Language use in education and human capital formation: Evidence from the Ethiopian educational reform

RAJESH RAMACHANDRAN*
Goethe University, Frankfurt, Germany

Summary. — In 1994, Ethiopia introduced mother tongue instruction in primary schooling for the largest ethnic group in the country. Combining data from before and after the policy change, from the regions that gain access to mother tongue schooling, along with the regions and ethnic groups that face no change in language policy, I estimate the effect of mother tongue instruction on human capital formation. The results show that access to mother tongue schooling increases the ability to read by 40%. Moreover, it increases the completed years of schooling by more than half a year, and the probability of completing primary schooling by five percentage points. The ability to read by permitting access to printed sources of information, increases newspaper readership by around 25% and makes it 17% points more likely that individuals report using pamphlets, posters or leaflets as a source of information about family planning. My preferred interpretation of the results is that provision of schooling in a language spoken at home, and used for social interactions, reduces the cost and increases the efficiency of learning. The result highlights the use of non-native languages, an almost ubiquitous practice in Sub-Saharan Africa, as a potentially important factor underlying the large educational failures in this part of the world.

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1. INTRODUCTION

The question of language use in education is particularly relevant for the Sub-Saharan African continent. In Sub-Saharan Africa, with the exception of Eritrea, Ethiopia, and Tanzania no country provides the entire span of primary schooling in a local language, let alone the mother tongue (Albaugh, 2014). Along with the wide-scale reliance on the use of non-native languages, extremely low levels of student learning characterize the schooling system in this part of the world. For instance, a recent evaluation of the state of education and learning in Sub-Saharan Africa estimates that out of 110 million children entering schooling, more than 40 million will not even acquire emergent reading and numeracy skills (VanFleet, Watkins, & Greubel, 2012). However, the role of language in affecting student learning and knowledge acquisition in contexts such as these remains an open question. In this paper I examine whether using as a medium of instruction in schools, a language that is different from the language used at home, can explain the failure to obtain basic skills such as literacy and also its impact on other facets of human capital.

I base my analysis on the Ethiopian educational reform of 1994. The reform introduced mother tongue instruction in primary schooling for the largest ethnic group—the Oromos—in four of the 11 regions of the country. Additionally, the reform also introduced a package of non-language educational reforms (curricula revision, teacher training, and decentralization) that were implemented uniformly across the country, that is, for all groups and regions. To isolate the effect of the language policy change, I exploit the fact that the exposure to mother tongue instruction is jointly determined by the interaction of year of birth, region of residence, and ethnicity dummies and implement a triple difference-in-differences (D-I-D) estimator. After controlling for year of birth, region of residence, and ethnicity dummies, as well as all the two-way interaction terms, the triple interaction term—year of birth, region of residence, and ethnicity—plausibly isolates the causal effect of the provision of mother tongue schooling on indicators of human capital. I provide evidence in support of the identifying assumption underlying the estimation strategy, that is, the groups being compared demonstrate parallel trends on the indicators of interest before the implementation of the educational reform in 1994.

The results show that access to mother tongue instruction increases the probability of being able to read a complete sentence, a key capability, by 18 percentage points. As only 45% of the individuals prior to the reform were able to read a complete sentence, introduction of mother tongue education leads to a gain of more than a 40% increase in the ability to read. Examining the impact on quantitative indicators of human capital, the data show that provision of mother tongue instruction increases the completed years of schooling by 0.65 years and the probability of completing primary schooling by 5 percentage points. I hypothesize that the increase in the ability to read permits access to printed sources of information, and consistent with this reasoning find that individuals affected by the language policy change are 8 percentage points more likely to report reading a newspaper, and 17 percentage points more likely to report using pamphlets, posters, etc.
or leaflets as a source of information about family planning. The increased readership of newspapers is an important outcome, as newspaper readership has been shown to be a proxy for social capital (Putnam, 2001), is associated with improved voter knowledge (Snyder, 2010) and electoral participation (Gentzkow, Shapiro, & Sinkinson, 2011), as well as having an important role in improving government responsiveness to its citizens (Besley & Burgess, 2002). I also explore whether the extension of mother tongue instruction has a positive effect on the state of knowledge about the existence of major diseases and the availability of simple cures. I find small positive effects on the probability that a person who gains access to mother tongue instruction, and hence increases their ability to read, has heard of all the five diseases or cures considered, that is, the existence of modern contraceptives, tuberculosis (TB), human immunodeficiency virus (HIV), sexually transmitted infections (STIs), and oral rehydration solution (ORS).

The estimation strategy (the triple D-I-D estimator) by design isolates the effect of the introduction of mother tongue education from the non-language educational reforms, however, I undertake several additional analyses to verify that the increase in human capital should be attributed to the change in the language of education and not the other aspects of the educational and political reform. I analyze factors such as increase in political power for the Oromos due to the creation of ethnic homelands, programs undertaken outside of formal schooling, changes in teacher composition, and the increase in school enrollment. I find little support to conclude that those other variables can explain the measured increase in the ability to read.

I discuss why findings from earlier studies such as Angrist et al. (1997) might differ from the ones found in this paper. I also elaborate on how my paper adds to the existing literature analyzing the role of language use in education in the context of Sub-Saharan Africa and also highlights the limited relevance of the findings from bilingual programs, primarily based on evidence from the United States, in informing us about the role of language in student learning and knowledge accumulation in Sub-Saharan Africa.

The paper is structured as follows: the next section provides an overview of the related literature and highlights the distinctions and commonalities. Section 3 provides information on the linguistic groups and the educational and language policy in Ethiopia. Section 4 presents the data and the empirical strategy. In Section 5, I show that introducing primary schooling in the native language increases the individual’s ability to read, completed years of schooling and newspaper readership. In Section 6, I show that the language policy change and not the other aspects of the reform explain the increase in human capital and Section 7 concludes.

2. RELATED LITERATURE

The impact of the choice of medium of instruction policies on educational outcomes in developing countries has been a vibrant area of research in the disciplines of sociolinguistics and education. The positive effects of mother tongue education on academic achievement and student performance has been demonstrated in a variety of contexts (Aldou et al., 2006; Bamgbose, 1984; Desai & Qorro, 2006). It also has been shown that use of a proximate language has positive impacts on attendance, participation in classrooms, as well as on acquisition of early reading skills and literacy (Benson, 2005; Bender, 2005; Trudell, 2012). There also has been a lively debate regarding the importance of integrating local cultures and indigenous knowledge systems into formal school curricula to enable greater community participation and to ensure education is not disembodied from its context (Owuor, 2008; Shizha, 2013), and on the role of mother tongue instruction in enabling the acquisition of a second language (Cummins, 1979, 1991). Finally, an important strand of literature has tried to understand the motivations underlying medium of instruction policy choices in post-colonial states, with an aim at incorporating the role of linguistic elites in society (Tollefson & Tsui, 2003). This body of literature has been crucial in bringing to the fore the importance and role of language planning in post-colonial states to help improve educational effectiveness; however, the research designs and the selected samples on which most studies are based, do not typically allow for drawing conclusions about the causal role of language on student learning.

The other body of literature exploring the role of language of instruction on student learning, primarily come from bilingual programs for language minority students in the developed world. Results from these bilingual programs shows that children’s reading proficiency in their native language is a strong predictor of their ultimate English reading performance (August & Shanahan, 2008; Garcia, 2000; Reese, Garnier, Gallimore, & Goldenberg, 2000); though recent randomized or matched longitudinal studies find no positive or negative benefits of provision of mother tongue instruction (refer to Chin (2015) and Slavin, Madden, Calderón, Chamberlain, & Hennessey (2011) for an overview in the context of the United States; and Parker, Rubalcava, & Teruel (2002) and Patrinos & Velez (2009) for evidence from Mexico and Guatemala, respectively). It is however important to stress that the results from bilingual programs in the developed world might not be transferrable to the context of developing countries. This is because, in the developed countries, language minority students learn in the dominant language to which day-to-day exposure is high and teachers are first language speakers of the medium of instruction. On the other hand, in Sub-Saharan Africa, the majority of the population learns in a non-native language to which they have low exposure and the teachers themselves are non-native speakers. This suggests that a ‘medium of instruction’ might have a more important bearing on student learning in the context of Sub-Saharan Africa. For the OECD countries and the United Kingdom, Dustmann, Machin, and Schönberg (2010) and Dustmann, Frattini, and Lanzara (2012) highlight language as the single most important factor in explaining differences between immigrant and native children’s schooling outcomes.

My paper relates most closely to the limited but growing literature in the field of economics of education on the language question in the context of Sub-Saharan Africa. Two recent papers, Taylor and von Fintel (2016) and Laitin, Ramachandran, and Walter (2016), in the context of South Africa and Cameroon analyze the impact of provision of mother tongue schooling on student test scores. The find positive and significant impacts on English and Mathematics scores, though both studies are based on a small set of classrooms. Another related study is Eriksson (2014) who uses the Bantu Education Act of 1955 in South Africa, and finds that the increase in the duration of local language instruction had a positive effect on the ability to read and write, on educational attainment and wages. The study most closely related to mine is Seid (2016), who also uses the Ethiopian educational reform of 1994 and finds positive effects on both enrollment and whether a child attends the “right” grade for her/his age. My study adds to the paper by Seid (2016) on several dimensions. First, the existing study is based on a
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