

MEASURES TO DEAL WITH AN AGING POPULATION: INTERNATIONAL EXPERIENCES AND LESSONS FOR CUBA

Sergio Díaz-Briquets¹

Cuba, along with many other countries, is in the midst of a transcendental demographic transformation. Concerns regarding high fertility and population growth rates (the “population explosion”) are giving way to alarm about population aging, mostly due to a transition to low fertility and—to a lesser extent—increased life expectancy. How this demographic transformation is impacting the world population is occurring at an uneven pace.

Most Western European and Southern Asian economically advanced nations have attained below replacement fertility, high median ages, and populations that are either contracting or likely to do so in the near future. Some former Soviet Republics, while not necessarily prosperous, share this demographic profile. In a few wealthy countries, such as the United States, population growth continues—albeit at modest rates—because of immigration. The shift is gradually visible in other world regions, mostly middle income South East Asian and Latin America countries, while still incipient in much of Sub-Saharan Africa and most Muslim nations. Long term projections envisage an eventual global convergence, as world population growth ceases while median ages continue to rise.

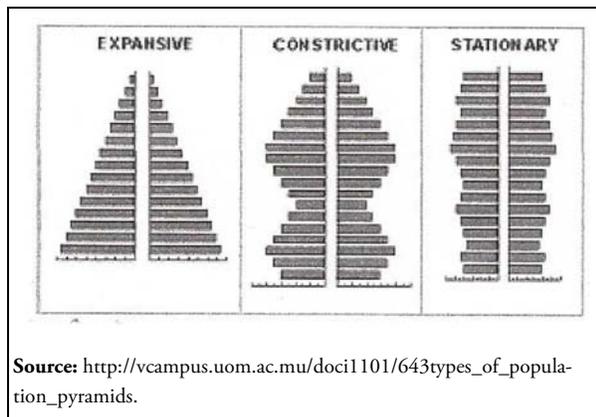
The significance of this demographic evolution lies in how it is reshaping population age structures. Figure 1 shows population pyramids corresponding to three age-sex distributions: expansive, constrictive,

and stationary. The leftmost panel of Figure 1 depicts the familiar high fertility/high mortality population pyramid, typical of most nations in the Twentieth Century and still prevalent today in many Third World countries, with larger numbers or percentages of the population in the younger age groups. The middle panel shows a constrictive population pyramid, with lower number or percentages of the population in the lower age groups, a result of gradually declining fertility; this distribution characterizes the population of many economically advanced countries today. Finally, the rightmost panel depicts a stationary population pyramid, closely resembling a rectangle—once the process is well advanced—in which the relative weight of any given age group in the age structure is more balanced. Thus, the shape of the age structure of a high fertility/high mortality population is seen to morph as it attains a low or zero growth near stationary or stationary state under constant low fertility and mortality rates (and no migration).

If fertility declines rapidly, the pyramidal shape may even be temporarily and partially inverted. Such profound age structure changes give rise to increasing elderly dependency ratios as fewer working age adults must provide for the old, just as the relative size of the former age cohorts is contracting. The extent to which overall dependency ratios (the young and the old combined as a share of total population) change depends on previous fertility, mortality and migra-

1. I am grateful to Luis Locay and Jorge Pérez-López for their comments on earlier drafts of this paper.

Figure 1. Types of Population Pyramids



tion interactions. From an economic perspective, important implications follow as human production and consumption patterns are closely correlated with age.

POPULATION AGING POLICIES: A GLOBAL PRIORITY

The effects of changing age structures on the economy are attracting considerable academic and policy attention. A particularly noteworthy research initiative set out to elucidate the nature of these effects by systematizing and integrating comparative international findings regarding relevant demographic-economic interactions pertaining to age structure shifts. This effort, under the leadership of Ronald Lee and Andrew Mason (2011a), produced a conceptual framework useful in assessing potential policy tradeoffs. The policy insights flow from the analysis of two key concepts: the Generational Economy and National Transfer Account. This paper does not attempt to explore in detail the applicability of these concepts to the Cuba case; rather it offers a cursory overview of the Lee and Mason perspective with the more modest objective of bringing these notions to the attention of Cuban economy students with the hope of stimulating interest and detailed analysis.

The Basic Notions

Contributions by children and the elderly to aggregate economic activity are limited while they peak during the prime working ages of the population. These differential age contributions vary from society to society as a function of multiple cultural and developmental parameters, including political systems,

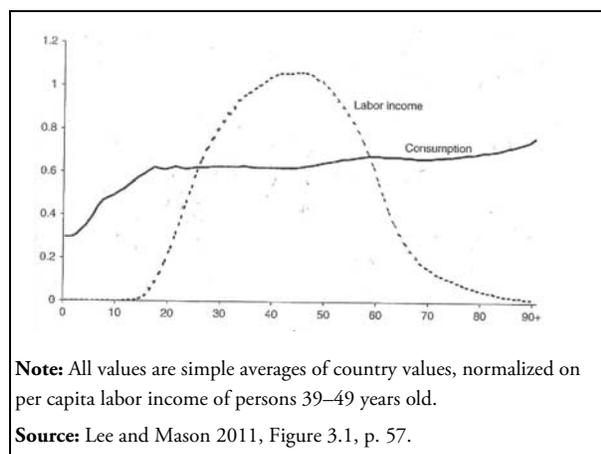
social policies, and other variables. Relative contributions hinge on how long and to what extent various population age segments produce or consume the economic resources upon which aggregate social welfare depends. As summarized by Lee and Mason (2011a), in hunting and gathering societies—and even more so in agricultural societies—children become economically active at a very early age and are therefore less dependent on adult support as are children in modern societies. In the latter, adults assume responsibility for supporting younger generations, often into their 20s, as they pursue formal education for many years. In hunting and gathering, as well as agricultural, societies the elderly remain economically active as long as they can, whereas in today’s societies they cease working and retire at relatively younger ages.

In contemporary societies, the economic support gap between producing and consuming at various ages, as shown in Figure 2, is filled by reallocating resources from the economically active population to that partly or fully inactive, or by drawing resources from savings accumulated by older generations while in their economically active and most productive years. As retirement age is reached, older individuals—whether individually or collectively—have accumulated assets (through contributions to pension funds, etc.). This is “labor income over consumption,” or the lifecycle surplus. Conversely, the lifecycle deficit represents the “excess of consumption over labor income” (Lee and Mason: 2011a, 56).

Deficits at the beginning and end of life are defrayed through various means, generally individual or government asset transfers, or by consuming assets accumulated by generations during earlier life cycle phases. In either instance, reallocations are tantamount to income transfers from one age structure segment to another. Thus, the basic mechanisms governing the generational economy are:

- “(1) the social institutions and economic mechanisms used by each generation or age group to produce, consume, share, and save resources;
- (2) the economic flows across generations or age groups that characterize the generational economy;

Figure 2. Economic Lifecycle, Per Capita Values: Average of 23 Economies Around 2000



- (3) explicit and implicit contracts that govern intergenerational flows; and
- (4) the intergenerational distribution of income or consumption that results from the foregoing.” (Lee and Mason 2011a, 5)

Based on this reasoning, Mason and Lee have developed a National Transfer Account system, consistent with the familiar National Income and Product Accounts, whereby a flow identity traces how lifecycle deficits are balanced through net intergenerational transfers plus asset-based reallocations. The identity assumes that “for any age group, inflows such as labor income, transfer inflows, and asset income must be matched by outflows, such as consumption, transfer outflows, and saving” (Mason and Lee 2011a, 57). These relationships and the sectors (public and private) in which, and from which, resources are saved or drawn from are summarized in Table 1 and illustrated with U.S. data for 2003. As the positive and negative signs in the various columns indicate, lifecycle deficits incurred at the younger and older ages are compensated by surpluses generated through labor income mostly during the prime working ages, remaining differences accounted for by age reallocations arising from public and private transfers and asset-based reallocations discounted by public and private savings.

Age reallocations transfers are broken down by source, whether public or private. The former could

Table 1. Format of National Transfer Flow Account Illustrated with the National Transfer Flow account for the United States in 2003 (aggregate nominal values by age group. US\$ billions)

Item	All Ages	0–19	20–29	30–39	50–64	65+
Lifecycle Deficit	2,120	1,825	220	-1,109	-116	1,301
Consumption	8,989	1,871	1,097	2,708	1,778	1,536
Public	2,288	819	248	458	291	472
Private	6,701	1,052	848	2,250	1,487	1,063
Less: Labor income	6,869	46	877	3,817	1,894	235
Age Reallocations	2,120	1,825	220	-1,109	-116	1,301
Transfers	-70	1,809	93	-1,611	-744	384
Public	-18	792	-3	-856	-447	495
Private	-52	1,016	95	-755	-297	-111
Asset-based reallocations	2,189	16	128	502	627	917
Public	190	6	19	89	54	23
Asset income	-203	-6	-20	-95	-57	-24
Less: Public saving	-393	-12	-39	-184	-111	-47
Private	2,000	11	109	413	574	894
Asset income	2,515	3	51	522	887	1,052
Less: Private saving	515	-7	-58	110	313	158

Source: Lee and Mason 2011a, Table 3.1, 59.

take the form of tax transfers from economically active to inactive age cohorts (youth and the aged) or by the consumption of aggregate savings such as government-managed retirement programs (whether financed by workers, businesses and/or governments). Private age reallocation transfers include family financial and in-kind assistance, as well as personal assets in the form of businesses, home ownership, private pension funds, investments, personal savings, etc.

INTERNATIONAL EXPERIENCES AND CUBA’S SITUATION

The architecture proposed by Lee and Mason provides a foundation to consider policy options Cuba must consider in decades to come if it is to satisfy the welfare requirements of its rapidly aging population. According to ONE projections reviewed by Díaz-Briquets (2015), Cuba’s dependency ratio is projected to increase rapidly in the next two decades, from 43 (young and old combined) in 2015, to 48 in 2025, and 66 in 2035. The increase is essentially accounted for by the rapid rise in the old age (over 65 years of age) dependency ratio from 20 in 2015, to 26 in 2025, reaching 43 in 2035, more than dou-

bling in the 20-year interval. The young (under 15 years of age) dependency ratio will remain largely unchanged over this time period, at around 22.

Compositional differences in the overall dependency ratio carry significant policy ramifications. Despite the burgeoning costs associated with supporting a rising elderly population share, there is a corresponding, often unrecognized, underlying bonus: the aggregate cost of supporting the younger age cohorts declines as they contract. Moreover, the social cost of elderly dependents, while high, is generally lower than that incurred in support of the young, a point emphasized by Lee and Mason. In addition, there is a further potential silver lining: savings realized from educating smaller young age cohorts could be invested to improve educational standards and thus enhance overall productivity. Productivity gains, in turn, should result in larger surpluses that could be transferred to the aged.

Potential tradeoffs arising from these theoretical relationships are mediated by multiple variables. From this perspective, Cuba's situation is problematic. For decades the country's economy has depended on the largesse of external actors, be they subsidies (former Soviet bloc, Venezuela), unpayable Western country loans, or, more recently, emigrant remittances. The national economy is far from being self-sustaining. As a result, precious few transferable public or private assets have been accumulated to support the aged.

Much of the existing public assets are not readily transferable. Alleged pension funds are a fiction and only theoretically available. Private asset transfers, other than those within existing family units, inclusive of remittances, are relatively modest. One potential source of transfers is home ownership. But even the potential for asset reallocations through home sales—allowed since 2011—is limited given the severe national housing shortage, deteriorated condition of the stock, high prevalence of multi-generational households, and limited purchasing power of potential domestic buyers.

Furthermore, even though long-term prospect for sustaining the elderly could be improved by maximizing the demographic dividend of smaller younger age cohorts, this opportunity is being wasted. By

most indications, the national education system is deteriorating instead of improving. Reports of faculty desertions from the national education system are common place, as teachers seek better remunerated employment opportunities in other economic sectors or choose to emigrate.

Educational investments also appear to be on a downward trajectory. On the surface, educational spending cuts could be justified since enrollments are on the decline. However, they appear to be shortsighted from the perspective of qualitative improvements. Some of the educational spending cuts are consistent with reformist tendencies embraced under the leadership of Raúl Castro and his desire to reduce waste, the closing of schools in the countryside being a prime example. These schools, other than responding to ideological premises, proved to be financially and socially costly, aside of being disastrous from an academic perspective. Equally rational are decisions to curtail university enrollments in some disciplines and limiting admissions to the national university system for foreign students subsidized by the Cuban government.

But totally indefensible from an economic point of view is Havana's continued reluctance to grant the population, students in particular, unbridled Internet access. In a world in which international competition is ever keener, productivity gains depend on the constant assimilation of rapidly-evolving knowledge. On this score, younger Cuban generation are being sacrificed at the altar of political control.

POLICY OPTIONS

So what is Cuba to do? How are other countries responding to the pressures exerted by declining fertility, population aging and changing age structures? Responses, while differing from country to country, ultimately must be selected from among four policy baskets, as noted by an OECD study. They consist of cost containment of old age support systems, achieving greater efficiencies in their administration, reducing elderly dependency on state transfers, and having families assume a greater share of elderly care burden by increasing private transfers (Aysan and Beaujot 2009). A response not addressed by the OECD study of rich countries, but apropos to Cuba, would be cre-

ating conditions capable of generating economic surpluses.

All four policy options proposed by the OECD are in play in Latin American countries sharing developmental levels similar to those of Cuba, but obviously with very different economic systems. In Chile and Uruguay, for example, concern with long-term structural deficits and the unsustainable nature of public transfer systems have led to the adoption of mixed private pension systems. The expectation is that these systems will, over the long-term, generate sufficient private transfer surpluses to cover old age deficits (Bravo and Holz 2011; Buchelli 2011). Similar reforms are urgently required but still pending in Brazil, where there is much concern about the “sustainability of the pension program for future generations.” Angst is also being voiced by Brazilians about the adverse impact of public old age support transfers on economic growth and the heavy tax burden they impose on younger workers (Turra et. al. 2011). In Mexico, where public old age transfers are limited, intra household private transfers provide the bulk of elderly support (Mejía-Guevara 2011). Few analysts in the region—or elsewhere—would dispute that the sustainability of elderly support systems partly hinges on sustained growth.

REFERENCES

- Aysan, Mehmet F., and Roderick Beaujot. 2009. “Welfare Regimes for Aging Populations: No Single Path for Reform.” *Population and Development Review* 35, No. 4: 701–720.
- Bravo, Jorge and Mauricio Holz. 2011. “The Significance of Inter-age Economic Transfers in Chile,” in Ronald Lee and Andrew Mason. Editors. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK, pp. 269–283.
- Bucheli, Marisa. 2011. “Public Transfer Flows between Generations in Uruguay,” in Ronald Lee and Andrew Mason. Editors. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK, pp. 434–445.
- Díaz-Briquets, Sergio. 2015. “Major Problems, Few Solutions: Cuba’s Demographic Outlook,” *Cuban Studies* 43:3–18.
- Lee, Ronald and Andrew Mason. Editors. 2011a. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK.
- Lee, Ronald and Andrew Mason. 2011b. “Lifecycles, Support Systems, and Generational Flows: Pat-

IMPLICATIONS

As this overview reveals, even some of the most common and modest reform options required to respond to the aging population challenge are of limited applicability in the current Cuban economic context. Rather than having accumulated public assets over the last half century, the Cuban state is heavily indebted. Accumulated private assets, meanwhile, are nearly non-existent, as the intra-familial support systems have limited capacity to assume more elderly support costs given low average income levels. Main exceptions are the increasing share of foreign remittance-dependent households and the potential—but limited, and still incipient—capacity of home sales to generate generational asset transfers.

Unless urgent short-term measures are implemented, potential productivity gains to be realized by providing enhanced educational opportunities to smaller age cohorts may be forfeited. Continued lackluster growth is preventing the accumulation of economic surpluses with which to support current and future elderly age cohorts. Just as critical is that the longer reforms are postponed, the graver the long-term outlook will become. From these perspectives, it is almost inescapable to conclude that older Cubans face a grim, rather than golden, future. And so do those younger generations that will have to support them.

- terns and Change,” in Ronald Lee and Andrew Mason. Editors. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK, pp. 79–106.
- Mejía-Guevara, Iván. 2011. “The Economic Lifecycle and Intergenerational Redistribution in Mexico,” in Ronald Lee and Andrew Mason. Editors. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK, pp. 283–296.
- Rosero-Bixby, Luis, Paola Zúñiga-Brenes, and Andrea Callado. 2011, “Transfer Accounts in Costa Rica’s Mixed Economy under Rapidly Changing Demographic Conditions,” in Ronald Lee and Andrew Mason. Editors. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK, pp. 500–512.
- Turra, Cassio M., Bernardo L. Queiroz, and Eduardo L.G. Rios-Neto. 2011. “Ideosyncracies of Intergenerational Transfers in Brazil,” in Ronald Lee and Andrew Mason. Editors. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Edward Elgar Publishing Limited, Cheltenham, UK, pp. 394–407.