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Reference

Auerbach, A. J., R. Hagemann, L. J. Kotlikoff, and G. Nicoletti. 1989. The economics of aging population: The case of four OECD countries. *OECD Economic Studies* 12:97–130.

Comment Cielito F. Habito

In its earlier version submitted to the EASE 16 conference for review (“The Developed World’s Demographic Transition—The Roles of Capital Flows, Immigration, and Policy”), the study analyzed the demographic transitions occurring in the United States, the European Union, and Japan (i.e., the *developed world*) and their welfare implications, via impacts on the pension system and on fiscal management. Using an overlapping-generations model that incorporates most of the state-of-the-art features employed in such demographic models (more on this follows), simulations yielded alarming results: (a) in a do-nothing scenario, payroll taxes would have to at least double to support benefits committed to the elderly; (b) macroeconomic feedback effects of aging populations lead to a significant capital shortage that dramatically lowers real wages (by 19 percent) and raises real interest rates (by over 400 basis points); and (c) even substantial immigration would do little to mitigate the fiscal squeeze. One way out that would exact short-term pain (i.e., welfare losses for current generations including the elderly) is to close down at the margin existing government pension systems and use consumption taxes to pay off their accrued liabilities. This would raise the welfare of future generations enormously, with those in Europe and Japan benefiting the most.

That analysis of course ignored the fact that there is much else in the world beyond the United States, Europe, and Japan. The addition of high-saving China into the picture dramatically changes the results, with China emerging as the savior that bails out the developed world from impending major fiscal troubles and real wage declines. Even if China’s saving rate eventually falls to the U.S. levels, it still manages to spare the developed world from eventual real wage declines, and instead permits substantial real wage increases. All the more if one further considers India and Southeast Asia, the other dynamic and high-saving economies in Asia. In effect, the developed world will be saved from potentially debilitating difficulties by the developing world, with their high saving rates and lower dependency ratios.

The study is of great interest to those in East Asia for at least three rea-

sons. First, the fiscal situations in the United States, the European Union, and Japan have profound implications on East Asian economies, given the strong trade and investment linkages between the region (outside of Japan) and these three large economies. Macroeconomic management in developing East Asian economies is currently heavily conditioned by the record deficits (external and fiscal) being incurred by the United States, for example. Second, for labor-surplus economies like the Philippines, the study gives reason not to expect any dramatic shifts in immigration policy in the developed world, as there seems to be little incentive for them to loosen up on immigration based on a long-run economic-stability argument. Third, the study provides a useful framework and approach for analyzing the future of pension systems in East Asia, different demographics notwithstanding.

In the Philippines, in particular, it is hard to identify with the study as the demographics are dramatically different, and indeed in the opposite situation of having a much larger younger population due to traditionally high population growth rates. Demographics are in fact among the least of its concerns in plotting the future of its pension system. The country's pension problems trace more to issues on the proper investment of retirement funds, and politicization of the management of benefits and contributions.

In the developed-country case, the analysis leads to an important policy implication: government needs to ease itself out of running public pension systems and move toward privatizing them. This implication is largely conditioned by the baby boom–baby bust phenomenon undergone by the three major developed economies modeled. For the Philippines and many developing countries with different demographics, the policy implication for pension privatization does not necessarily have as compelling an appeal as it would have in the developed countries. Temporary labor migration—an important feature in the labor markets of the Philippines and other similarly situated countries—also presents unique questions on implications for pension policy.

The various features incorporated into the life-cycle model with overlapping generations make the model employed in the study truly state of the art. An important improvement has been the inclusion of government investment in the formulation, the omission of which in the earlier version (i.e., treating government purchases as government consumption) appeared to unduly magnify the negative effects of the demographic trends on real wages and human welfare. Admittedly, the complexity of the system being modeled necessitates a good deal of simplifying assumptions (e.g., immigrants have the same asset endowments and preferences as native counterparts; people die between ages 68 and 90).

It is not clear from the paper whether adequate sensitivity analyses have been undertaken on some of the key assumptions and parameters used in building the analysis, but this would be an important test on the robustness

of the model's simulation results. Unfortunately, the dramatic difference made by the inclusion of government investment and the addition of China appears to be an indication of strong sensitivity of simulation results to model parameters and features. It is likewise not clear whether the basic life-cycle assumptions are uniform for the United States, Europe, Japan, and China. The differences explicitly modeled are on demographic variables and immigration rates, but cultural differences certainly lead to differences in life-cycle decisions (e.g., bequest motives, income dependence on parents).

The incorporation of uncertainty in specific key elements of the model, particularly lifespan uncertainty, is useful to better model mortality and bequest behavior using available probabilistic information—and it adds better realism to the model. The inclusion of capital adjustment costs is also a good realistic element.

The modeling framework suffers from the same constraint suffered by CGE models (i.e., validation is only possible for the benchmark data set). Because of this, one cannot really validate the dynamic outcomes of the model, making sensitivity analysis all the more important.

Still, the model is the most comprehensive so far in capturing the various elements in the life-cycle/overlapping-generations system. The interesting extension would be the inclusion of the remaining major economic regions in the world not yet captured so far in the analysis.