

The impact of educational homogamy on literacy levels

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Abstract: In this paper we explore the impact that increases in homogamy levels have had on corrected literacy levels, the later being defined as classical literacy rates corrected by the way in which literates and illiterates are allocated across households and penalizing those distributions with high levels of literacy segregation. In order to disentangle the joint effect that homogamy levels and education expansion have had on corrected literacy levels we have developed a new measure that combines into a single dimension the joint effect of both factors at the same time. Based on IPUMS and DHS data for 73 countries and 217 samples, our results suggest that increases in the preference for homogamy have not been strong enough to prevent educational expansion to reach an expanding number of layers of the population and increase corrected literacy levels all over the world. Nevertheless, corrected literacy rates would have been on average 7% higher had it not been for homogamy preferences.

1. Introduction.

Literacy and, more generally, education, are essential factors that contribute to the creation of human capital. It is widely acknowledged –both on theoretical and empirical grounds– that literacy-related skills are a necessary condition to escape out of poverty. At the macro level, education contributes to economic growth (Lucas 1988, Barro and Sala-i-Martin 2004, Lutz et al 2008) and to the reduction of poverty (Dollar and Kraay 2004). Several empirical studies show that literacy and education levels are highly (and positively) correlated with many human development indicators (Sen 1992, 1998). At the micro level, the acquisition of literacy skills is associated to higher labor market returns (Psacharopoulos 1994) and, broadly speaking, to higher well-being levels. In many developing countries, being illiterate may thus be an important disadvantage for an individual, her/his dependents, and perhaps his/her wider community.

In a pathbreaking paper, Basu and Foster (1998) suggested that all illiterates might not experience the same disadvantage, especially if they can access other individuals who are literate. As argued in that paper (p. 1734), ‘...literate household members generate a *positive externality* or a kind of *public good* for illiterate members’. Therefore, the authors suggest to distinguish between the so-called ‘*isolated illiterates*’ (those illiterate individuals living in a household where each of its members is illiterate) and the ‘*proximate illiterates*’ (those illiterate individuals living in a household with at least one

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literate). This basic but powerful intuition has generated a burgeoning literature on new ways to measure literacy levels and their corresponding applications (see, for instance, Basu et al 2001, Gibson 2001, Mitra 2002, Dutta 2004, Almeyda-Duran 2005, Kell 2008, Maddox 2007, Lee 2008, Subramanian 2004, 2008, Iversen and Palmer-Jones 2008, Basu and Lee 2009). From now onwards, the new literacy measures that take into account the externalities exerted by literate individuals will be referred as '*corrected literacy measures*'. According to the corrected literacy measures recently proposed in the literature, having a larger share of isolated illiterates is detrimental for overall literacy levels because the positive 'externalities effect' is not so influential.

An important factor that a priori might influence the existence *and perpetuation* of isolated illiterates is the increasing educational homogamy pattern observed at a worldwide level (Blossfeld 2009, Esteve and McCaa 2007, Kalmijn 1998, Mare 1991, Smits et al. 1998). Other things being equal, if educational homogamy levels continue to increase illiterate individuals will tend to choose partners who are illiterate too, thus contributing to the creation of isolated illiterates and lowering the literates' externalities returns. This is clearly linked to the more general phenomenon of intergenerational transmission of skills and goods and to the mechanisms that perpetuate inequality (see Chadwick and Solon 2002, Ermisch et al 2006, Torche 2010).

On the other hand, there is an educational expansion all over the world that has contributed to steady increases in 'classical' literacy rates² (see, for instance, Lutz 2008, United Nations 2003). Interestingly, despite the observed worldwide gains in classical literacy rates, the absolute number of adult illiterates remains very high and almost constant because of the impact of population growth: the absolute number of illiterates in the world from 1990 to 2000 has barely reduced from 879 to 862 million (United Nations 2003).

Therefore, increased homogamy patterns and the expansion of education are two forces that run in opposite directions when assessing corrected literacy levels: the former will tend to reduce its values while the latter will do the opposite. The main aim of this paper is to analyze the extent to which these two forces counteract each other or whether one is dominated by the other. More specifically, we want to assess and quantify the contribution that each of these forces has had on corrected literacy measures. For this purpose, we need to define a new measure that combines into a single dimension the joint effect of both factors at the same time. One of the main contributions of this paper is the definition of one such measure which, in addition, has been axiomatically characterized. The axiomatic methodology, which is very common in economic theory, allows one to state explicitly the normative foundations upon which the index is based and to gauge its appropriateness vis-à-vis other measures proposed in the literature. The way in which the index has been constructed allows us to factor out the separate effects

² The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines the literacy rate in a given population as the percentage of adults (aged 15 and older) who are literate in that population.

that homogamy patterns and education expansion have had on corrected literacy levels. Moreover, such measure also allows performing some counterfactual exercises in which actual corrected literacy levels are compared with respect to what would have been observed had the preference for homogamy remained constant during the whole period of analysis – an issue that will be investigated in the empirical section of the paper which illustrates in full swing the influence that increases in homogamy patterns have had on corrected literacy levels.

The notion of proximate illiteracy assumes that when literate and illiterate individuals cohabit in the same household, the later benefit from the positive externality generated by the former. In this context, and given the fact that our analyses are restricted to the population living in union, it seems natural to explore whether women or men are more benefited from literacy externalities. This important topic, which is closely related to the gender-differentiated process of education expansion, will be investigated in the last section of the paper.

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