

## RONALD LEE

# “THE ECONOMIC CONSEQUENCES OF POPULATION AGING ARE QUITE DIFFERENT ACROSS COUNTRIES AND REGIONS”

**Y**our work on population aging and the generational economy spans several decades and includes dozens of research contributions. In what ways have the key issues you have studied changed over the years? What do you think has contributed to the changes (if there have been many)? For topics that have remained resilient in their importance – why have these questions remained important over the years?

Early in the study of population aging in the 1980s and 1990s, I and others tended to use the rich mathematical framework of stable population theory to do comparative steady state analysis for population aging and for its economic impacts. There were two consequences of using this approach. First, it focused attention on the effects of different levels of fertility because this was analytically tractable with less attention to mortality decline because this has ambiguous effects, making populations younger in high mortality settings and making them older in low mor-

tality settings. Second, the focus on long term steady state results diverted attention from very important transitional changes in population age distributions. Later economists and demographers came to realize that the real story was these transitional changes, and the possibility of capturing persistent long term positive effects during the so-called “demographic dividend” phase through investment in physical and human capital. Analytic and empirical work shifted to this more dynamic and comprehensive approach, and away from simple initial and terminal dependency measures.

There was also increased interest in health and mortality at older ages. Most economists and demographers studying aging took advantage of the new Health and Retirement Survey (HRS) in the US, and subsequently similar SHARE surveys in Europe to study many aspects of health, labor supply, retirement, intergenerational transfers, saving, pensions and related behaviors



at the individual level, and that is still the case. But I went in a different direction, focusing on the macro level, as I will discuss further below.

I should add, as an aside, that I have also been very interested in the biology of aging and how evolutionary natural selection could have led to the long life of humans after they finish reproduction. In my view this is because after finishing producing babies in their 40s, humans continue to contribute to the survival, development and reproductive success of their children and grandchildren by making intergenerational transfers to them over these descendants' many years of nutritional dependence, up till reaching age 18 or 20. Anthropological studies find that older adults and elderly in hunter-gatherer populations continue to support the younger generations through intergenerational transfers. After completing childbearing, they continue to contribute to the reproductive fitness of their descendants and therefore natural selection still acts promoting their survival. I have published many articles developing mathematical theories about this and related topics, mostly published in biology journals, and I have collaborated with anthropologists in empirical work on hunter-gatherer groups. Because of the central role of intergenerational transfers in this work, it is closely related to the next topic I will discuss – the National Transfer Accounts project, or NTA.

**Over the years and together with your original collaborators you have created and grown a large international network of researchers who study generational economics under the umbrella of the National Transfer Accounts (NTA) project. In what ways has the research program benefited from these international perspectives? What do you see as the greatest accomplishments of the NTA?**

With Andy Mason, I started the NTA project, which grew out of theoretical and empirical work I initially did in the 1990s on intergenerational transfers occurring in stable populations and then in actual real world populations including hunter-gatherer

group and subsistence agriculturalists. The NTA project expanded our early work on the US and Taiwan to other countries – first to five other countries in Asia, Latin America and Europe, and then it grew gradually to its current size with research teams in over 70 countries and accounts estimated for over 90 countries around the world including many in Sub-Saharan Africa.

For me, the greatest accomplishment of NTA is to reveal the great variation across countries and regions of the world in the way the economic life cycle is structured (labor supply and consumption by age, as well as saving, asset holding and other economic behaviors), and the way different institutions, most broadly the family, the market and the state, undergird these economic life cycles. Some patterns are universal among NTA countries, such as net consumption in childhood and old age, and net production at ages in between, but the age boundaries vary widely. More specifically, it is fascinating to see variations in the importance of public pensions for the elderly versus familial support for them versus their self-support through asset income, and to see the variations in public versus familial investment in the human capital of children. Because of these differences it is also true that the economic consequences of population aging are quite different across countries and regions.

Another important accomplishment has been the ability to view the economic consequences of population aging not only in a global international comparative context, but also to see them historically as just part of the entire sequence of population age distribution changes over the past decades going back into the 19th century. Population aging is part and parcel of the demographic transition as is the demographic dividend, and we can analyze all the consequences in a unified theoretical and empirical context. While NTA is fundamentally an accounting system, it is designed to have a close interface with economic models and behavioral assumptions, so it is also possible to use it for other kinds of analyses and projections of fiscal sustainability for the public sector and for the family transfer system, for asset accumulation and for economic growth.

**A key question in generational economics that you have studied is how the different age groups of a society interact and support each other. Working age members care for the dependents, children, and elderly, supporting them via public and private resource transfers. In a context of rapid population aging, some researchers and political commentators argue that tensions on the sustainability**

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**of public transfer systems, such as pensions, have led to a conflict between generations. A growing elderly population (the so called “silver tide”) could be voting to keep pensions high at the expense of education and other government programs that favor younger ages. According to your research, is there any evidence of such forces at play? Is there truly a “silver tide” influencing politics?**

Well, NTA does not include voting behavior so I can't address that question directly. However, in cross-national NTA data consumption per child is positively associated with consumption by the elderly, both measured relative to working age consumption. Also, in older countries, both child consumption and old age consumption are higher relative to working age consumption, compared to younger countries. These associations conflict with the silver tide story which would predict a negative association. This proves nothing, but taking the association at face value it at least seems that the elderly are not crowding out expenditures on children. In some countries, though, the opposite may be occurring, with rising familial transfers per child crowding out transfers to the elderly and resulting in old age poverty, as may be occurring S. Korea.

Almost everywhere the net direction of intergenerational transfers is from older people to younger people. If we look at private familial transfers separately, they are just as strongly from old to young in aging populations as in younger populations. But if we look at public transfers (mainly pensions, health care, long term care, and education), they are from old to young in young countries (education and health care) but are strongly from young to old in older countries (pensions and health care), which is consistent with the “silver tide” story. Because the old countries are also the rich countries, with more mature and larger public sectors, it is not at all clear what is causing what here.

**In any case, it is quite clear that pensions reforms are a major topic of political debate. Some argue that the inherently short political cycle might lead to poor policy choices, since politicians might seek short term political**

**gains at the expense of sounder long-term planning. As a response to this concern, many countries are adopting what is known as automatic balance mechanisms (ABM) (Spain has also taken steps in that direction). Those are rules that tie pension payments and contributions to the financial health of the system; automatically lowering pensions and, in some cases, raising contributions when the pension system is not sustainable. What are, in your opinion, the key issues in designing a sound ABM?**

I am enthusiastic about automatic balancing mechanisms. The systems I am most familiar with are the Swedish Notional Defined Contribution system and the reformed German system. Both remain essentially Pay As You Go systems without substantial assets. The Swedes set the rate of return on the notional asset accounts equal to the rate of growth of the wage rate, whereas the correct (but politically more difficult) rate would have been the growth rate of total wages which reflects both productivity growth and the growth rate of the labor force.

Consequently they had to introduce another mechanism, the “Brake”, to achieve automatic fiscal sustainability. The German system explicitly introduced the dependency ratio as one factor governing taxes and benefits. In both Sweden and Germany the costs of adjusting their public pension systems to achieve sustainability in the face of population aging are shared between workers (through higher taxes) and retirees (through lower benefits). Good for them. In my own country, the US, we seem inclined to put all the cost of adjustment on the workers, or else we just neglect making any adjustments until the pressures reach crisis stage. I think we need an ABM system here.

What are the key issues in designing a sound ABM? First, it must address not only productivity growth rates and rising life expectancy but also the effects of other demographic changes through fertility and migration. Indexing benefit levels inversely to remaining life expectancy is not nearly enough. Second, it must take into account socioeconomic disparities in longevity so that the shorter-lived lower income groups do not end up subsidizing the higher income pensioners who collect greater benefits over their longer lives. This is true for all pension systems, not just ABMs. Third, it must provide an actuarially fair return to working longer and retiring later. Fourth, it must make adequate provision for those unable to work to older ages. Fifth, it must ensure gender equity – after first deciding what that should mean.



**On the topic of the broader economic consequences of population aging, could the current trends towards greater automation (the substitution of workers by robots in productive processes) be a response to the projected smaller work forces?**

Yes, this is in fact the sort of change that we assume will occur when we say that increased capital per worker will raise productivity. In the area of elder care, robots and remote sensing devices are increasingly used to substitute for human care takers, and that is important as well as robots in manufacturing and other service sectors.

**To conclude, we would like to ask you about your view on the future of generational economics. What are the current key issues?**

Will the elderly substantially increase their labor supply at old ages? Retirement age dropped by a dozen years during the 20th century, and it has risen by only one or two years since 1995. Will it rise substantantially in the future, or are we now locked into a system in which the elderly have an increasingly long and costly retirement stage while younger people struggle to raise their children, advance their careers, save, and pay rising taxes to support the elderly? I think this is the most fundamental question in generational economics. However, it is linked to the question whether as life expectancy continues to rise, will the health of the elderly continue to improve and their disability rates decline so that they are able to work significantly longer? Or will the distressing trends we see in the US and elsewhere of rising disability in working age adults due to obesity and diabetes translate into increased disability and worsening health when they enter old age?


It is natural to worry that the current behavior and circumstances of the elderly – retiring late, consuming increasingly costly health care, and living quite well relative to those in working ages – will burden future generations with rising national debt, both explicit and implicit. But it is also true that the elderly almost everywhere continue to save on average, even if they are living

in part on asset income. The generosity of public pension systems enables the elderly to save even more while still consuming at relatively high levels. So I wonder to what extent public pension benefits will be converted into assets of the elderly, and then bequeathed to the next generation who, to be sure, will not inherit until they are in their 50s. Will bequests play a bigger role in coming decades due in part to public pensions and in part to low fertility (which means that bequeathable wealth will be shared among fewer siblings)? Or alternatively will the rise of non-bequeathable annuitized public pensions mean that there is less to inherit because the pension streams die with the recipient? This is an important topic for further exploration using NTA data.

There is increasing attention to inequality in income and wealth, and also to inequality in life span and health. While much work has already been done on these topics, much remains to be done. Work based on tax data has been very influential, but it has not really incorporated the important role of public pension and health care “wealth” (present value of expected future public transfers minus expected future taxes) which is the most important form of wealth of the lower income population. NTA has mostly worked at the level of national averages by age, but perhaps future work will be able to exploit micro-level estimates. Such work is underway now.

Secular stagnation is another puzzle. Will it be a real problem, or is it just a trendy topic that we will leave behind when solid economic growth resumes? Secular stagnation is thought to be primarily due to adverse trends in technology, whereby the economy-wide dynamism of past revolutions such as the steam train, or electricity, has not been duplicated by the IT revolution, leading to declining productivity growth. However, declining population growth and population aging are also thought to play a role. Population aging leads to capital intensification (the rising capital/labor ratio I mentioned earlier) which causes falling rates of return to capital and falling real interest rates. Real interest rates have indeed fallen globally in recent decades and are now approaching zero. This greatly reduces the range of options for central banks as we have already seen in the great recession that started in 2007/2008. We might think that producers would eagerly respond by borrowing at these low rates, but they also look to the future and see that low population growth rates will mean low growth of demand for their products, so they hang back. The result is that economies get mired in a low employment, low interest rate, low investment equilibrium: secular stagnation. ■

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