DISPERSION OF HUMAN CAPITAL AND ECONOMIC GROWTH

Zlateva-Petkova T.M.
TU – Gabrovo, Bulgaria

Abstract: Based on a theoretical consideration of human capital production technology, this study empirically investigates the growth implication of dispersion of population distribution in terms of educational attainment levels. Based on a pooled 5-year interval time-series data set of 94 factories and enterprises, the study finds that dispersion index as well as average index of human capital positively influences productivity growth. Given limited social resources for human capital investment, the finding implies that education policy that creates more dispersion in the human capital will promote growth.

Models of endogenous growth have pursued theoretical framework where persistent economic growth is conditioned on human capital accumulation. The implication of these models is that human capital is the driving force in the growth process of an economy. Barro (1991), Benhabib and Spiegel (1994), Dinopoulos and Thompson (2000), and many others find empirical evidence supporting these models, relating human capital with productivity growth. In these studies, human capital stocks are represented by average schooling years or enrollment ratio of the population which, however, may not appropriately reflect the actual capacity of aggregate human capital in an economy. It may well be that given the same average index of schooling, economies with different distributions of population in terms of educational attainment levels may perform differently.

Education policy and structure of social incentive system regarding human capital accumulation will determine the distribution of population across various educational attainment levels. It is interesting to note that not only the average schooling years but also distribution of population in terms of different educational attainment levels varies widely across economies and across time.

This study defines the human capital dispersion of population as the degree of dispersion in population distribution in terms of educational attainment levels and empirically investigates the productivity growth.

Human capital dispersion based on a theoretical consideration regarding the form of human capital production technology. The findings will have a strong implication on education policy. Theoretical consideration behind our inquiry stems from the generalization of the human capital production technology and the consideration of the measurement issue of human capital index. The common use of average index of schooling years to proxy human capital relies on the assumption that human capitals obtained from different levels of education are perfectly substitutable and that each additional educational year contributes to the productivity growth at a constant rate regardless of the education levels. Considering the fact that different types of knowledge are obtained at each level of education, a linear return function of education may be a crude approximation. If the return function exhibits convexity, implying that higher education contributes to productivity growth at a higher rate, a greater dispersion of a country's population distribution in terms of educational attainment levels would lead to a greater stock of aggregate human capital, given the same average schooling years in the population.

Recent empirical studies provide mixed assessments on the magnitude of social returns to human capital. When human capital is considered as a factor of input in a production function, empirical studies find that its impact on growth is insignificant, or even if it exists, that the returns beyond private returns are minimal or negative. On the other hand, when human capital is considered as a factor influencing productivity growth as suggested in endogenous growth models, its impact is found to be significant. These findings suggest an existence of strong externality arising from human capital investments. This study contributes to the literature by considering the growth.

Effect of human capital dispersion of population. Based on a pooled time-series data set of 94 factories and enterprises for the period of 2006 to 2010, the findings show that the human capital dispersion of population proxied by variance of educational attainment is strongly and positively correlated with productivity growth controlling for the average schooling years of population. Only a handful of studies have looked into relationship between human capital dispersion and growth.

The study examines the significance of human capital dispersion on the productivity growth based on production function regressions against a 5-year interval pooled time-series data set of 94 factories and enterprises. Controlling for catch-up effect, regional and time dummies, the empirical results provide strong evidence that both average index and dispersion index of human capital contribute positively to the productivity growth. The findings on the average index of human capital support earlier theoretical literature on human capital effect on productivity growth. Most interesting result in this study is that more dispersion of population distribution in terms of educational levels adds to the productivity growth, contrary to the previous findings. This evidence is consistent with the theoretical discussion regarding the existence of non-linearity in human capital production technology. The results of this study support the convexity hypothesis where each additional education year at a higher level raises the human capital of individual at an increasing rate.