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June 14, 2010

Some Policy Applications of NTA Estimates

One of the most exciting aspects for me of this NTA7 meeting has been to see that many country teams have moved beyond construction of the basic accounts, either to apply them in new areas, or to spin off into related topics. Here are some of the thoughts I have had.

I. An "Intergenerational Report" for each NTA country.

I have seen a report by the Australian government titled "The 2010 Intergenerational Report". It includes information on population growth and aging, fiscal pressures that will result, a plan for mitigating the fiscal pressures including raising productivity growth through education, and encouraging female labor supply. It also includes some new rules on fiscal policy, such as during periods of rapid economic growth, public expenditures should not grow by more than 2% per year until the government is running a surplus.

We could develop a plan for an intergenerational report for each NTA country based on richer information than was available for the Australian report. The emphasis would not be on a description of current patterns of flows, but instead would be on how to use the information in the flow accounts to shed light on the consequences of population change – first dividend or population aging. In particular, we could discuss trends in general support ratios, fiscal support ratios, and support ratios for specific programs to indicate which programs would come under pressure and which not. Support ratios for the family which would be important in some countries, not in others. We could discuss the changing fiscal situation of the household and family, which would alert policy makers to the possibilities, or not, of shifting support burdens to the family sector, or perhaps a need to relieve the family of increasing burdens. We would consult the Working Group on Indicators and other working groups for ideas about what measures to include.

We could develop a report template, and generate standard statistics, projections and charts and tables for each country. These would be available for each country team to use or not, but they might prove useful for policy makers, media, and the general public. For many countries, the emphasis would be on population aging, but for some, the first dividend changes might be important. We would ask Sidney to help us design an effective report format and presentation style.

I understand from Robert Gal that some European countries have generational constitutions which require that for each major new program that is proposed, there should be an analysis of its intergenerational implications. This would be a related use, but reports and information would have to be tailored to each specific proposed program. An excellent example is provided by Young Chun's GA work on a new Long Term Care program in Korea that was introduced in 2008.

II. Full Generational Accounts

Here is a very fundamental intergenerational question: What are we giving our children? On net, are we investing in them, or are we leaving them to repay our debts? Traditional Generational Accounts addresses a piece of this question, related to a part of governmental expenditure. GA examines the intergenerational consequences of current program structures for currently living generations versus future generations. We can also look at changes over long periods of time in this generational balance. A recent paper by Bommier, Lee, Miller and Zuber in PDR addresses this question for the US, again focusing on a part of government expenditure (pensions, Medicare, and public education) for generations born from 1850 to 2090. Here is the key result from that paper (**see Figure 7 from Bommier et al at end of this note, and see full pdf of paper on NTA7 website**). The results are different than we expected. Almost all generations born after 1880 are winners, up until those born after 2050. Note generations around 1940 are squeezed – see later topic.

But what I have in mind here includes all government programs, and in addition it includes the family. Parents give to their children when they feed and clothe them. They give to them when they pay for their health care and education, supplementing what is provided by the public sector. They give to them when they help them out as adults. And they give to them again when they die, and leave them bequests. These are massive downward private transfers.

On the other hand, we living generations have made big promises to our future selves for health care, long term care, and pensions. These promises can be fulfilled only by our adult children, and as our populations age these promises will be increasingly costly to keep.

If we combine the private and public sectors, what are we actually leaving for our children? That is the Full Generational Account, or FGA, that I have in mind. What is it now? How has it varied over time within a country? For example, did the rise of welfare state transfers to the elderly diminish the FGA? And how does the FGA differ across countries today? Is it higher in Asia than in the rest of the world?

A few years ago, Tim and I tried to calculate the FGA for the US, and we came up with a value close to zero. There were huge positives and huge negatives, and they nearly exactly cancelled.

- NPV of Public Transfers (Pub Ed, Soc Sec and Medicare only) assuming budget is balanced 50-50 by cutting taxes and benefits: **+$47,000**
  (assumes govt debt = value of pub capital)
- NPV of Intervivos familial transfers received including consumption: $**220,000**
- Private end of life bequests: $**27,000**

Total: +$**294,000**

- Relative to Net Present Value of child's life time earnings = **34%**
- Health and Education as a share of total bequest = **33%**
- Private transfers as a share of FGA = **84%**

- Conclude:
  - We are not robbing our children and saddling them with debt for our public transfers.

Incidentally, the current program structures for many countries are unsustainable. In my view, it is important to develop some scenario for adjusting the programs to make them sustainable rather than using them as they stand in the calculation. In our work, Tim and I have generally assumed that programs are balanced in the future by a 50-50 mix of raising taxes and cutting benefits.

This also seems like a natural place to consider the intergenerational transfer of natural resources. We act as custodians of the natural environment and pass it on to the next generations just as we do our physical capital, our human capital, and our culture and institutions. But we also consume some of the natural capital and carelessly destroy some of it as well. Furthermore, if the next generations are larger than the previous, then each new birth is entitled to a smaller share of the services of the natural environment, diluting their value. We might be able to draw on existing work by others to do some relevant calculations here. I have attempted this in a different context.

III. Externalities and other Consequences of Demographic Events

Some governments in low fertility countries are particularly concerned with the population aging that results from low fertility, and worry about the costs of supporting an aging population that retires early, receives generous pensions, and also receives costly health care. Some governments would like birth rates to be higher, and adopt financial incentives to encourage higher fertility. But are births actually a fiscal benefit? Or are they a net cost? In either case, how big is the effect?

Now an additional birth imposes very heavy private costs on parents as well as affecting government budgets. Should we also count these private costs? I suggest that these private costs are internalized by the couple, who has the birth precisely because they think the utility they expect to receive from the birth over their life times exceeds the costs they will have to bear. But the public sector gets no such utility from the birth, so we can use the accounting of fiscal effects as a measure of the external cost of the birth. Of course, there may also be other costs and benefits, such as environmental, which I am not discussing here. Also, there are other fiscal effects besides those arising from age targeted transfers. For example, an additional birth helps spread the costs of public goods, helps to service and repay the public debt, and dilutes the value of all forms of public wealth. These effects can be calculated as well, but I will not discuss them here.

Some similar questions and policies emerge around the immigration. Some people think immigrants inflict fiscal costs on the receiving population through need-based program costs. Other people think immigrants are a partial solution to pressures of population aging. The same issues I discussed above arise in relation to fiscal externalities to an immigrant, with the additional note that immigrants do not give utility directly to the receiving population, unlike a birth, and that immigrants can arrive at any age rather than just at age 0.

Less commonly questions are raised about the fiscal impact of a death of a person at a given age. This is much like the question of the fiscal impact of an immigrant, arriving at age x with educational level E, except now it is in reverse.

In all three cases, there is the further question of descendants, which is critically important. One birth now entails a series of benefits received and taxes paid over its life time, but it also entails the births of its own children, each of whom in turn entails a series of costly benefits and taxes, as well as more births. Ignoring these second, third and higher order birth generations would bias and distort the results. For example, when an earlier birth retires and becomes a costly public burden, the children of that birth are entering into prime working years and paying taxes far in excess of the benefits they receive, and these offset the costs of the aging parent. But these same children had to be educated much earlier, which is very costly. And…you can see how this goes on, and how complicated it is.

Complicated as these calculations are, Tim Miller and I took them on first in a series of studies, culminating in a study of the fiscal impact of immigrations which can also be used to derive estimates of the externalities to a birth or to a death.

The basic idea is that we have, from NTA, a matrix with the fiscal balance at each age in each year, based on a projection of the NTA public sector profiles. These must reflect some plan for balancing the budget in each future year. For simplicity, ignore the problem of descendants.

We can find the life time fiscal impact of a birth by calculating the survival weighted discounted present value of the cells pertaining to a birth today, in 2010. We sum the balance for age 1 in 2011, for age 2 in 2012, and so on.

Based on this method, we calculated (in 1996) a net present fiscal value of a birth to native born parents with a high school education at around $200,000, which would be 300,000 in today's dollars. For immigrants, we give an estimate for each age at arrival and level of education. The average impact is +$80,000 ($120,000 in today's dollars), that is, an immigrant is beneficial. We could use the same method to calculate the fiscal impact of a death, but did not do that. See a figure from Lee and Miller presenting the fiscal impact in total for immigrants by age at arrival and by level of education is pasted in at the end of this note. Panel A gives the total fiscal impact. Panel B shows the portion of this amount that is due just to the immigrant, and Panel C shows the portion due to all

descendants. Note that an immigrant arriving beyond age 45 or so produces no descendants and gets a zero. The full article is available as a pdf on the NTA7 website.

The US estimates were calculated specifically in response to a request from the US Congress.

I believe that the Hungary country team is carrying out some related calculations.

We can also do the counter part of the study of fiscal impact of an immigrant by looking at the deletion of a person from the sending country. Ivan as done some illustrative calculations for Mexico. Of course, immigrants may be very different than the averages in the NTA estimates, but this is a convenient starting point. So here are some calculations:

1) what is the loss of life time future labor income minus consumption for a migrant leaving permanently at age x. How much of that loss is offset by remittances? What about assets, do they go with the immigrant or remain in Mexico (we don't know).
2) A similar calculation could be carried out just for the public sector, based on benefits and tax payments.
3) A calculation pertaining to the lost human capital investment could be done as well.
4) What is the effect of all emigration on the support ratios?

Here is another study that was just recently completed in the US, drawing on the old immigration study Tim and I did. What is the fiscal impact of childlessness compared to having at least one child? In the US, some people without children have argued that they were treated unfairly by public programs which provide various subsidies for parents of children. This study was led by Doug Wolf, with Gretchen, Tim and I contributing the basic calculations. It has not yet been published.

IV. Socioeconomic Differences in Public Transfers

I have seen some of the results of work by Cassio and Mauricio, and I found these results fascinating and important. I think there are some methodological issues to be resolved, but I think this work is a very important direction for NTA. I expect it will be of immediate interest for policy makers.

V. Consequences of Missing Generations: HIV/AIDS in Africa or War Losses

I believe that there are important possibilities here, and I wonder whether anyone is working on them. How does HIV/AIDS mortality affect support ratios in high prevalence countries in Africa? Suppose we make further adjustments for disability of living adults, as Doyin suggested to me? Might it be possible to use the micro level estimates of intrahousehold transfers in individual households to shed light on these issues? There would be difficult issues of fosterage.

VI. Gender and Time Use

I know there is a working group on this topic. I am very interested, but I don't know what the group has concluded.

VII. Are Some Generations Particularly Squeezed? (Sandwich Generations)

I know there was a working group meeting on this topic, but I don't know what was discussed or what it has suggested. Here are some thoughts I have on this.

1) Consider working age adults in an Asian country like Taiwan, S. Korea, Thailand or China. These are all countries with pretty strong familial support of the elderly, so many working age adults will have co-resident elderly parents or perhaps will be transferring money to non-co-resident parents. If they were born after fertility had substantially declined, then they have few siblings to help them support their elderly parents. At the same time, they may expect that their own children will not be willing to support them when they are themselves old. Yet there is no public pension program in place. So feel the need to save to finance their own retirement at the same time that they are supporting their own parents' retirement. This is the situation that Cio referred to as "killing the transitional generation". In addition, these people live in a world in which heavier and heavier investment in the human capital of their children seems to be necessary, although at the same time they have very few children which. This is one kind of sandwich generation, and it would be very interesting to study it, and try to identify people in this situation in the data.

2) Another kind of sandwich generation arises in countries that had big baby booms like the US, Canada or Australia. These are generations of parents that both had many children to raise, and also were themselves from a small generation born during the Great Depression and so have few others with whom to share the burden of supporting their elderly parents, who lived longer than others did in the past. This is what I think of as the original meaning of the phrase sandwich generation, a small generation in the middle supporting two large generations of children and the elderly. But that was in the past. I am not sure that this situation is occurring anywhere now.

References—The two with asterisks are available on the NTA7 website.

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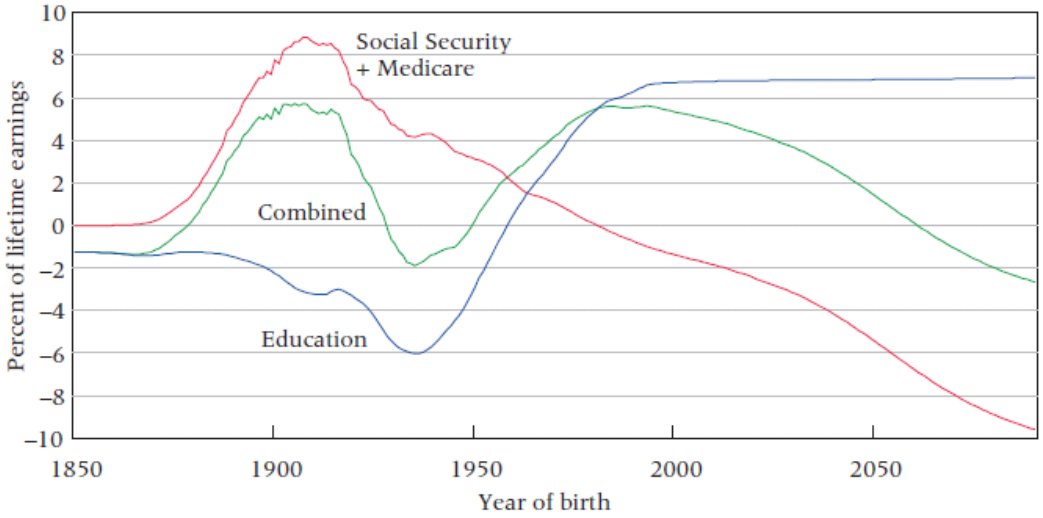
*Ronald Lee and Timothy Miller (1997) “The Life Time Fiscal Impacts of Immigrants and Their Descendants” Chapter 7 for *The New Americans*, National Academy Press, 1997 (pp.297-362).

FIGURE 7 Present value at birth of expected lifetime education, Social Security, and Medicare net benefits as a percent of lifetime earnings



NOTE: Calculated using the baseline assumptions (see text).

Source: Bommier et al, *Population and Development Review*, 36(1):1-26 (March 2010)

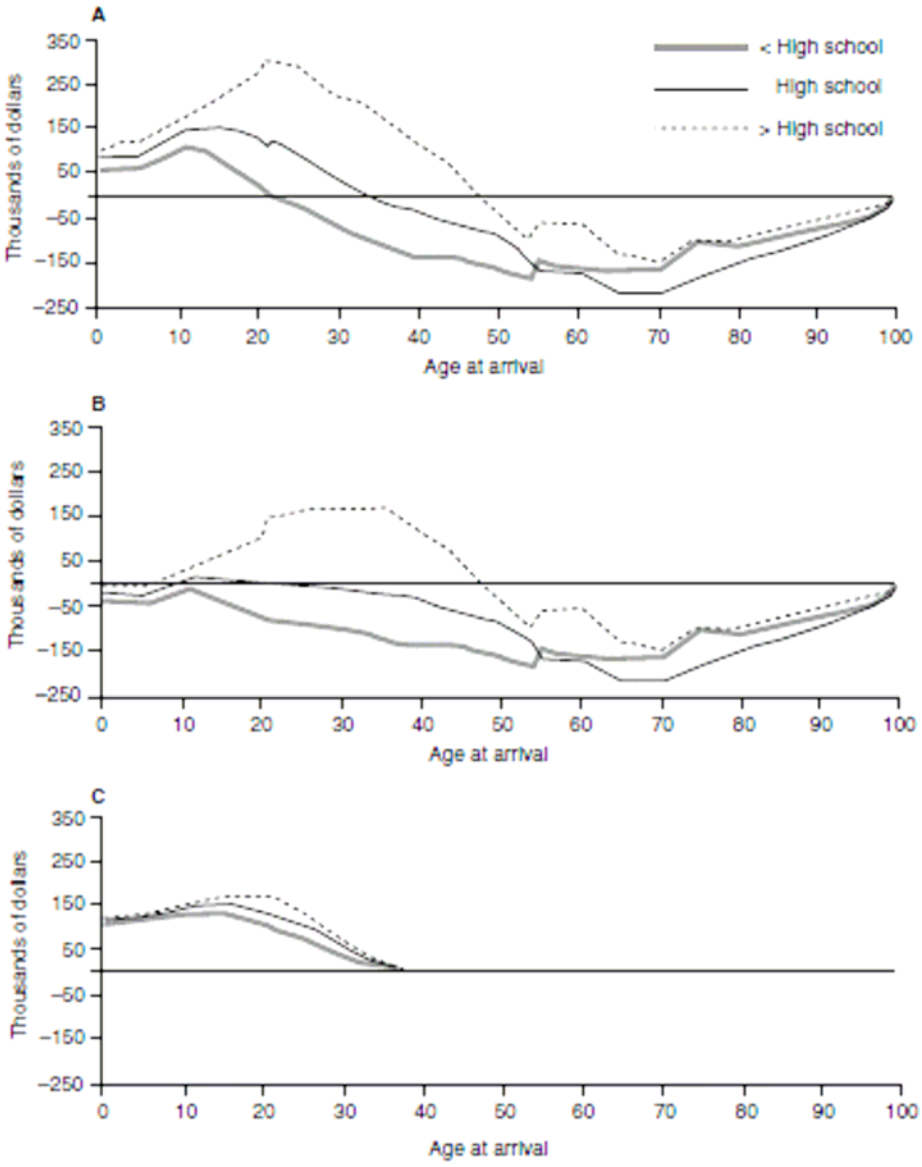


FIGURE 7.10 Net present value of total fiscal impact: **A**, Generation 1 by age at arrival and education status, self and descendants; **B**, Generation 1 by age at arrival and education status, own lifetime; **C**, Generation 1 by age at arrival and education status, descendants.

Source: Ronald Lee and Timothy Miller (1997) "The Life Time Fiscal Impacts of Immigrants and Their Descendants" Chapter 7 for *The New Americans*, National Academy Press, 1997 (pp.297-362).