Abstract for "Composition of Human Capital, Distance to the Frontier and Productivity"

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Although widely studied, the debate on whether there are productivity externalities to the use of human capital is far from settled. Krueger and Lindahl (2001) find only little evidence of human capital externalities. Vandenbussche, Aghion and Meghir (2006) and Madsen (2010) argue in favor of externalities, as long as both a country's distance to the technological frontier and the composition of human capital (skilled versus unskilled) are considered. In contrast, Inklaar, Timmer and van Ark (2008) find no evidence of skilled human capital externalities, even when proximity to the frontier is taken into account.

One obstacle to resolving this debate is the lack of reliable data on productivity levels and growth for a broad set of countries at different levels of development. The second obstacle is a dominant focus on university-educated workers versus the rest of the workforce. As a result, the current conclusions on human capital externalities have a narrow basis. This paper will deal with both obstacles. First, through the recently revised Penn World Table (Feenstra, Inklaar and Timmer, 2013), we have at our disposal a more sophisticated measure of productivity for a large set of countries than has predominantly been used in this literature. Vandenbussche et al. (2006) rely on a crude productivity measure that does not take into account the educational attainment of the labor force, which in turn implies that they cannot distinguish between private and social returns to education (Inklaar et al., 2008). The expanded Penn World Table allows us to also examine human capital externalities in developing countries, a thus far under-explored topic in the literature.

Second, for much of the world the spread of secondary education is a much more important phenomenon than tertiary education. Treating all workers without tertiary education as 'low-skilled' potentially misses out on any externalities stemming from the spread of secondary education in emerging economies, as their greater technical skills allow for the imitation and adaptation of foreign technologies. Using the Barro and Lee (2013) dataset, the workforce in an economy can then be split into three, rather than the usual two groups. The testable hypothesis analyzed here is that an economy needs to exceed a certain level of human capital to start catching up to the productivity frontier. As enough workers reach a secondary level of education, the economy starts to move towards the technological frontier. This continues until high-skilled become more important. Only in this second stage will the economy be able to reach and even surpass the frontier. The paper will analyze this hypothesis with the aim of giving new insights into the importance of different types of human capital at different stages of development.

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