Extended Abstract Submitted
to the Annual Meeting of the Population Association of America - 2012

The Demographic Transition: how do advanced stage developing countries illuminate the path to other countries?

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Belo Horizonte, September 21st, 2011

Background

In 2003, Jim O'Neil of Goldman Sachs investigated the economic growth of Brazil, Russia, India, and China, and came out with the concept of BRIC economies. In this study, he showed that these countries would exceed the GDP of the current more developed economies (G7) within 40 years. The study captured the attention of economists and policy makers worldwide. It comes as no surprise that the four countries could emerge as economic powerhouses, but it might be unexpected the speed in which they reach important position in economic terms. In more recent years, South Africa has been included as a member of the BRICS. In 2005, Goldman Sachs has identified other eleven (11) countries that together with the BRICS have the potential to become the largest economies in the world. In general terms, Goldman Sachs consideres macroeconomic and political stability, openess to investment and trade and educational policies as variables to determined to potential of countries.

The contribution of BRIC and N-11 to the global GDP has exceeded expectations and already crossed 15%, while that of the developed nations like the US and Japan is decreasing. Although, they are not yet the most important and largest economies in the world they already play an important role in many economic spheres around the globe, such as demanding changes in the subsidy policies of the developed countries and signing trade agreements amongst themselves. In 2008 and 2009, the response to the global financial crisis was considered to be remarkable. However, they might still be vulnerable to problems like inflation, proper infrastructure, and one which is less discussed, population changes.

In this paper, we give a demographer's perspective on the possible challenges faced by BRIC and N-11 economics regarding population changes and how more advanced economies can iluminate the path to other countries in this process. We argue that there are four main areas that might pose a challenge to these countries and should be looked carefully by policy makers and economists. The first one is the rapid change in the population age structure (population aging) caused by the fast decline in the total fertility rate. The second challenge, consequence of the changes in the population age structure, is how the transformation in the age structure of the population can have important impacts on the economic growth, the demographic dividends (Bloom; Mason & Lee). The third one, closely related to population aging, is the relation between changes in population age structure and how they affect intergenerational transfers (Lee & Mason, 2011). Lastly, the rapid aging in developing countries raises concerns about living conditions, social support and health care provision for the elderly, especially where changes caused by economic development have weakened familial support and a universal welfare system of support is not yet in place.

The demographic transition, and population aging, started with mortality improvements in the 1930s, which were followed by fertility declines in the later 1960s. The demographic transition in the BRICS and N-11 countries has been characterized by rapid demographic changes. The total fertility rate has declined rapidly, for example in Brazil TFR declined from 5.9 in 1950 to 2.3 in 2000 and in India declined from 5.8 in 1970 to 3.1 in 2000. Also, life expectancy at birth has improved steadily, in all countries life expectancy at birth is above 65 years. These trends have interacted to transform the population age structure, meaning rapid population aging. Until 2000s, the most important changes were the decline in the share of the young and a rise in the share of the working-age population. Significant increases in the elderly population are expected to occur only in the next decades. Population projections indicate that

by 2050, the population aged 65 and older will represent over 16 per cent of the total population in all countries, compared to less than 10 per cent in 1990.

The demographic transition is back at the center of the debate not only in economic growth models (Galor, 2011) but also in new syntheses of the global context (Lee, 2003b; Dyson, 2010; and Reher, 2011). These demographic syntheses highlight different demographic indicators that can be applied to BRICS and N-11 countries as an indicator of the possible demographic paths of less developed economies.

The debate relating population and economic growth was, for many years, focus on the impacts of population growth rates on economic growth (see Malthus). Although, the debate was a important subject for both economists and demographers, the demography side was almost exclusive to population growth rates. In the literature we can point three main views of the relation: a) pessimistic – population growth was a break to economic development; b) optimistic: suggested that there was a series of external factors that were responsible for the consequences of population growth; and c) neutralist – based on empirical analysis that shows little evidence that population growth warm economic development, when controlling for a series of variables. However, population growth cannot be the only variable analyzed in this relation. Population age structure also plays a very important role as each age group behaves differently with distinct economic consequences and in each age group, individuals might depdend of different sources to sustain their consumption level. For example, youth requires investments in education and health and rely on transfers from families and the public sector; prime-age individuals supply labor, pay taxes and save, and old-age individuals demand health care and retirement and might depend on different sources to it.

Malmberg and Sommestad (2000) proposed a four stage classification of the demographic transition. To understand the impact of changes in population age structure is important because they are more extended in time and might have stronger consequences. Thus, Malmberg and Sommestad (2000) break the demographic transition in four stages. Each stage is characterized by the predominance of one age goup and has different consequences for economic development. The first phase is the child phase, characterized by high child dependency ratio. This phase is characterized by the decline in mortality and high levels of fertility. In general this phase is associated to high levels of poverty and slow economic growth. The second phase, adult phase – related to the decline in fertility rates, is associated with modernization and increase labor productivity and, as results, rapid economic growth. The third phase, period of maturity, is related to the increase in the middle-age group. Malmberg and Sommestad (2000) argued that this period is characterized by sustainable economic growth. The fourth stage, population aging, is related to the rapid participation of the elder population in the total population. Also, the last stage poses a new challenge for all countries.

The consequences of changes in population age structure have regained interest in recent years (Cutler et al, 1990; Bloom, Canning and Sevilla, 2003; Lee and Mason, 2011). Demographers and economists alike are interested in examining the extent to which interactions between population age structure and both fertility and mortality declines yield economic development. First, several studies indicated the role of population dynamics (age structure) on economic growth. For example, Bloom & Williamson (1998)

showed that part of the Asian economic miracle was explained because the working-age population grew at faster rates than the dependent population from 1960 to 1995. They find that changes in population age structure account to about one-third of the observed economic growth in Asia during that period. Second, the early 1990´s brought a different issue to demographers and economists in developed countries. What would be the impacts of population aging in the developed world? Cutler et al (1990) investigated whether population aging is a challenge or an opportunity to economic development. They showed that the changing age structure can bring benefits to the society for two reasons: lower dependency ratio means more resources to be invested in the economy; and increase longevity affects working age population savings behavior creating positive effects on the income level.

BRICS and N-11 countries have an immense potential as economic leaders and can have profound impact on the development of less developed nations. However, these countries must recognize the scope of the new demographic reality and adjust current policies accordingly. Experience has shown that such adjustments may be painful—changes in retirement ages and medical benefits, for example, are not widely popular. But experience also shows that it is easier to address problems sooner rather than later, when the cost of waiting may become unsustainable.

Data and Methods

Data:

1- Labor income and Consumption Age Profiles from the National Transfer Accounts (www.ntaccounts.org)

2- United Nations population projections (2010 revision)

Methods:

1. Descriptive analysis of demographic changes: population growth rates, population age structure, dependency ratios, speed of the transition, Malmberg & Sommestead stages;

2. Demographic dividends, following method proposed by Lee and Mason, and applied by Queiroz and Turra (2010).

Preliminary Results

In assessing the impacts of demographic changes in BRICS and N-11 countries, it is important to start by examining the broad features of population growth and economic dependency. Figure 1 (Panels A and B) shows the population growth rates for BRICS and N-11 countries, those with data available in the NTA project. The results show that most countries are moving towards slow growth rates, as result of the recent declines in fertility rates. Figures 2 and 3 (Panels A and B) depicts youth and old-age dependency ratios. In common, all countries

Figure 3 presents estimates of the first dividend for a series of BRICS and N-11 countries. These preliminary results were estimated using labor income and consumption profiles from around 2000 from the NTA database. We assume that the cross-sectional profiles are fixed during the whole period. There is a lot of variation across countries. The results should be interpreted as follows: hgh fertility rates and declining infant mortality rates are related to higher youth dependency ratios and small or negative first dividend (low support raio). Gradually we observe improvements in the support ratio because of the fertility decline and the consequent increase in working age population. The support ratio reaches its peak in different years from each country. During this period the economy should have grown 0.6% per year on average due to the first dividend. After a few years of positive impacts, the effects of population aging are observed, when the first dividend starts to increase at lower rates.

Discussion

- Discuss different stages of the demographic transition and impacts of development and well-being;
- What developing countries that are leaders in the process (advanced stages) can teach to countries are still in the transition?
- What is the link between BRICS and N-11 with the old concept of “large developing countries” suggested by Pravin Visaria and Gavin Jones?
- Can we also learn from small developing countries with advanced demographic transition such as Argentina, Chile, Uruguay, Taiwan, Singapura?
- Agenda for future research:
    - Old-age consumption? How will it be financed?
    - Old-age labor force participation, productivity growth, variations in productivity by age;
    - Inequality
    - Migration and development
    - Intergenerational transfers (state, market and families)
    - Living arrangements

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FIgures

Figure 1 A – Population Growth Rates, BRICS, 1950-2050 (UN Population Projections)

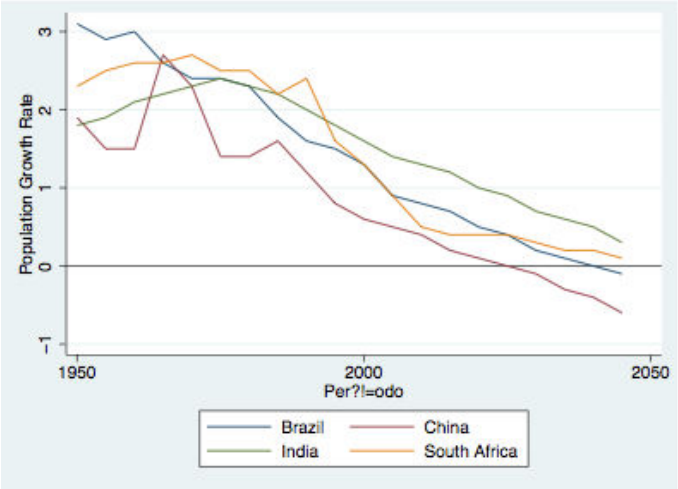

Figure 1 B – Population Growth Rates, N-11, 1950-2050 (UN Population Projections)

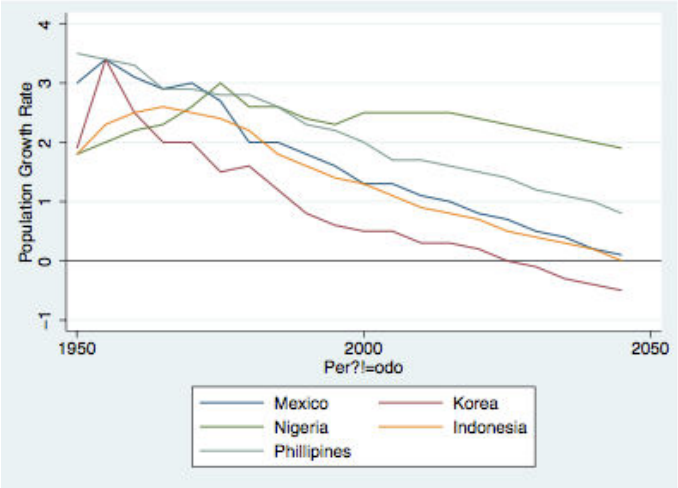

Figure 2 A – Demographic Dependency Ratio, BRICS, 1950-2050

Youth Old-Age

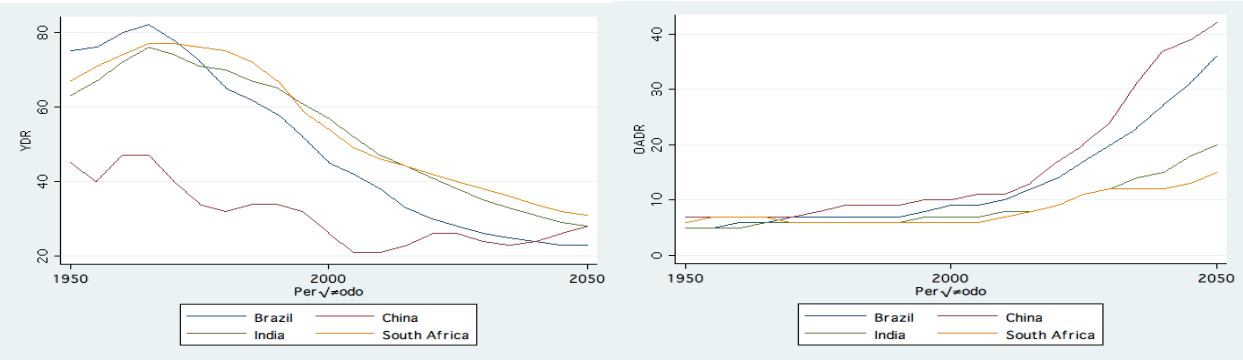

Figure 2 B – Demographic Dependency Ratio, N-11, 1950-2050

Youth Old-Age

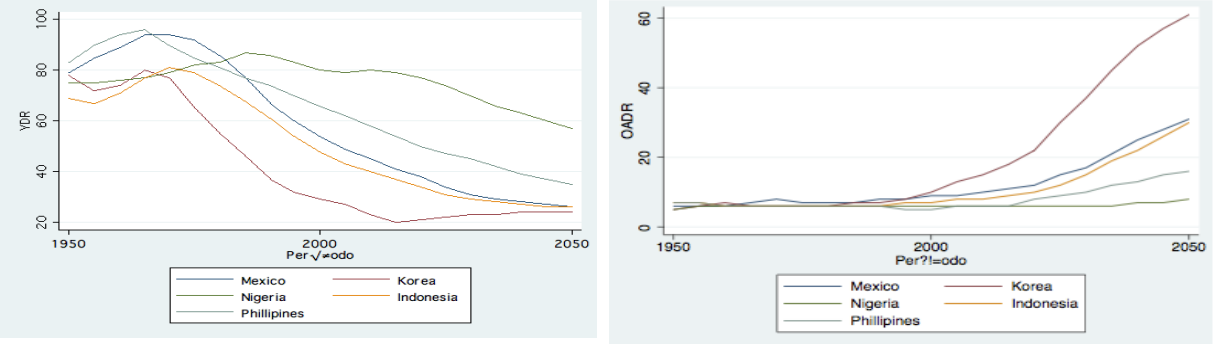

Figure 3 – Estimates of First Demographic Dividends, BRICS and N-11, 1970-2045