

This PDF is a selection from a published volume from the National Bureau of Economic Research

Volume Title: The Economic Consequences of Demographic Change in East Asia, NBER-EASE Volume 19

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Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-38685-6
ISBN13: 978-0-226-38685-0

Volume URL: http://www.nber.org/books/ito_08-2

Conference Date: June 19-21, 2008

Publication Date: August 2010

Chapter Title: Comment on "Demographic Transition, Human Capital Accumulation and Economic Growth: Some Evidence from Cross-Country and Korean Microdata"

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Chapter URL: <http://www.nber.org/chapters/c8156>

Chapter pages in book: (125 - 127)

rate sustain the higher economic growth, especially considering that the working-age population ratio will decrease soon?

Methodology

Hahn and Park perform empirical studies by adopting the cross-country data for two sub-periods: 1960 to 1984 (twenty-four years) and 1985 to 2004 (nineteen years). Are there any reasons why the authors choose such data of these two particular periods?

The study proposes three demographic indicators for measuring speed of demographic transition: fertility rate (SFRTIL), working-age population ratio (SWRATIO), and population growth rate (SPOPGR). However, are there any alternatives to capture the speed of demographic transition? We may consider two alternatives to measure the speed of demographic transition: the year average of difference in demographic indicator for a given time interval, and the estimated coefficient on linear time trend by a regression model.

In table 3.8, absolute value of SWRATIO is adopted to replace the original variable which may jointly proxy direction and speed of demographic transition. Is it possible to add a dummy variable for referring to the direction in the equation? In some way, we are able to measure both the direct effect and the speed effect in driving economic growth.

In models of per capita GDP growth, three variables, namely “initial GDP per capita,” “openness,” and “quality of institutions” are treated as the exogenous variables. However, argued by some studies, an economy’s institutional quality and openness usually significantly determines its per capita income. That is, the regression model may have an endogeneity problem, more or less. Even in this chapter, such a problem may be minor or has been solved. The authors may need to mention how to solve such a problem.

Finally, as mainly argued in the chapter, the high speed of demographic transition features a country associated with economic growth. In some way, the authors may consider the existence of bidirectional causality between variables, economic growth, and demographic transition. In addition to regression analyses, a suitable quantitative approach to classify their Granger causality may be helpful, and their empirical evidence will be inspiring.

Comment Chulhee Lee

Hahn and Park’s chapter offers two types of empirical evidence as to the interrelationship among demographic transition, human capital accumulation, and economic growth. Firstly, based on cross-country regression analyses, it suggests that measures of the speed of demographic transition

between 1960 and 2004 were positively related to the growth rate during the same period. It also provides that measures of the speed of demographic transition between 1960 and 2000 were positively associated with a measure of the speed of human capital accumulation. The second type of evidence comes from the micro Korean Household Survey, from which the authors found a negative relationship between the number of children and the per capita expenditure on education. This result was taken as evidence of “quality-quantity trade-off.” This is an ambitious study offering a big picture that encompasses a half century in time horizon and nearly the entire world in geographic coverage. Although I am not an expert in studies of economic growth, this work looks like a highly useful contribution to the literature that attempts to explain economic growth, focusing on the roles played by demographic transition and human capital accumulation.

A major shortcoming of the study an outsider to the field can point out is a somewhat wide gap between the endogenous growth theory this study is based upon and the empirical evidence offered in the chapter. It is not too difficult to be convinced that the theory leads to the two hypotheses tested by the paper: first, a country with a faster demographic transition experiences a higher rate of per capital income growth; and second, a country with a faster demographic transition experiences a faster human capital accumulation. And the empirical results are consistent with the predictions of the theory. However, it is unclear whether the results were indeed generated by the mechanisms explained in the theoretical model. It is perhaps a limitation arising from a reduced-form analysis. And providing empirical evidence that is consistent with a theory would be an important contribution in its own right. However, paying more attention to what really produced the results would have greatly raised the quality of the chapter. More importantly, some attempts could have been made to do so using the same data and empirical framework.

Let me take an example. A decline in fertility in the course of demographic transition could affect the growth rate through two different pathways: by encouraging human capital accumulation, and by increasing the share of the working-age population. It looks like the relationship between demographic change and human capital accumulation is a more critical element of economic growth emphasized in the theoretical model, rather than the effect of population composition. In the current regression analyses of GDP growth rate, reported in table 3.4, measures of fertility change (denoted as SFERTIL in the chapter) and schooling are included in the set of independent variables, whereas no variable is included pertaining to the share of working-age population (denoted as SWRATIO in the chapter). Given that the measures of schooling represent the magnitude of human capital accumulation, the estimated regression coefficient of SFERTIL captures the following two effects combined: first, the effect of changing human capital accumulation not explained by rising school enrolment, and second,

the effect of change in SWRATIO. It would have been a better test of the theory if SFERTIL and SWRATIO were included simultaneously, and the measures of education were excluded from the regressions. This alternative specification would have helped determine the pure effect of fertility change through human capital accumulation in all forms, including schooling.

The empirical analyses are conducted carefully in general, but there are rooms for further improvements. A cross-country growth regression, as in the case of this study, often confronts a problem of potential endogeneity bias, because economic growth and other social transformations associated with it, such as urbanization and changing social norms, are major causes of fertility decline. This chapter addresses this endogeneity issue by employing GMM estimations. However, it is not fully discussed in the chapter whether the instrumental variables (IVs) used in the estimations, such as working-age population ratio in 1960, life expectancy in 1960, and female labor force participation rate in 1960, are valid IVs. More detailed discussions as to how the IVs were chosen would have made the results more convincing. An alternative approach to this problem would be to allow a time lag between demographic change and economic growth by dividing the period under study into two sub-periods.

I would also like to make several points regarding the analyses of the Korean Household Survey given in the chapter. First, the number of family members other than children should have been included in the regression model. If higher-income families have more dependents to support, the omission of this variable could produce the strange negative relationship between income and per-child educational expenditure, admitted as an unexplainable result in the paper. Second, employment status of the mother should have been taken into account. If working women tend to have fewer children, the number of children may capture the effect of mothers' labor market status. In this case, the negative effect of the number of children on educational expenditure could be explained differently. Given that mothers' time and money are substitutes in children's human capital accumulation, a working mother may replace her time by spending more money. Finally, the negative relationship between the number of children and per-child spending on education could be explained to some extent by economies of scale in educational expenditure.

Overall, this chapter is a good study tackling big questions regarding economic growth. I hope that this work will be developed into a larger research project that provides more detailed discussions of the mechanisms that produced the observed interrelationship among demographic changes, human capital accumulation, and economic growth. Looking into the cases of particular countries would also be a promising direction of extension.