to inequality in the students' achievement, the concentration index is decomposed by factors. The method proposed by Wagstaff et al. (2003) is used in this context where the concentration index can be written as

$$CI = \sum_k \left[\frac{\beta_k \bar{x}_k}{\mu}\right] C_k + \frac{GC_\varepsilon}{\mu} \quad (2)$$

where $\bar{x}_k$ is the mean of x_k, C_k is the concentration index for each of the determinants $x_k C_k$,[3] μ is the mean of A_i and GC_ε is the generalized concentration index for the error term, also called the *unexplained* component. Indeed, Eq. (2) is the sum of two components: the first component consists of two constituents: elasticity and a concentration index of k determinants. The elasticity $\eta_k = \left[\frac{\beta_k \bar{x}_k}{\mu}\right]$ indicates the impact of each determinant on achievement, i.e. how much change in achievement is associated with one unit of change in the explanatory variable. The concentration index of each determinant indicates the extent of its unequal distribution across economic groups. The second component is the part of the inequality that cannot be explained by systematic variation in the contributors (determinants) across economic groups.

For the decomposition process, we compute the contribution of each determinant to inequality by multiplying the elasticity of each determinant by its concentration index. After that, we calculate the percentage contribution simply by dividing $(\eta_k c_k)$ of each determinant by the concentration index of achievement. It is worthy to note that it was proved that the concentration index of a binary variable has a minimum of δ-1 and a maximum of $1 - \delta$ where δ is the mean of the variable in question (Wagstaff, 2005). So, as the mean increases, the range of possible values of the concentration index decreases.

2.4. The socioeconomic ranking variable

Practically, SES is complex in nature. It is assessed by a variety of different combinations of variables. The conventional measures incorporate parental income, parental education and parental occupation (Duncan, Featherman, & Duncan, 1972; Entwisle & Astone, 1994). However, researchers have also emphasized the significance of different home resources such as bed, newspapers, bicycle, radio... as indicators of family SES (Heyneman, 1976). Indeed, there is no consensus upon exactly how socioeconomic status should be measured. While some researchers have used composite measure of SES to conduct their analysis (Baker, Goesling, & LeTendre, 2002; Nonoyama-Tarumi, 2008; Yang & Gustafsson, 2004) and recommend the use of composite indices of SES (Mueller & Parcel, 1981), others assessed the SES by using a variety of items (Alexander & Simmons, 1975; Ammermüller, Heijke, & Wößmann, 2005; Hanuskek & Luque, 2002; Heyneman, 1976; Wößmann, 2003, 2004; Chiu and Khoo, 2005; Bouhlila, 2014, 2015; Martins & Veiga, 2010) because each item of SES is supposed to be unique and supposed to capture a different aspect of SES (Sirin, 2005).

For the purpose of this study, and in line with Martins and Veiga (2010), we use parental education as a measure of a socioeconomic

[1] Research demonstrated that people within a particular group tend to be more similar to each other in terms of an outcome variable than they are to people in a different group.

[2] The fractional rank variable is defined as follows, when data is weighted (O'Donnell, van Doorslaer, Wagstaff, & Lindelow, 2008): $R_i = \sum_{j=0}^{i-1} w_j + \frac{w_i}{2}$ where $\mathbf{w_i}$ is the sample weight scaled to sum to 1, observations are sorted in ascending order of living standards, and $\boldsymbol{w_0} = 0$.

[3] C_k is determined analogously to CI.