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Comment

Jocelyn E. Finlay

In their chapter, Mason, Lee, and Lee explore the macroeconomic implications of the decline in fertility and mortality over the past fifty years with a particular focus on the Asian region.

During the demographic transition there is a decline in the mortality rate followed (often much later, as in the case of India) by the decline in the fertility rate. In the early stages of the demographic transition when mortality rates fall but the fertility rate remains high, population growth is very strong. In India, during this window of time the population growth rate hiked from 0.3 in 1900 to 2.2 around 1980.

The economic implications of the demographic transition have long been an avenue of enquiry. It was the work by Kelley and Schmidt (1995) which showed that population growth as a single variable did not have a significant effect on economic growth, but rather the components behind population growth were considered empirically important and theoretically interesting.

In addition to their effect on population growth, changes in mortality and fertility rates also have an effect on age structure of the population. With people living longer, the number of people in the older age groups increases. Couple this with the decline in fertility and the proportion of youth relative to the elderly declines.

One striking demographic feature that has come about during the demographic transition is the rise in the working-age share. When the fertility rate declines, the number of youth-age individuals declines relative to the number of working-age individuals. The working-age share increases. The

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number of workers relative to the number of dependents increases (assuming little or no change in the number of old-age dependents), and income per capita increases through this accounting measure. Mason, Lee, and Lee define this as the first demographic dividend as explained in this chapter and by others (Bloom, Canning, and Sevilla 2003).

Throughout the second half of the twentieth century, as the fertility rate fell in many countries the working-age share increased. The effects of the rapid decline in fertility dominated the effects of the increase in life expectancy so that the working-age share increased. Lowering the number of births and lowering the number of deaths per thousand in the population have an equal effect on population growth (the Rate of Natural Increase, NRI). However, births have a more dramatic effect on age structure than deaths as the injection of births is concentrated at the first age group, while deaths are spread over the entire age distribution. The working-age share will increase with a decline in the fertility rate as the number of individuals entering the youth age-group instantaneously declines.

Presently, many countries are entering a period where we observe a stabilizing of the fertility rate decline. Thus the upward pressure on the working-age share from the declining youth-age end of the age spectrum will weaken, and the downward force on the working-age share from an increasing proportion of old-age individuals will become stronger. With stabilizing fertility rates and an ever increasing life expectancy in many Asian countries the working-age share is set to decline.

Approaching the issues of population change from the age-structure perspective, Mason, Lee, and Lee then explore the economic implications of the demographic transition. The authors look at past trends in the relationship between age structure and economic growth, but consider the role of the second demographic dividend in offsetting the negative effects of the decline in the working-age share. The second demographic dividend comes about as the rise in life expectancy encourages greater savings. With higher savings and lower population growth, the capital-output ratio defined through the Solow-Swan model increases.

Population numbers in the future are not all based on predictions; cohorts alive today will survive into future age groups probabilistically and make up the population stock in the future. The combination of certainty over the current stock and observed prior serial correlation in fertility and mortality trends means that we can predict the future population level with a degree of confidence. An epidemic that unexpectedly kills a large number of people or an unexpected rebound of the fertility rate to 1960 rates could, of course, make the predictions over population growth and levels inaccurate.

What is less predictable in the course of the demographic transition is the behavioral change that comes with the shift in the age structure of the population. In the second half of the twentieth century, the rise in the working-age share was largely driven by the decline in the fertility rate. The rise in the

working-age share brought with it a rise in female labor force participation (Bloom, Canning, Fink, and Finlay 2007) and an increase in human capital accumulation (Galor and Weil 1996)—factors that are predominantly backed by the decline in the fertility rate.

The reason for caution regarding predications over behavioral change into the future is that the decline in the working-age share in the years to come will be backed by the rise in life expectancy and an increasing proportion of elderly dependents. Trends in the past that came with the decline in fertility may not translate to the scenario of an increase in life expectancy. Thus behavioral patterns we observed with the increase in the working-age share in the past may not be reversed as the working-age share is set to decline in the future.

The two behavioral responses to the demographic transition Mason, Lee, and Lee focus on are the change human capital accumulation and physical capital accumulation, with particular attention on the latter. Changes in the savings rate are subject to unknown behavioral responses. Population growth rate decline is understood with a degree of confidence. Thus predictions over future capital-output ratios depend on predictions over savings behavior change.

Mason, Lee, and Lee, too, are careful with these assumptions over predicted behavioral change and draw on our understanding of behavioral responses in an aging society. In particular for this article they draw on the savings rate implications. Asia is a particularly interesting example in terms of savings and capital flows across time and generations. For while many Asian countries do not have a formal Pay-As-You-Go system (PAYGO), they have a strong culture of intergenerational transfers which are in effect very similar to the pay-as-you-go system. Asian countries have also been typically known as high saving countries, but these rates are declining.

In a simulation exercise, Mason, Lee, and Lee plot out projections through 2050 over net savings rate, asset/labor income ratios, and consumption index under two scenarios: a high savings/low intergenerational transfers; and, a low savings/high intergenerational transfers. The assumption is that those in old-age will fund the gap between income and expenditure with either savings or intergenerational transfers. The authors show that, relatively, Thailand in 2004 was of the high savings/low transfer category, and Japan in 2004 was a low savings/high transfer country. Thus within Asia, either scenario is possible.

Some of the simulation results are not surprising: a high savings environment will lead to stronger net savings and stronger asset/labor income. Interestingly, the low intergenerational transfer scenario will lead to higher consumption in the future. It is not clear why high savings will lead to higher consumption than high intergenerational transfers. Assumptions over the interest earned on savings will certainly affect this result.

The simulation results in this chapter would suggest that savings over

intergenerational transfers may be more effective. The authors do caution the reader with regard to existing trends indicating that many Asian countries comply more strongly to the high transfers/low savings scenario (Japan, Korea, Rep., Philippines, Sri Lanka, Taiwan, and Vietnam each have a Pay-As-You-Go social security system). However, there are many Asian countries that have low intergenerational transfers and also within the formal social security setting adopt the fully funded pension scheme (Hong Kong, India, Indonesia, Malaysia, and Singapore have fully funded social security schemes) (Bloom, Canning, Mansfield, and Moore 2007) thus comply with the low transfers/high savings scenario.

Throughout the Asian region the demographic transition will lead to an increasing proportion of the population aged over sixty years—the aging of the population. In many Asian countries, significant aging will not begin to occur until after 2025, and many individuals due to retire in 2025 are currently in the workforce. Current savings patterns and transfer policies will affect aging societies in the future.

This chapter by Mason, Lee, and Lee provides a cautionary note. Pay-As-You-Go social security systems and the promotion of familial transfers may lead to lower welfare outcomes than fully funded systems, and private savings to fund retirement years. But in these discussions the uncertainty lies in the behavioral changes and future policy changes that will come as a society ages. Labor force participation behavior of men and women of various ages, savings patterns at the various ages, education choices and its returns are just some fundamental factors that remain unknown. Pronatalist policies, mandated age of retirement increasing, and immigration policies could also shift the age structure, the working-age share, and its implications dramatically. We observed behavioral changes and policy shifts as the fertility rate declined over the past fifty years, but as societies become aging societies over the next fifty years, what behavioral and policy changes will this bring and what will be the implications of these changes? A contribution of the Mason, Lee, and Lee chapter is that it brings knowledge to this question.

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Comment Jong-Wha Lee

The Mason, Lee, and Lee chapter summarizes the main features of demographic transition in Asia since 1960—characterized by fertility decline, population aging, and decrease in working-age population. The chapter highlights three important channels by which demographic transition influences economic growth in Asia. They include (a) the change in working-age population (first demographic dividend), (b) the change in savings rate and capital accumulation (second demographic dividend), and (c) human capital investment.

This chapter addresses an important issue: fertility decline and population aging are becoming increasingly important in the region, especially in Northeast Asia. This chapter addresses the economic and social implications of demographic transition and discusses the role of an intergenerational transfer system for supporting the growing number of elderly population. While I agree on most of the chapter's findings, I have a few questions.

The first concerns the second demographic dividend in Asia. The estimation of the first dividend is straightforward. The estimates show that the first dividend has become negative in several Asian economies with rapidly expanding elderly populations. The critical question concerns the size of the second dividend, which is important for the aggregate growth effect of demographic dividends. The chapter claims that longer life leads to higher savings, which raises the capital-labor ratio and thus labor productivity. Hence, if the second dividend is large, an aging population could lead to higher—not lower—per capita income. However, it is not clear how strong leaving bequest or any other motives are to support increased elderly savings. Uncertainty surrounding the timing of retirement and death may have a strong influence on the pace of dissaving among the elderly and retirees. But it is not clear to what extent a motive of building inheritance can dampen the decline in savings during retirement. The chapter needs to discuss more empirical evidence of elderly savings in Asia.

Second, the chapter emphasizes the role of intergenerational transfers from the young to the old on net savings and financial asset accumulation. The impact of demographic change on capital accumulation and economic growth hinges on the extent to which the population accumulates pension-transfer wealth versus physical capital accumulation over the lifetime.

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