The role of levels of numeric competence and school quality in the South African wage function

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Abstract

Returns to education in South Africa are highly convex in light of a surplus of unskilled workers and a shortage of skilled workers in the economy (Keswell & Poswell, 2004). However, the unbiased estimation of these returns has not received the same econometric attention in the local literature as they have internationally. This is predominantly due to the absence of appropriate micro level data in the past. This paper investigates the well-known ability bias using the NIDS 2008 survey, one of the first to contain concurrent information on the labour market outcomes of individuals and respondents' numeracy proficiency. The latter is a possible proxy for ability. It is particularly important to account for ability differences in South African earnings functions, as individuals with the same educational qualifications may have achieved vastly different learning outcomes and have been exposed to schools of diverse quality (given the highly segmented education system inherited from the apartheid regime).

However, other work has shown that response rates on the NIDS numeracy test were low, and that in many cases it was the group of low ability individuals that opted out of the test. Using this selected sample, we estimate the returns to education by also controlling for numeric ability. We correct for the sample selection on this variable, as well as selection into employment. We also compare naïve estimates from the full sample (without controlling for numeracy) with the limited sample (with and without controlling for numeracy). In addition to the selection issues, further problems arise within design of the numeracy test. It was administered in 4 different difficulty levels, which were designed to accommodate the different levels of mathematical attainment of all working-age respondents. However, it appears from descriptive evidence that enumerators allowed respondents to choose their own difficulty level, which often did not correspond to the recommended level. It is evident that those who chose test levels that were too difficult performed worse and vice versa. We investigate the potential calibration issues related to the various tests and whether this influences the wage function. Further, the name of the last secondary school that individuals attended is collected in this survey. This is connected to historical results in the national senior certificate examination to gauge school quality. This information is exploited to establish whether the inequalities in school outcomes contributes to the highly convex returns to education.