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To educate or not to educate: Impact of public policies in developing countries

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ABSTRACT

It is well-known in the empirical literature that present-oriented individuals are less likely to go to college as compared to forward looking individuals. There is compelling evidence of a high percentage of dropouts from high schools in poor countries. The endogenous sorting of homogeneous workers into skilled and unskilled types might be the outcome of exposure to income risk and an individual's aversion to risk. We obtain the critical risk aversion associated with income levels above which no individual chooses education. Broad-based economic policies may have perverse impact on educational attainments of individuals. We argue that such an analysis has been largely neglected in related studies. This outcome may also be undesirable from the perspective of a social planner. To address this, we suggest a sector-specific tax-subsidy scheme as a corrective instrument of public policy.

1. Introduction

In many developing countries access to education remains limited and poor. For a large number of households that belong to the lower and lower-middle income strata in such countries find education to be a difficult choice vis-à-vis joining the labor market at an early age. The well-known luxury axioms *a' la* Basu and Van (1998) pertaining to families incapable of retaining children in school and generating a high incidence of child labor in developing countries is a clear manifestation of such difficulty. Figs. 1–3 in Appendix B shows that for India, Bangladesh, Nepal, Pakistan and Sri Lanka (as compared to the United States, used only as a standard example) the gross enrolment ratio[1] at the primary level is quite high for all the countries, and that the ratio in Nepal exceeds that of the United States between 1996 and 2014. The gross enrolment at the secondary level is also close to the US ratio of 93 to 94% for most of these countries, and for Sri Lanka in the recent years the ratio is as high as 99.18. This pattern, however, undergoes a significant turnaround when one considers gross enrolment ratio in tertiary education. The tertiary ratio stands at 89% for the US, 24.6% for India, 13.2% for Bangladesh, 17.2% for Nepal, 18.7% for Pakistan and 9.8% for Sri Lanka in 2014. It is evident that a significantly large number of students drop out of educational institutions both after primary and secondary education.

The observed patterns are neither new nor surprising. Several important attempts (see Eckstein and Wolpin, 1999; Hanushek et al., 2006; to name a few) have been made to understand the underlying causes behind high dropout rates. One issue nevertheless seems less attended to: how do macroeconomic policies in a country affect individual decisions about schooling. The decision, as we shall show is principally based on how future prospects from education influence present decision about the level of schooling for risk-averse individuals. Referring to Figs. 1–3 in Appendix B, if continuing till tertiary education is costly and education up to secondary levels generate only low to moderate returns in populous developing countries with high percentage of unskilled workers in the labor force, then the overall returns from education may not influence choice of any education (beyond literacy levels) at all. We consider a theoretical example in this paper to see if

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[1] Gross enrollment ratio according to the World Bank, World Development Indicators, is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown.

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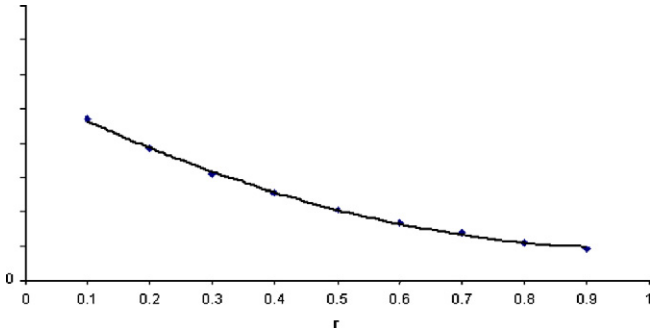
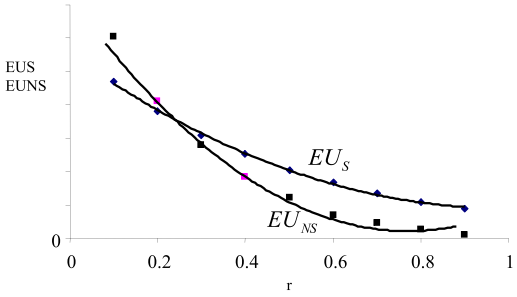


Source: Author's calculation based on numerical approximation of the parameters.

Fig. 1. Relation between EU NS and r.



Source: Author's calculation based on numerical approximation of the parameters.

Fig. 3. Critical risk aversion r*.

different risks associated with skilled and unskilled incomes determine the distribution of educated and less educated workers in an economy.

More importantly, we inquire why people with similar individual characteristics and income levels in developing countries often end up with widely different levels of schooling. We develop a model with income risks from skilled and unskilled jobs in order to obtain a level of critical risk aversion for the population. Individuals either choose education or do without it, depending on their relative position in a scale of risk aversion. We show that the distribution moves in favor of more schooling as the wage gap between the skilled and the unskilled rises, but it is quite sensitive to several other parameters.

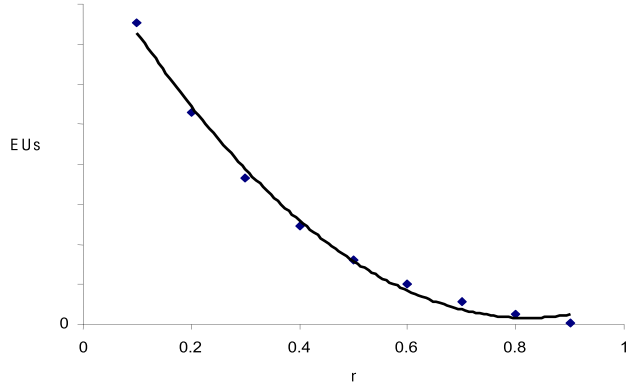
Differences in individual cognitive abilities across a distribution of population, access to credit, household size, presence of siblings, parental education and a number of other factors including public policies have been considered as those capable of determining the type and level of education (see, viz. Dai and Heckman, 2013; Heckman and Cunha, 2007 for elegant discussions). In addition, creditworthiness, parental education, number of siblings, etc., are often outcomes of direct and indirect choices made by individuals and households spreading over generations. This paper argues that such variables are important contributors to potential measures of the degree of risk individuals get exposed to in the process of making different choices, including the level of education. Should attitude towards risk at the individual level then provide answers to the questions raised above? We show that such choice also responds to countrywide policies and corrective adjustments, if any. In this regard, we discuss how countrywide macroeconomic policies may affect the distribution of the level of education in the population. For example, important contributions by Heckman et al. (1998); Judd (1998); Dupor et al. (1996); Perroni (1995); Trostel (1993), etc. show that the impact of government policy instruments on human capital formation can be considerable. Since, some macroeconomic policies may also have unintended consequences on the level of education chosen by individuals, we explore corrective public policies as may be desired by a social planner.

A no less important parameter in the discussion of human capital formation is the subject of uncertainty in the returns associated with acquisition of human capital. It seems to arise from two major sources: one, uncertainty regarding enrolment and continuation of schooling, and two, from the wage and employment variability in the post-schooling period. In many developing and transition countries, extreme poverty continues to restrict the decision to enroll and continue in school. However, those who still manage to do both, face considerable uncertainty with regard to the job market prospects and outcomes. It is easy to see that poor job market opportunities may negatively affect the decision to choose education despite little ambiguity about the fact that education enhances earnings over a lifetime.

Section 1.1 discusses some of these findings further; Section 2 develops the model and Section 2.1 deals with effects of interest rate adjustments on the level of education. Section 3 discusses the social planner's problem and corrective adjustment policies. Section 4 concludes.

1.1. Literature review

The studies on the production or accumulation of human capital at an individual level draw largely on the seminal contributions by Becker (1962) and Ben-Porath (1967). Since this well-known literature is wide and multi faceted, we refer to a few studies only in order to motivate our point of departure. For example, Pecorino (1994), Becker et al. (1990) studies human capital investment and growth while Hanushek et al. (2004), Seshadri and Yuki (2004), Caucutt and Kumar (2003), Benabou (2000, 2002) and others, emphasized skill formation among children facing credit constraints and parental altruism. The effect of risk on the production of human capital by an individual was formalized in the study by Levhari and Weiss (1974) and was subsequently followed by Williams (1978, 1979), Kodde (1986), Hogan and Walker (2002),



Source: Authors' calculation based on numerical approximation of the parameters.

Fig. 2. Relation between EU_S and r.