

Policy In Focus

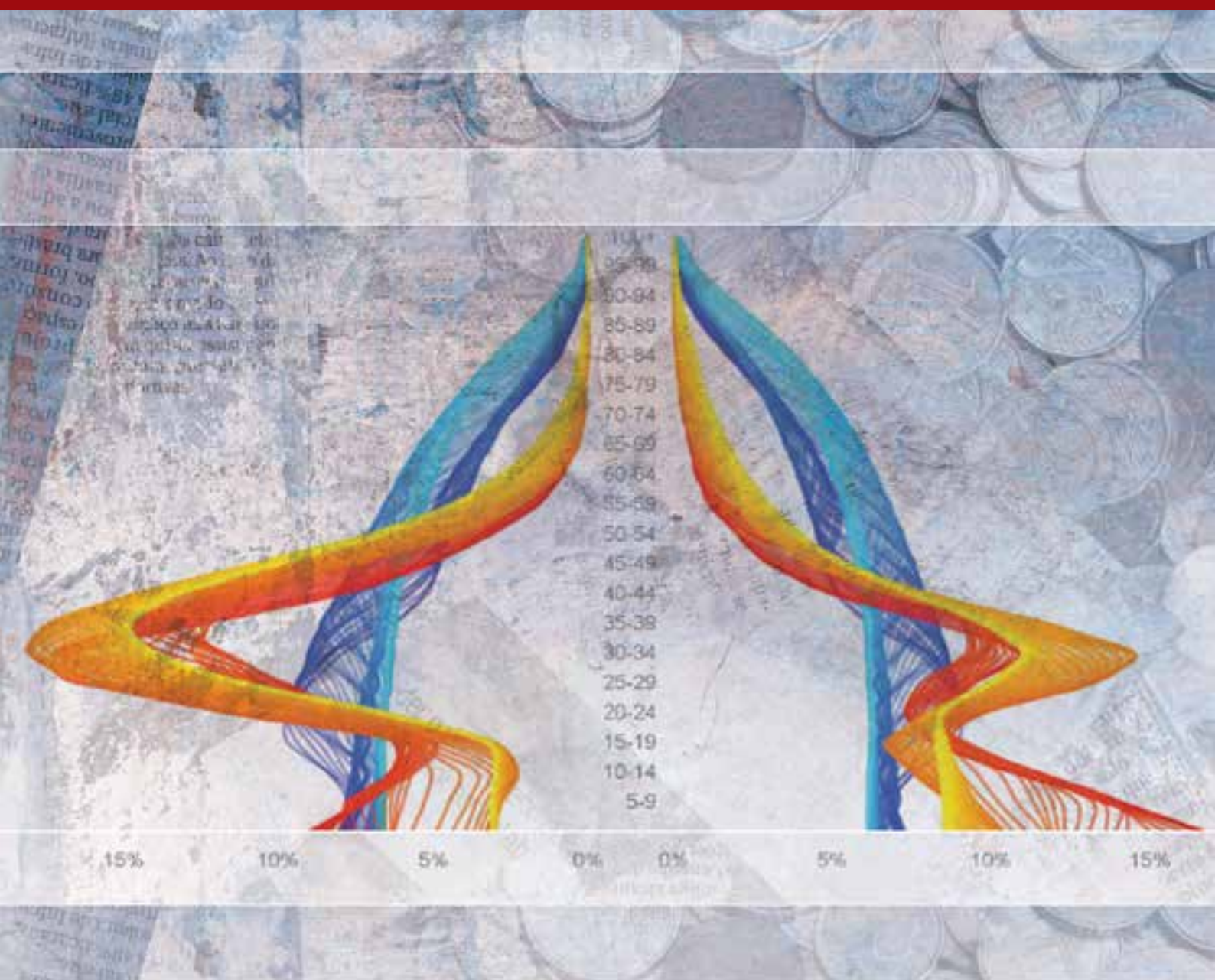


*Empowered lives.
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National Transfer Accounts and Generational Flows



The International Policy Centre for Inclusive Growth (IPC-IG) is a joint project between the United Nations and Brazil to promote South-South learning on social policies. It specialises in research-based policy recommendations on how to reduce poverty and inequality as well as boost inclusive development. The IPC-IG is linked to the UNDP Brazil Country Office, the Secretariat of Strategic Affairs (SAE) and the Institute for Applied Economic Research (IPEA) of the Government of Brazil.

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Policy in Focus

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Editor's note: This special edition of *Policy in Focus* presents some of the ongoing research using National Transfer Accounts (NTA) from across the world in regards to the intergenerational economy and the effects of demographic transitions on economies and societies more broadly.

On behalf of the UNDP IPC-IG I would like to extend a special thanks to Bernardo Lanza Queiroz for his dedication to the publication of this issue and to all of the authors for their insightful contributions.

Authors contributing to this issue explore the demographic transformations of populations into increasingly "Aged Economies", also bringing to the forefront questions of what population aging means for the future replication, reduction or creation of inequality.

The NTA has served as an important instrument to help policymakers, academics, and development practitioners to address the risks and opportunities associated with demographic transformations. We hope that this issue helps to further the discussions and explorations of these themes and to better inform the pursuit of increasing the quality of life for people of all ages.

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The economic life cycle is characterised by three distinct phases: two phases of economic dependence and one phase of economic independence. In most societies, children consume resources generated by adults, transferred to them by family or by the public sector. The elderly, in turn, possess an accumulation of assets accrued during their active economic phase, and of resources produced and transferred by adults or other credit operations. Over each period of time, every society determines—by social norms, laws and individual decisions—the combination of mechanisms for resource allocation over life cycles. Intergenerational transfers represent a significant portion of the distributed production and time allocation over the life cycle and become increasingly important given the rapid demographic changes that have been happening around the world over the last decades.

This issue of *Policy in Focus* examines demographic changes, intergenerational transfers and their impacts on economic growth in different countries. The articles cover the experiences of developing and developed countries from the Americas, Africa and Asia. As a common thread, all articles discuss the main features of the intergenerational transfers in their respective countries and make a connection between the public and private intergenerational transfers and demographic change, to analyse the possible impacts on economic growth.

This special issue commences with an article by Ronald Lee and Andrew Mason on the general features of the National Transfer Accounts project that briefly discusses its main results. They show how the life cycle deficits of childhood and old age are financed in different regions and countries of the world.

Queiroz and Turra then investigate the impact of changes in population age structure on economic growth in Brazil. They show that Brazil is failing to take advantage of the positive impacts of demographic dividends. In the last few decades, the Brazilian economy has grown much more slowly than the demographic dividends alone would predict.

The following articles (Colombia, Chile and Mexico) deal with more specific features of the intergenerational transfers. Urdinola and Tovar illustrate intergenerational transfers in Colombia and argue that elevated rates of labour market informality have negative impacts on public transfers that might undermine potential growth resulting from demographic changes. Miller, Saad and Holz provide an important analysis of transfers and inequality in Chile. They show how the pattern of transfers varies widely across socio-economic groups and might have impacts on the well-being of the population. Mejia-Guevara and Saucedo then discuss a specific feature of the public transfers system in Mexico: they analyse public education transfers and how they benefit children.

The remaining articles—encompassing Africa and Asia—also discuss the impacts of demographic change on economic growth. Murithii et al. show that Kenya can take advantage of its demographic transition if proper educational and health policies are in place to increase the productivity of workers. For South Africa, Oosthuizen shows that the first half of the 70 years' worth of potential demographic dividends for that country has already passed, and to benefit from their potential impacts, the country should invest in policies to improve youth labour market conditions.

Regarding Asia, an article from India shows that to fully benefit from demographic change, an increase in the age-specific productivity of labour, especially in the informal sector, is important to maximise the growth effects of the age structure transition. Furthermore, Matsukura presents the case of Japan, a country with the oldest age structure analysed in this publication. The author shows that Japan must start considering ways to benefit from the second demographic dividend (accumulation of wealth). He argues that the elderly population, normally seen as a liability, is in reality an important actor in the process of economic growth. To conclude the magazine, Maliki argues that, for Indonesia to fully benefit from demographic change, proper policies are needed to boost investment, improve labour market conditions, improve the accumulation of human capital and increase productivity.

We hope that these articles further emphasise the importance of considering the economic life cycle, demographic changes and their economic consequences.

National Transfer Accounts: An Overview

by Ronald Lee¹ and Andrew Mason²

The demographic transition is the slow-moving process through which populations go from initially high fertility and mortality to low fertility and mortality, accompanied by deep changes in the population age distribution. For a single population these changes unfold over the course of one and a half or two centuries, and for the world as a whole the process will take at least three centuries, from 1800 to 2100.

What are the economic consequences of these profound changes? Consequences arise because the behaviour, needs and social situations of individuals vary strongly by age, with respect to work, consumption, saving, asset holding, taxes paid, benefits received, giving and receiving in the family, and so on.

As the population age distribution changes, many adjustments must occur to keep the economy in balance. When the size of the age groups that are net givers declines and that of receivers increases, either givers must give more or receivers receive less, or some combination of the two. If the share in age groups that tend to hold lots of assets, such as the elderly, rises, then there will be an increase in assets per capita, which might depress rates of interest or might boost labour productivity. As the share of children in the population declines, it becomes easier for society to invest more in each child.

The National Transfer Accounts (NTA) project helps us understand and analyse the consequences of changes in the population age distribution by estimating many aspects of economic behaviour by age. Standard National Accounts describe the aggregate features of an economy, such as total consumption or the level of Gross Domestic Product (GDP). NTA is consistent with National Accounts but goes beyond them in two important respects. First, it decomposes all relevant elements contained in National Accounts by age. Second, it estimates private inter-age and inter-generational transfers by age, both within and between households—items

that are not included in National Accounts. Current work on NTA extends the accounts even farther beyond National Accounts to include economic activities in the home, such as cooking, cleaning, elder and child care, shopping and home repair, based on time-use surveys.

NTA is a loosely organised network of teams in 46 countries, with regional organisations in Asia, Europe, Latin America and Africa, plus members in North America and Oceania. There is a small core group that organises training programmes, disseminates information and reports, exercises quality control and maintains a website (www.ntaccounts.org), where the accounts for many countries are stored and made publically available. The website also provides access to working papers and other documents and publications.

The accounts are used for many purposes. They provide a valuable description of the economic roles of people at different ages, and of the relations among generations. They provide inputs for analytic studies of the effects of changing population age distributions on the macroeconomy as fertility and mortality decline and as populations age, and for studies of generational equity and the sustainability of economic support systems. They inform the efforts of policymakers to raise the living standards of people of all ages, from children to the elderly.

How NTA makes its estimates

NTA estimates do not require new surveys. They are estimated only in countries in which existing surveys, administrative data and National Accounts are sufficient to meet their needs. A full description of NTA methods is given in a manual published by the United Nations (2012). Here we will briefly sketch these methods.

NTA begins with estimates by age of labour income and consumption. Labour income at a given age is the average across all individuals at that age of wages and salaries, plus fringe benefits, plus two

thirds of income from self-employment and unpaid family labour (the other third is attributed to household assets). Consumption is similarly an average across all individuals of a given age, including both private consumption expenditures and public in-kind transfers, both of which require some explanation. Consumption is reported in surveys at the level of the household, not individual. NTA uses various methods to allocate household expenditures on health care and education to individuals in the household. That leaves the rest of consumption—the major share—that is allocated in proportion to a consumption scale that assigns a weight of 0.4 to children aged 0 to 4, and 1.0 to people aged 20 and above, with linear interpolation for ages in between (see Deaton, 1997; and Lee et al., 2008). Public in-kind transfers, such as public education and publicly provided health care or long-term care, are also counted as consumption, because unlike cash transfers, to receive them is to consume them.

The gap between consumption and labour income at an age is called the ‘life cycle deficit’, which can be positive (as in childhood and old age) or negative (during working age). This gap is filled by reallocations from one age to another in the form of private transfers, public transfers or the difference between asset income and savings, which is called ‘asset-based reallocations’.

Each of these components is also measured by NTA, for both the private and public sectors and for many subcomponents, but here we will only explain estimation for private transfers. For each individual in each household, labour income and consumption are estimated as described, while net public transfers are estimated using other methods. Then consumption minus labour income minus net public transfers gives the private transfer received, which is treated as coming from the household

head. In this way intra-household transfers are estimated, and we average these across all individuals by age. Inter-household transfers are estimated directly through surveys, and are assumed to pass between household heads.

What NTA has found

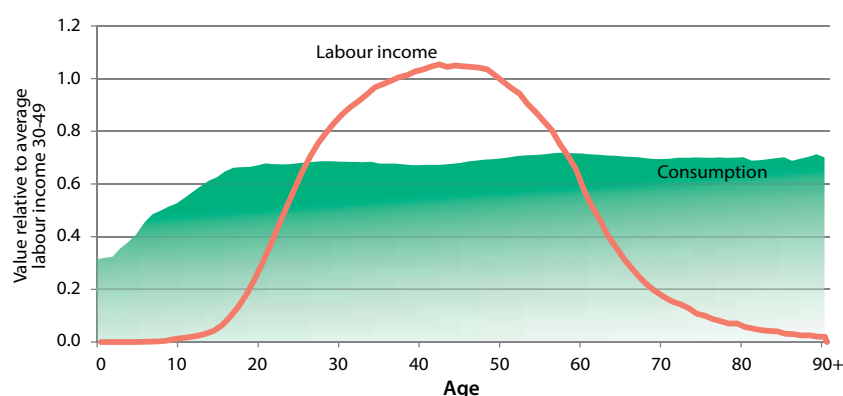
NTA results are presented most simply and effectively in charts and graphs. As an example, Figure 1 shows the average per capita consumption and labour income for 40 countries around the world, expressed as a ratio to average labour income at ages 30–49 for each country. We see that the life cycle begins with a period extending into young adulthood in which consumption is greater than labour income, followed by a period in prime adulthood in which labour income exceeds consumption. Finally, consumption once again exceeds labour income in old age.

The figure shows an average of developed and developing countries, but these actually have different shapes. In rich industrial nations there is a bulge in consumption for children, reflecting heavy public and private investment in their education that is muted or missing in developing nations. Also, in developing countries consumption tends to be quite flat across adult ages, while in many developed countries there is a strong increase in consumption with age, reflecting rising public and private health care costs and perhaps the accumulation of assets and pensions that provide higher income at older ages.

These age profiles can be combined with past and projected population age distributions to calculate ‘support ratios’—the ratio of effective workers to effective consumers. Output per consumer is proportional to this support ratio, all other things being equal. For developing countries, these support ratios show a rapid rise towards the middle of the transition when fertility begins to decline rapidly, reducing the share of dependent children in the population and raising the proportion of workers. This rise in the support ratio can continue for many decades, producing the ‘demographic dividend’ by boosting the average growth rate of output per consumer by up to 0.8 per cent per year. Eventually the gains of this dividend phase are replaced by the constrictions of population aging, already experienced in

FIGURE 1

Per Capita Labour Income and Consumption—Average of 40 Countries



Source: Calculated from data in Lee and Mason et al., 2014.

many industrial nations and soon to come for all developing countries as well. Support ratios fall, subtracting up to 0.8 per cent per year, as in the case of Spain.

NTA also reveals how the life cycle deficits of childhood and old age are financed in different regions and countries of the world. For childhood, familial transfers from parents are, of course, very important, but the role of the public sector varies greatly and is greatest in European countries with excellent public education, whereas in some East Asian countries private familial spending on education is about as important as public spending. For old age there are many countries in Europe and Latin America where the deficit is financed entirely or almost entirely by public transfers for pensions and health care. In East Asia, familial support for the elderly is important, but in the rest of the world the typical pattern is that older people continue to make net private transfers to their children. NTA also shows that as fertility declines and the share of children in the population falls, parents and governments invest more in the human capital of each child, leading to a substitution of worker quality for numbers of workers later on.

NTA has been limited to the flows of material resources among ages and generations but has missed the time spent caring for children or the elderly and the time spent in production in the home. Now, however, new work is incorporating these important factors by drawing on information in time-use surveys, drawing on new methods. This new direction is called National Time Transfer Accounts

(NTTA), and work is well advanced in many developed and developing countries around the world.

Another important new direction for NTA is the estimation of accounts by socio-economic status as defined either by educational attainment or by position in the income distribution. Latin American countries in particular have made important progress in this direction.

NTA can also be used as the basis of traditional Generational Accounting, and as the basis for projecting government budgets to assess their fiscal stability in the face of population aging, given their public transfer programmes for the elderly.

In these and many other ways described more fully in Lee and Mason (2011), NTA is providing vital new information to help policymakers and researchers around the world to grapple with the costs and opportunities of changing population age distributions. ■

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Lee, R. and A. Mason, principal authors and editors (2011). *Population Aging and the Generational Economy: A Global Perspective*. Cheltenham, UK, Edward Elgar.

United Nations Population Division (2012). *National Transfer Accounts Manual: Measuring and Analyzing the Generational Economy*. New York, United Nations.

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Window of Opportunity: Socio-Economic Consequences of Demographic Changes in Brazil

by Bernardo L. Queiroz¹ and Cassio M. Turra¹

This paper analyses the relationship between changes in population age structure and economic growth in Brazil between 1970 and 2050. While we know some facts about population growth and economic development, we know little about the interactions between population age structure and changes in demographic variables on economic growth. The transformation in population age structure can have important impacts on economic growth, a phenomenon known as demographic dividends (Lee, 2003).

The rise in the share of the working-age population and individual responses to population aging can lead to these dividends. We use income and consumption age profiles, in conjunction with population projections, to study the macroeconomic consequences of population changes in Brazil. We estimated the demographic dividends, analysed the first and second dividend, and provide an alternative perspective by looking at public and private dividends while discussing the gap between observed economic growth and potential growth attributed to these dividends.

The consequences of changes in population age structure have received renewed interest in recent years (Lee and Mason, 2011). Demographers and economists alike are interested in examining the extent to which interactions between population age structure and declines in both fertility and mortality yield economic development. First, several studies have indicated the role of population dynamics (age structure) on economic growth. It is argued 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 for about one third of the observed economic growth in Asia during that period. Second, the early 1990s brought forth a different issue to demographers and economists in developed countries; several articles showed that the changing age structure can bring benefits to society for two reasons: a lower dependency ratio means more resources to be invested in the economy; and increased longevity affects the savings behaviour of the working-age population, creating positive effects on income.

The demographic dividend or demographic bonus has recently been presented as a combination of two separate dividends (Mason and Lee, 2006). The first dividend is usually related to a temporary increase in the share of the population that is of working age; it can be effectively measured by increases in the ratio of producers to consumers in the population.

The second dividend, which has gone virtually unnoticed among most scholars, comes in succession to the first dividend and is related to the creation of wealth that arises in response to population aging. Unfortunately, the demographic dividends are not automatic and depend on institutions and policies to reflect changes in population age structure in economic growth (Mason and Lee, 2006).

Despite unabated interest among researchers in issues pertaining to macroeconomic consequences of population aging in developed countries, little is known about them in emerging economies. Brazil is one example of an important context for elaborating linkages between economic and population changes that has not yet been fully examined. Brazil has been characterised by rapid demographic changes, such as a

rapid decline in fertility and improvements in life expectancy. From a young quasi-stable age distribution in 1970, the distribution has been gradually shifting to an older one. This transition in age structure implies a rapid growth of the working-age population until 2045, from which the first dividend begins to arise.

In this article we show that almost 100 per cent of the economic growth between 1970 and 2010 in Brazil could be explained by the demographic dividends. Our findings, however, suggest that most of this contribution was concentrated in the 1970s; in the last two decades the economy has not taken advantage of the demographic changes. We speculate that low investments in human capital and the lack of proper social and economic institutions are responsible for jeopardising the demographic dividends in the country.

Demographic dividends

The first dividend arises and dissipates as changes in age structure interact with the lifecycle of production and consumption (Mason and Lee, 2006). The first dividend is related to a temporary increase in the share of the working-age population and can be effectively measured by increases in the ratio of producers to consumers in the population.

In this sense, it measures increases in income due to the growth of the working-age population. The first dividend is temporary and not always positive. As population ages and the share of the elderly grows faster than the working-age group, output growth will become depressed (Mason and Lee, 2006).

The first dividend might generate positive impacts on the family and government. Families benefit from having more adults able to receive income and fewer individuals depending on transfers, while the government benefits from an increase



Photo: James Gilbert. 2009 IPC Photo Competition. Women working in Brazil.

in the pool of taxpayers and a smaller number of beneficiaries of public transfers.

We follow Bixby and Robles (2008) and estimate private and public dividends, as part of the first dividend. The private (familial) first dividend is estimated by increases in the household support ratio, which is given by the variation in the rate of household producers minus the variation in the beneficiaries of private inter-vivos transfers.

The public dividend is given by the changes in the ratio between effective taxpayers and effective beneficiaries from public transfers. We also estimate separate dividends from education and social security, as components of the total public first dividend.

Estimates of the demographic dividends require both income and consumption age profiles. The results in this article are based on age profiles estimated using Brazilian data (Turra, 2000; Lee and Mason, 2011). More information about the data can be found elsewhere (Turra, 2000). We follow the methodology developed by the National Transfer Accounts project (www.ntaccounts.org) to perform the calculations.

The Brazilian demographic dividends

The first demographic dividend

The results presented here were estimated using Brazilian profiles for 1996. We assume that this cross-sectional profile is constant during the period of analysis (1970–2050).

However, this assumption ignores how socio-economic development

might affect the patterns of income and consumption in the future.

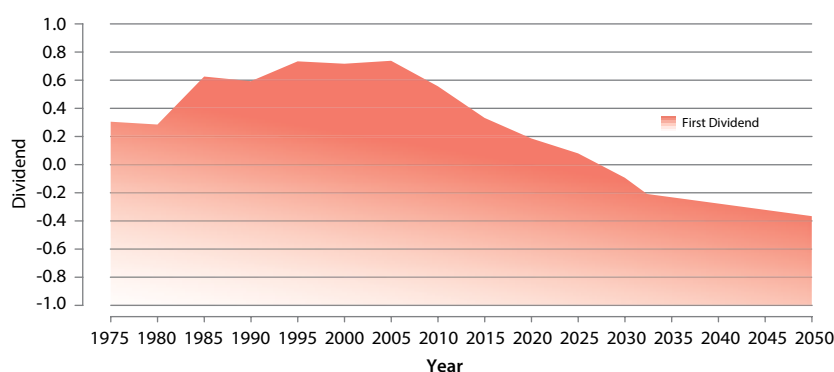
Figure 1 presents the support ratio and the first dividend. Figure 1 indicates when the growth rate of the support ratio turns negative (i.e. the first dividend equals zero), in 2026. The support ratios (effective producers to effective consumers) in Brazil were unfavourable during the 1970s and 1980s. High fertility rates and declining infant and child mortality led to a larger proportion of children, about 50 per cent of the population under the age of 20 during this period, causing the low support ratio. From the late 1990s onwards, a rapid rise in the support ratio of the country is indicated, lasting until 2040.

These improvements in the support ratio are caused by the fertility decline since the 1970s and the consequent increase in the working-age population. The trend in the Brazilian support ratio shares some similarities with the Indian experience, shown elsewhere. They both have only one peak, contrary to the United States experience, and the rise in the support ratio starts later in these two countries as opposed to the USA and Japan. However, the rate of growth of the support ratio occurs faster in Brazil than in India because fertility decline in India was much slower than in Brazil.

The Brazilian support ratio peaked in 2010, while the support ratio in India is not expected to peak until 2040 (Lee and Mason, 2011).

The first dividend—the rate of support ratio growth—is shown in Figure 1.

FIGURE 1 The First Demographic Dividend, Brazil 1970-2045



Source: Turra, 2000; Lee and Mason, 2011.

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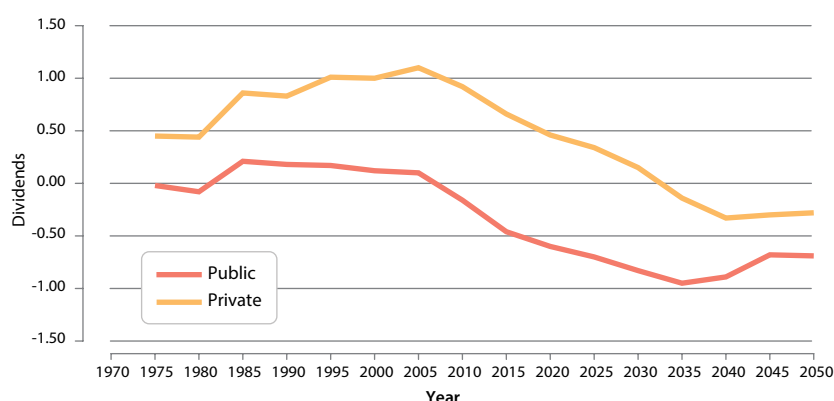
Demographers and economists alike are interested in examining the extent to which interactions between population age structure and declines in both fertility and mortality yield economic development.

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The demographic dividends are not automatic and depend on institutions and policies to reflect changes in population age structure in economic growth.

FIGURE 2

Public and Private Components of the First Demographic Dividend, Brazil 1970-2045



Source: Authors' elaboration.

Brazil has one clear period of demographic dividend, starting in 1975 and lasting until 2025. The dividend is strongly positive during those decades. In this period the economy should have grown at about 0.6 per cent per year on average due to the first dividend alone. The effects of population aging are already observed after 2005, when the first dividend starts to decline, but they are more evident after 2025 when it turns negative.

The first demographic dividend after 2025 will become a hindrance to economic growth. The first dividend contributed to almost 30 per cent of the observed economic growth from 1970 to 2010.

The contribution of the first dividend in Brazil is greater than the ones observed in Japan, India and the USA. Mason estimates the contribution of the growth rate of the support ratio to be 20 per cent for the USA and about 10 per cent for India during the same period. Most of the contribution of the first dividend is from 1970 to 1980.

In the 1980s and 1990s the growth rate of the support ratio could have led to an increase in Gross Domestic Product (GDP) per effective consumer of 2.5 per cent and 2.4 per cent per year, respectively. However, the observed economic growth was smaller than the first dividend alone. The growth rate in GDP per effective consumer from 1980 to 1990 was negative 0.61 per cent per year, and from 1990 to 2000 it was 0.08 per cent per year.

First dividend: public and private

Figure 2 presents the public (fiscal) and private (familial) components of the first dividend. The private dividend implies an improvement in living conditions, because there are more effective producers than effective consumers in the household for a certain period of time. The fiscal dividend is related to the larger number of potential contributors in relation to beneficiaries of public transfers. The familial (private) dividend is greater and lasts longer than the fiscal dividend. In general, Brazilian households can expect to improve their life conditions (well-being) by more than 0.5 per cent per year from 1980 to 2020. After 2020, the familial dividend declines to the point that it becomes negative in 2035. From 2035 on, Brazilian households will observe a reduction in their well-being resulting from demographic changes.

The fiscal dividend is estimated to have declined to the point of becoming negative after 2005. During the window of opportunity, when the number of effective producers increases faster than effective consumers and could boost government revenues, we observe a very short period of gains. This happens because at the same time that public revenues increased, we also observe a rapid increase in government spending on public programmes, especially for the elderly.

These results are related to a large body of the literature that discusses the size of the Brazilian public transfer system. These results also show that the current generation of adults (the demographic

bonus) suffers from a double burden.

They are responsible for supporting the large public pension system and are also contributing to the expansion of the public education programme. This situation probably affects the ability of the public sector (and families) to invest properly in education, investing less than necessary in the development of human capital and future workers, which may further stunt productivity growth in Brazil.

Conclusion

Demographic changes might favour economic growth when appropriate policies and institutions are in place. We hope to have contributed to expanding the body of knowledge about the extent to which demographic changes in Brazil could impact economic growth. More specifically, we now have an understanding that the country is failing to take advantage of the positive impacts of demographic dividends. In the last few decades, the Brazilian economy grew at much slower rates than what the demographic dividends alone would lead to predict, contrary to the experience of other developing countries (e.g. in Asia).

One of the main findings of our work is that the demographic dividends explain 97 per cent of GDP per effective consumer from 1970 to 2010. However, our results also indicate that the economic growth rate could have been greater if the country had taken advantage of the changes in its population age structure. In addition, we find that most of the dividends' contribution happened in the 1970s.

These findings reveal that Brazilian policymakers have not made decisions to transform changes in population age structure into economic growth. Moreover, if policies are not adopted, future benefits of the dividends will also be lost.

Our second important finding is that given the current structure of the public transfer system in Brazil, the government will observe a faster growth in the number of beneficiaries compared to contributors, and will only enjoy the benefits brought by the demographic transition for a very short period of time.

The rapid process of population aging will have huge impacts on the sustainability of the Brazilian public transfer system (and familial support network). The increase in the old-age dependency ratio means a larger number of beneficiaries will depend on a smaller number of contributing workers. The demographic problem is

not the only issue in this matter. Other research has shown that large public transfer systems provide incentives for individuals to leave the labour force earlier, thus increasing the dependency ratio and crowding out private investments, further affecting the fiscal dividend (Wise, 2010).

The rapid process of population aging, as well as the size and fiscal problems of public transfer systems in the developed world have led researchers to devote considerable attention to this problem. However, developing countries are aging much more rapidly than developed countries, and social welfare programmes will be asked to provide more support than they may be capable of. ■

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Is the Demographic Advantage Wasted by Informality in Developing Countries? National Transfer Accounts-Colombia¹

by B. Piedad Urdinola² and Jorge A. Tovar³

The National Transfer Accounts (NTA) methodology allows the construction of economic flows from different age groups using the System of National Accounts (SNA) and micro-data from national household surveys. This method was developed by Ronald Lee and Andrew Mason and successfully implemented in over 30 countries (see Lee and Mason, 2011).

For the construction of NTA-Colombia we used data from 2008 by combining SNA information, macroeconomic information and the Living Standards National Survey (*Encuesta Nacional de Calidad de Vida*—ECV), carried out by *Departamento Administrativo Nacional de Estadísticas* (DANE—the Colombian Official Bureau of Statistics) and representative at the national level.⁴ All following figures are

presented in annual Colombian pesos (COP). These figures not only allow us to see how demography shapes many economic issues, but they also show the main patterns for transfers between generations. Using our results, we analyse their implications under the assumption that current conditions will be maintained.

It is important to keep in mind two economic facts for Colombia. First, the main public company in Colombia is the National Petroleum Oil Company (ECOPETROL), which provides the largest public income for the entire public sector and the nation in general. Second, Colombia, like other developing countries, has a large informal sector. Official calculations show that half of the economy is informal (52 per cent

of employees are informal, and 49 per cent of all small business are not officially registered and, therefore, do not pay taxes).⁵ Given these figures, we assume that, on average, 50 per cent of households' consumption originates in the formal market and the remaining 50 per cent in the informal market.

Demographically speaking, Colombia is the third largest country in Latin America and categorised as a young country, with most of its population between the ages of 15 and 35 (35 per cent), and has both a decreasing very young population and an increasing older population. In other words, Colombia is advancing in its demographic transition, like many other Latin American countries at this stage, such as Brazil, Costa Rica, the Dominican

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Colombia is now at the beginning of the so-called demographic dividend (a larger productive young population than the dependent population).

FIGURE 1

**Labour Income Composition
Colombia, 2008**



Source: Living Standards Survey, 2008. Authors' calculations, Macro Adjusted.

Republic, Mexico and Panama. Indeed, Colombia is now at the beginning of the so-called demographic dividend (a larger productive young population than the dependent population). This categorises the age profiles of interest: income, consumption and transfers.

The first age profile we show (Figure 1) is labour income. Labour income categories distinguish between formal employees (earnings) and independent workers (self-employed income)—the former always being larger for all ages. Curves peak at different ages: earnings from formal employees reach their highest level after age 42, while self-employed income reaches its peak six years later (age 48). The patterns show the differences between both categories, not only at the

income level but also in the long-term pattern, where formal workers enjoy higher levels of income despite losing this advantage after retirement age (averaging 55 years for women and 60 for men in Colombia).

Households split their labour income between consumption and savings. In turn, consumption differentiates between public and private goods. The former is aggregated in health, education and other consumption, while private consumption includes the same categories plus housing and the consumption of durables. In the private consumption profiles, other consumption is largest across all ages, as it includes all current consumption—for example, food and clothing. Other public consumption is the remaining—discounting

health and education—and is equally distributed across all ages.

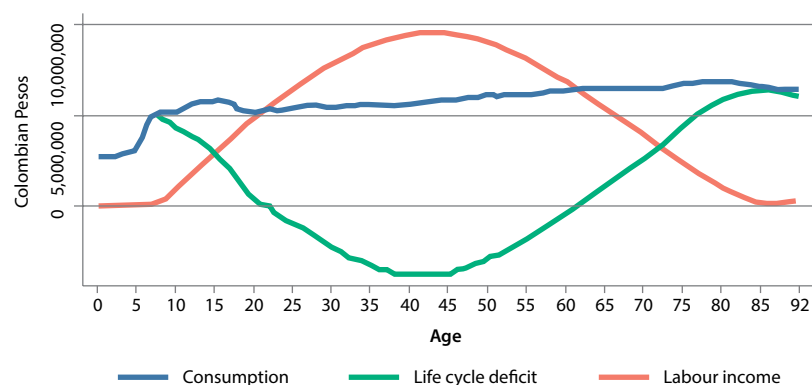
Total income minus total consumption reflects savings, which, when explicitly calculated over a person's lifetime, are collectively termed the 'lifecycle deficit'. Theoretically, the lifecycle deficit suggests that, in modern societies, when individuals are very young or very old, they do not produce but still need to consume. Thus, individuals compensate with excess production during their working years such that, at the end of their lives, balance is achieved. The NTA project, however, has found empirical evidence that this balance is not necessarily the case; it is common to find that consumption is not necessarily income-driven in most cases, as demonstrated by a non-decreasing consumption level at older

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The switch of transfers from the eldest to the youngest may help reduce the poverty levels and inequality that are extreme and persistent in the region.

FIGURE 2

**Life Cycle Deficit
Colombia, 2008**



Source: Living Standards Survey, 2008. Authors' calculations.

ages. Moreover, with population aging, this period is also increasing even further in most societies. This is also the case for Colombia, as shown in Figure 2.

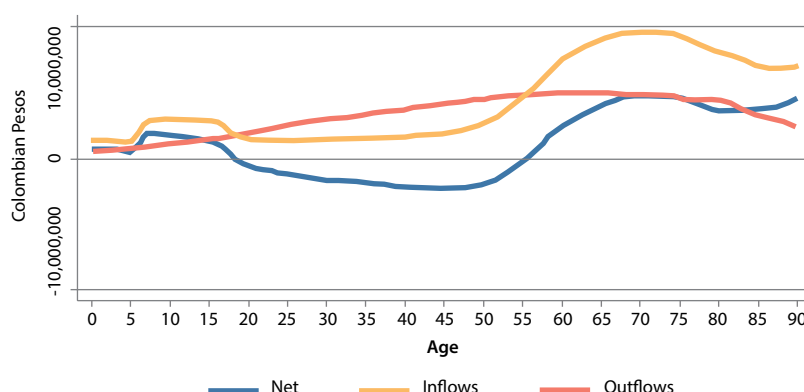
In fact, the Colombian case shows an increasing pattern of consumption right after age 10, the beginning of working age in rural areas according to DANE, and only starts a subtle decline at age 80. Figure 2 also shows that the ages where households can actually engage in savings (from 23 to 63 years old), income is larger than consumption for not very long, considering that life expectancy in Colombia reached age 76 by 2008. This shows that even in young countries consumption patterns do not decline at older ages; therefore, aging will have an impact on both public and private consumption and will become an extra burden for families, if we consider that other consumption (followed by private health consumption) is the largest type of consumption at older ages.

Given that this consumption pattern will be maintained in the future (or even worsen), and that the pension system is far from universal (only 25 per cent of workers have access to it), Colombia should design strategies to encourage increased savings for future workers by promoting both higher saving rates and expanding coverage in the pension system. The country should also invest heavily in education and retain a larger proportion of the population in the educational system to improve the level of formality in the economy, leading to higher income levels and significant improvements in access to the social security system.

The transfers profile allows us to observe how different cohorts interact, as the lifecycle deficit does not necessarily converge to zero by the end of their lives. Public transfer inflows (shown in Figure 3) represent the amount received by individuals, while outflows show the amount they give to the public system. As expected, as individuals' income begins to increase, so do their outflows. This increase is maintained until retirement age, when it stagnates, and only starts decreasing after age 73.

On the other hand, public transfer inflows are large for younger people—driven

FIGURE 3 Public Transfers
Colombia, 2008



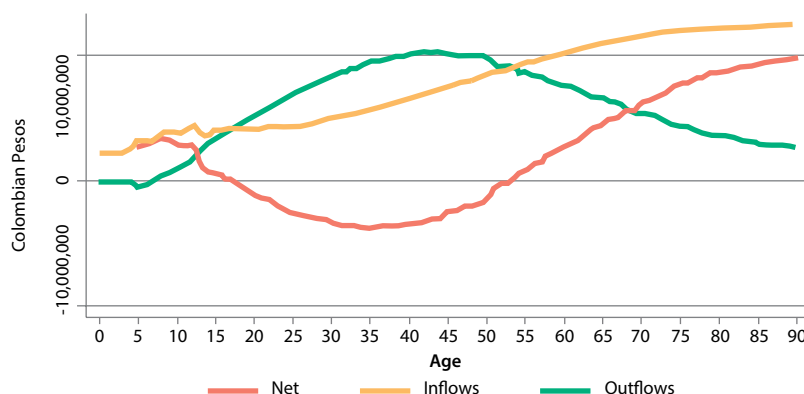
Source: Living Standards Survey, 2008. Authors' calculations.

by transfers for education—and even larger for older people, driven by public health transfers. However, total transfers towards people older than 55 years are more than three times the size of transfers to the youngest segment of the population (below age 20). Like other Latin American countries with similar demographic patterns but different social security systems, most public transfers are devoted to the eldest rather than the youngest members of society. This may have important consequences not only for current public spending systems but may also have long-term implications for the future productivity of today's young population that are also linked to the coverage of the formal social security system. The switch of transfers from the eldest to the youngest may help reduce

the poverty levels and inequality that are extreme and persistent in the region.

Figure 4 depicts the private transfers which overall follow a similar pattern to that of public transfers, although some differences exist. First, both outflows and inflows are practically the same as public transfers, which attests to the importance of the traditional family support system in an economy with a weak social security system. Second, outflows begin at a slightly older age (around 20 years old), but the increment spans a smaller period of time, as at age 50 outflows begin to diminish, and they do so at a faster rate than public outflows. Finally, private inflows are seen to be always increasing from age 15 onwards, which confirms that most workers

FIGURE 4 Private Transfers Intervivos
Colombia, 2008



Source: Living Standards Survey, 2008. Authors' calculations.

from older generations rely on their families for support at older ages.

In summary, consumption patterns remain at the highest levels among the middle-aged population, for longer than expected periods, driven mostly by 'other consumption' and health consumption. Formal labour income is more than double that of informal labour at early working ages—such as age 15—and the gap keeps increasing until middle age.

This implies not only that current income will be larger for formal workers but also that saving ratios and the possibilities to accumulate capital are larger, not to mention the direct access to the social security system that guarantees access to health and pension systems in the years to come. Transfers, mostly private, are currently highly concentrated in the post-

retirement years, led by the increasing expenditure on health care at those ages. This pattern is understandable, as only a minority from previous generations rely on a formal pension system, leaving families to support their elderly members.

However, if this pattern persists it will only lead to a vicious circle of low investments in education for children and young adults that directly translates into worse job prospects, and most will probably remain in the informal sector. Thus, the population will be left with little or no access to the social security system and become reliant on family support later on in life.

■
Lee, R. and A. Mason (2011). 'Part I: Fundamental Principles and Concepts', *Population Aging and the Generational Economy. A Global Perspective*. Cheltenham, UK, Edward Elgar Publishing: 1–106.

1. The authors wish to thank the International Development Research Centre (IDRC) for the financial support to produce NTA-Colombia.

2. Universidad Nacional de Colombia.

3. Universidad de los Andes (Bogotá).

4. Data sources for this project include: 2008 Living Standards National Survey (*Encuesta Nacional de Calidad de Vida—ECV*); System of National Accounts (DANE); Government Finance Statistics accounts from the International Monetary Fund; balance of payments, financial and price data from the Colombian Central Bank (*Banco de la República*); central government income and expenditure balance, expenses per programme and public finances from the Ministry of Finance and the Ministry of Health (Ministerio de la Protección Social).

5. The official survey that specialises in labour market indicators in Colombia is the monthly implemented *Encuesta Continua de Hogares*. The official report has been presenting this segmentation between formal and informal workers for the same statistic since 2007.

National Inequality Accounts: The Case of Chile

by Tim Miller,¹ Paulo Saad¹ and Mauricio Holz²

Inequality and aging populations

Population aging is a slow revolution. The population age structure today is not noticeably different from last year. But when one looks at change spanning decades, the revolutionary nature of this slow but relentless aging transformation becomes evident. In 1950, all countries in the world had child-dominant populations—with the population under age 20 being the largest age group. In Chile in 1950, 46 per cent of the population was under the age of 20. By the end of this century, almost all countries in the world will have elderly-dominant populations—with the population over 60 forming the largest age group. According to UN population projections (CELADE, 2013), 37 per cent of the Chilean population will be older than 60 in 2100. One way of drawing attention to this decades-long aging process is to mark milestone dates. Chile will become an elderly-dominant population in 2039.

An economic milestone also marks this aging transformation. In the 1990s, Japan

became the world's first Aged Economy—an economy in which consumption of goods and services by the elderly exceeds that consumed by children. Based on our analysis of National Transfer Accounts (NTA) data, there are only 20 such economies in the world today—comprised of European countries and Japan. However, by the middle of the 21st century, this will emerge as the dominant form of economy throughout the world. Chile will become an Aged Economy in 2021. By the end of the century, virtually every economy in the world will be an Aged Economy, with important economic implications for product markets—most of all health care, labour markets and capital markets.

In Latin America, these demographic and economic transformations will occur in societies that historically have been characterised by high and persistent levels of social and economic inequality. Will population aging strengthen the reproduction of inequality in these

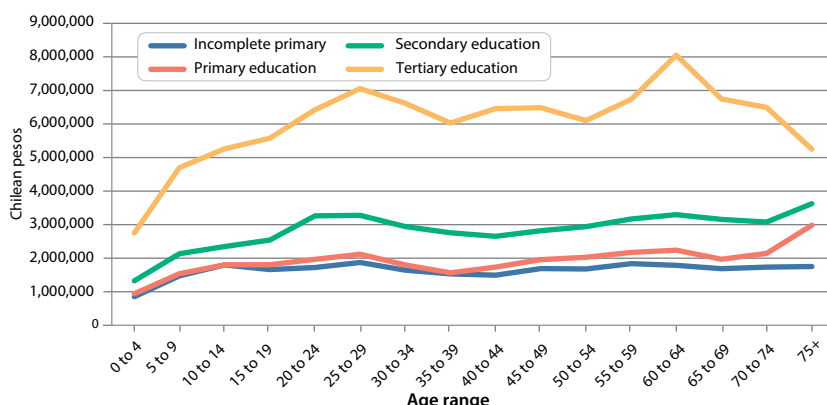
societies? Or will population aging place Latin America on the path towards ever increasing equality? Economic policies which are often cited as responses to population aging—from increasing labour supply (promoting increased female labour force participation, delayed retirement, increased immigration and return migration) to boosting labour productivity (increased educational investment in youth) to increasing savings (through shifts from pay-as-you-go to pre-funded retirement systems)—are all likely to have important impacts on inequality.

Transforming National Accounts into a policy instrument to address inequality

One of the main triumphs of 20th century economics was the development of National Accounts—an international, standardised instrument for measuring national economic activity. But many key policy challenges of this century are centred on the economic interactions between population groups within a national

FIGURE 1

Annual Consumption Per Capita by Age and Education of Household Head, Chile 2007



Source: Authors' elaboration.

economy: between the young and the old, between men and women, between rich and poor. NTAs aim to fill this knowledge gap. Though they were initially designed to monitor national economic activity by age and promote a long-term perspective on the impact of population aging, we have found the NTAs to be a flexible framework that enables us to simultaneously examine both age and inequality. It is a particularly appropriate policy instrument for examining the dual challenges of population aging and inequality faced by Chile and the rest of Latin America.

National Inequality Accounts follow the same methodology adopted by NTAs but allocate national economic activity by both age and socio-economic strata.

Socio-economic strata can be defined in a variety of ways according to the needs of the particular policy analysis. The results presented here define strata according to the educational attainment of the household head—a good marker for the degree of access to economic, social and political resources. A key strength of the National Inequality Accounts is that they provide—for the first time—a complete picture of inequality within a country through a full accounting of economic flows within an economy: consumption (of goods and services, both public and private), labour earnings, savings, asset income, taxes, public benefits and family transfers. While many methodological and empirical challenges remain in the development of National Inequality Accounts, preliminary

results for Chile and other countries in the region show much promise.

Substantial inequality in consumption at all ages

Figure 1 presents the average annual consumption per person of goods and services from both private and public sources for the National Inequality Accounts for Chile in 2009. The averages are reported by age of individual and by the educational attainment of the household head. The age patterns of consumption among the educational groups are quite similar: consumption increases from infancy to young adulthood and is then mostly flat over the remaining life cycle, with a slight depression during the late 30s and early 40s. There are some differences



Photo: UN Photo/Milton Grant.

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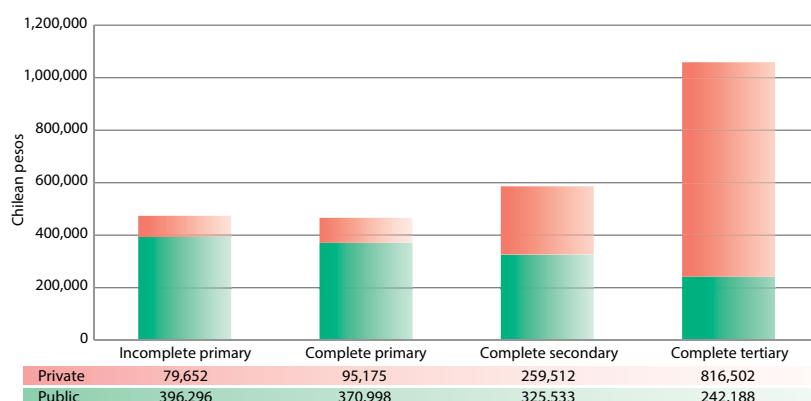
In Latin America, these demographic and economic transformations will occur in societies that historically have been characterised by high and persistent levels of social and economic inequality.

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By measuring economic relationships between groups within an economy, National Inequality Accounts provide a way of transforming National Accounts into a policy instrument that addresses inequality. We believe this is vitally important, not just for Chile and Latin America but also throughout the world.

FIGURE 2

Annual Educational Investment per Youth (age 5 to 24) by Education of Household Head, Chile 2007



Source: Authors' elaboration.

between the groups at the older ages, which may be a reflection of small sample sizes. There are striking differences in the level of consumption between the groups. On average, individuals in the two lowest educational attainment groups consume only about one quarter to one third of the consumption of individuals in the highest educational attainment group. The relative gap in consumption levels appears to be fairly constant across age. An exception is seen in an apparent closing of this consumption gap in the very oldest age group (75+), but, as noted earlier, this may be a reflection of small sample sizes for this age group.

Inequality in educational investments among Chilean youth

Educational investments in Chilean youth are highly unequal. Figure 2 shows average annual educational investment per youth (5 to 24 years of age) by socio-economic strata. While public spending on education favours the less-educated strata (with individuals in these groups receiving 60 per cent additional resources), this does not compensate for the tenfold advantage in private spending received by youth in the highest education group. Youth in households whose head has not completed secondary school receive an educational investment of one half of that invested in youth from the highest educational attainment group. Such unequal investments in education early in life are likely to reverberate later in life, as the children enter into labour markets in young adulthood, as they strive to invest

in their own children in middle adulthood, and as they attempt to save for their own retirement during their working years. In international comparisons with other regions based on the NTA dataset, Latin America stands out for its low levels of educational investment in youth, which is likely a reflection of this region's inequality in educational investment.

Population aging presents an important opportunity for improving educational investment in youth in Latin America, as the decline in the number of youth relative to the working-age populations allows substantial increases in educational investment per youth without any increase in tax burden. A better-educated workforce is often cited as one way to counteract the economic impact of smaller cohorts of workers in aging societies—but this expansion of educational investments to underfunded youth is also likely to have profound and long-lasting impacts on inequality.

The twin challenges of population aging and confronting inequality are not often viewed as urgent demands—or are easily pushed off the policy agenda by the immediacy of other events. Both call for policy actions today in response to challenges that will unfold over decades to come. The creation, adoption and sustainability of these policies depend on policy-relevant measures of economic activity, on international standards to allow for cross-country comparisons, and on rigorously defined economic statistics that provide the scientific basis

for informed public debate. By measuring economic relationships between groups within an economy, National Inequality Accounts provide a way of transforming National Accounts into a policy instrument that addresses inequality. We believe this is vitally important, not just for Chile and Latin America but also throughout the world. ■

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Public Education in Mexico: Is all the Spending for the Benefit of Children?

by Iván Mejía-Guevara¹ and Silvia Giorguli-Saucedo²

Mexico has faced a paradox regarding education over the last two decades. The expansion in access—especially reflected in the enrolment rates in preschool, lower and upper secondary school—coexists with constantly low achievement results (OECD, 2014). At the same time, Mexico is the OECD country with the largest proportion of public spending invested in education (20.5 per cent in 2010; *ibid.*).

This paradox has triggered a debate about how to improve the quality of education, under the premise that it is not only the amount of public resources allocated but how they are distributed and used. In this article we briefly examine the age distribution and evolution of public expenditure on education in Mexico between 1992 and 2010.

In addition, given that an important proportion of these resources are used to cover the salary of teachers and other staff in education,³ we also explore the amount of public resources allocated to paying salaries to personnel in the educational sector who devote their time to other non-formative activities which, we assume, do not have a direct impact on improving the quality of schooling in Mexico.

Public education spending by age: 1992–2010

Within the National Transfer Accounts (NTA) framework, public expenditure on education is regarded as an intergenerational transfer (Lee and Mason, 2011). Figure 1 illustrates the age distribution of public education expenditure from 1992 to 2010 in current Mexican pesos (MXN). During this period, compulsory education changed from 9 to 12 years through the addition of three years of preschool (SEGOB, 2002).⁴ Figure 1(a) shows shifts in the age distribution of public expenditure that correspond to the timing of the expansion of preschool education. It is also clear that most of the public expenditure is concentrated on

compulsory education—from ages 3 to 14—in the period under study.

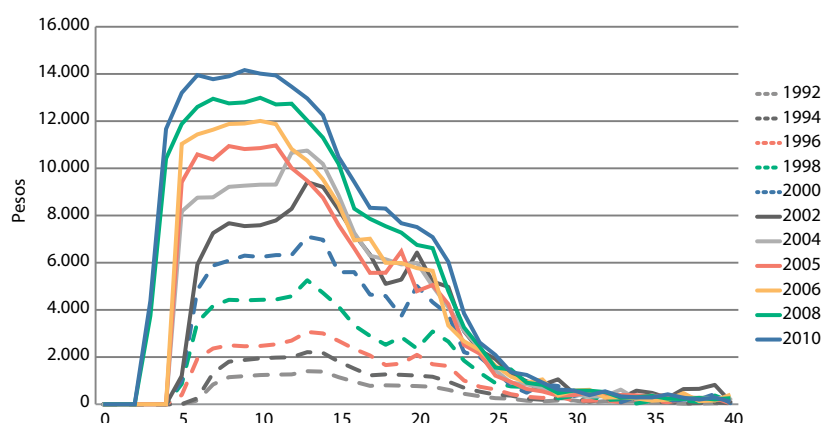
Figure 1(a) does not reveal the real increases by age of public expenditure on education during the period, since the values are expressed in nominal terms. Figure 1(b) illustrates the same age profiles, but discounts inflationary effects. We still witness important increases in the level of expenditure for all relevant

ages between 1992 and 1994. However, the crisis of 1995 had a negative impact on all levels of educational expenditures, as observed in 1996.

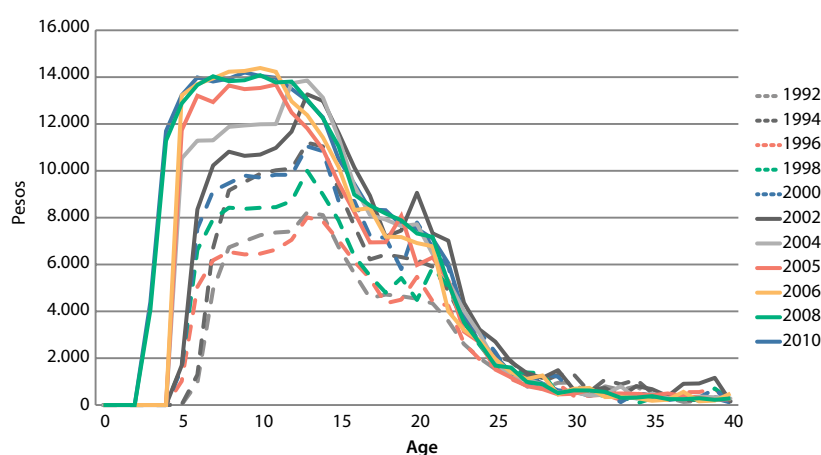
The severity of the inflationary impact was such that the levels observed in 1994 were only reached again in 2000. Steady increases are observed in subsequent years until 2006, where the age profile

FIGURE 1 Per Capita Public Education Expenditure by Age: Mexico 1992–2010

A Current values



B Constant values*



Source: Mejía-Guevara (2014). * December 2010 = 100.

levels seem to stagnate. For 2008 and 2010, we do not see changes or increases in the public education expenditure at almost all levels compared to 2006; the only exceptions are the preschool years.

During the period analysed there was an emphasis on expanding enrolment of those in lower secondary school. Enrolment of those 13 to 15 years of age increased from 69 per cent in 1990 to 86 per cent in 2000 (Alba et al., 2014), and it remained roughly the same by 2010 (Giorguli and Hernández, forthcoming). Although expenditure in education increased in general for this age group, the growth between 1990 and 2000 was not of a similar magnitude to what was observed in the enrolment rates. A possible explanation is that distance education—which has lower budget requirements for its operations—absorbed a large proportion of this growth, specifically in the states with the lowest enrolment rates in secondary school (Cárdenas, 2010).⁵

Misallocation of public expenditure on education

The aforementioned figures illustrate trends and age distributions for the public education system under the assumption that the expenditure is for the benefit of Mexican children. However, it is well known that the Mexican government does not have total control of the resources it allocates to public education (Esquivel, 2014). In 2013, the National Institute of Statistics (INEGI) conducted a census (Censo de Escuelas, Maestros y Alumnos de Educación Básica — CEMABE) to determine the number of active teachers and personnel in preschool, elementary and lower secondary schools (INEGI, 2013). Before the census, it was uncertain as to how many teachers and/or personnel in the educational system there were in Mexico and how many of them were effectively teaching or working in education-related activities (González, 2014).

The census revealed that, among the 1,949,105 teachers in the survey (SEP, 2014), 298,174 (15.3 per cent) did not work at the workplace where they received their payment. Among them, 39,222 (13.2 per cent) allegedly worked

at a public school where nobody knew them; 30,695 (10.3 per cent) received payment as teachers, but they actually worked for one of the dominant teachers' unions; 113,259 (38.0 per cent) received their payment from one school but were actually working somewhere else; and 114,998 (38.6 per cent) were paid as active teachers, but they were retired, were already pension recipients or had already passed away (INEGI, 2013).

González (2014) provides a raw estimate of the annual cost of the salaries paid to those assigned as teachers that we replicate here and use to estimate a potential effect on the age allocation of public education for 2010. If we assume that the average salary for one teacher in Mexico is about MXN10,000 per month, then the annual cost is about MXN35.8 billion (10,000 [MXN] x 12 [months] x 298,174 [number of supposedly active teachers]).

This amount is equivalent to 6.4 per cent of the programmable expenditure in education in 2012 (SHCP, 2014). It is worth stressing that this is a conservative estimate of the real cost, since around 8.1 per cent of schools (around 158,565) did not participate in CEMABE (SEP, 2014), due to the strong opposition of the teachers' unions. We used the 6.4 per cent estimate to deduct an equivalent amount from the educational budget in 2010. The resulting estimate is subtracted proportionally to the budgets allocated to preschool, primary and secondary education.

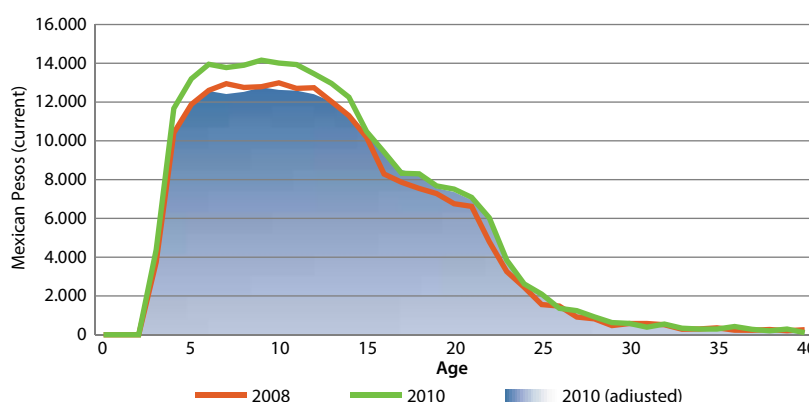
Figure 2 replicates the distribution by age within the education system shown in Figure 1(a) for 2008 and 2010. It also illustrates our estimate of the 2010 age profile (adjusted) after excluding the amount of money that was paid to those defined as teachers who do not actually teach. Children aged 5 to 14 are the ones losing most resources; the effect on the average per capita expenditure and on the total aggregate is close to 10 per cent. Thus, the new age profile for 2010 is practically the same as the profile for 2008 (Figure 2). Losing the money that should be devoted to education has the same effect as not increasing the education budget for the primary and secondary levels over two years (from 2008 to 2010).

Final remarks

Analysis derived from a period of around 20 years reveals a positive trend in the public expenditure on education in Mexico that seems to stall only during economic downturns. It also reveals important changes in the age distribution of expenditure within the education system. The NTA framework was used to construct age profiles, but the main assumption behind this framework is that public transfers to education are for the benefit of the children. Our raw estimate demonstrates that the misallocation of resources may cost the country an equivalent of 10 per cent of its annual education budget allocated towards compulsory basic education. We consider this estimate

FIGURE 2

Public Age Distribution of Education Expenditure by Age: Mexico 1992-2010



Source: Mejía-Guevara (2014) and estimates of the authors.



Source: Samuel Martin. 2009 IPC Photo Competition. Girls at school in Mexico.

“... the misallocation of resources may cost the country an equivalent of 10 per cent of its annual education budget allocated towards compulsory basic education.

conservative, since it excludes around 8 per cent of schools that could not be counted, and because an important amount of the budget allocated for education is used to pay teachers who do not teach. ■

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2. El Colegio de México, A. C.
3. Around 83 per cent of the total expenditure on primary, secondary and post-secondary non-tertiary education is used to cover the cost of teachers' salaries. It is the highest proportion among OECD countries (OECD, 2014).
4. The Mexican system is organised as follows: three years of preschool starting at age 3, six years of elementary school (ages 6 to 11), three years of lower secondary school (12 to 14), three years of upper secondary (15 to 18), and tertiary education. Compulsory education has expanded twice during this century, first with the addition of preschool (2002) and afterwards with the inclusion of three years of upper secondary (2012) (SEGOB, 2002 and 2012).
5. Around 1.3 million students in lower secondary attend distance-learning schools (Giorguli and Hernández, forthcoming).

Demographic Transition and Human Capital Development: Evidence from Kenya's National Transfer Accounts

by Moses Muriithi,¹ Reuben Mutegi¹ and Germano Mwabu¹

Like most of the other developing economies, Kenya has been undergoing a demographic transition as a result of decades of decline in both fertility and mortality rates. In general, life expectancy is on an upward trend despite setbacks due to the HIV/AIDS pandemic in the 1980s and 1990s. Moreover, both the working-age population and the support ratio are on the increase. To reap the benefits associated with demographic transition, it is important for the country to implement policies designed to boost the skills and productivity of the workforce. The National Transfer Accounts (NTA) for Kenya provide the information that policymakers need to design interventions to develop skills and enhance productivity. The approach of determining the aggregate income of a country at each age (commonly known as the NTA methodology (Lee and Mason, 2011)) can be used to design and implement such measures. We show the possible economic impacts of demographic change on the Kenyan economy and discuss how the Kenyan government could invest in programmes that enhance prospects for the economy to reap higher demographic dividends in the future.

The case of Kenya

Kenya is undergoing an important transition in demographic terms. According to the National Coordinating Agency on Population and Development (NCAPD), there has been a significant decline in population growth in Kenya from 3.8 per cent in 1989 to 2.5 per cent in 2000. The country has observed a process of declining fertility and mortality over the last few years. The number of children per family has fallen sharply, from 8.1 children in 1978 to 4.6 children in 2008, and it is projected to possibly reach 2.4 children by 2050.

Furthermore, life expectancy is projected to increase from 54 years of age today to 68 years by 2050. Because of these trends, the fastest growing population groups in Kenya will be those 15 to 64 years of age—and these are exactly the population groups that work. From only 22 million working-age people today, by 2050 Kenya will have about 56 million people of working age.

The aim of this article is to study the relationship between changes in population age structure and economic growth in Kenya between 1950 and 2050. We use income and consumption age profiles, based on the NTA methodology, in conjunction with population projections by age, to study the macroeconomic consequences of population changes in Kenya. We estimate the demographic dividend and the evolution of the economic support ratio in Kenya. We also discuss the possible social and economic implications of those changes.

Demographic dividend and dependency ratio

It is argued that the strength of the economic support system depends largely on the age distribution of the population. In Kenya, the age distribution is still heavily concentrated among young age groups, but that concentration has been declining recently. From 1999 to 2010, the dependency ratio, defined as the ratio of dependent persons less than 15 years and above 64 years old to the working-age population (those between the ages of 15 and 64) dropped from 106.8 per cent to 88 per cent (UNDP, 2011). The corollary of a high dependency ratio is that there is a large proportion of the population relying on a small working-age population for the provision of food, shelter, education, health and other necessities of life. However, the dependency ratio is a

limited measure of the support ratio, as it does not incorporate the consumption and production of individuals by age. The combination of economic profiles and age structures can provide better information about the impacts of demographic change on economic conditions.

The transformation in population age structure can have important impacts on economic growth—a phenomenon called 'demographic dividends' (Lee, 2003). The rise in the share of the working-age population and individual responses to population aging can lead to these dividends. The first dividend is the direct and immediate effect on per capita income of the decline in the share of the population concentrated in the lifecycle deficit ages. In this sense, it measures increases in income due to the growth of the working-age population. The first dividend is temporary and not always positive. As the population ages and the share of the elderly segment of the population grows faster than the working-age group, it will result in depressed output growth.

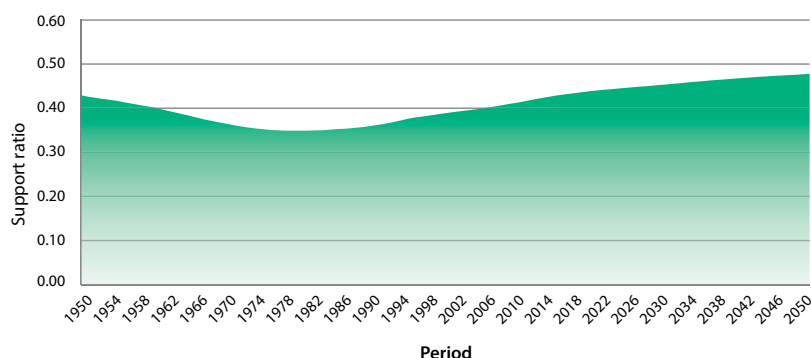
However, the dividends are not automatic; they depend on a series of factors. For example, it is fundamental that the labour market creates enough opportunities for the growing working-age population, and that a developed financial market exists to support an individual's willingness to save money. Therefore, it comes as no surprise that some emerging economies which could benefit substantially from the demographic transition are also the ones that are most likely to fail to take advantage of this opportunity.

Results and discussion: the support ratio and the dividend

The projected support ratio in Kenya from 1950 to 2050 is shown in Figure 1.

FIGURE 1

Support Ratio, Kenya, 1950-2050



Source: Consumption and labour income from Kenya NTA data; population estimates from United Nations (2014).

The support ratios (effective producers to effective consumers) in Kenya were unfavourable during most of the second half of the 20th century. High fertility rates and declining infant and child mortality led to a larger proportion of children—about 50 per cent of the population under

the age of 20 during this period—causing a low support ratio. From the early 2000s on, the country experienced a rise in the support ratio that should last until 2050. These improvements in the support ratio are caused by a decline in fertility and the consequent increase in the working-age

population, combined with income and consumption age profiles.

The first dividend—the rate of growth of the support ratio—is shown in Figure 2 (on next page). Kenya has one clear period of demographic dividend, starting around 1980 and lasting until 2050. The dividend is strongly positive during these decades. In this period the economy should have grown by 0.5 per cent per year on average, exclusively due to the first dividend. The effects of changes in population age structure, towards an older population, can be observed after 2020, when the first dividend starts to decline.

Conclusions and policy implications

The paper has shown that there has been a decline in fertility and mortality rates in Kenya over the past several decades. As a result, life expectancy is growing progressively. The impact of this demographic change is twofold: Kenya can take advantage of opportunities resulting from the demographic transition to reap the first dividend; and, with growth in life expectancy, an incentive to save money has been created, because people expect to live beyond the labour income generation stage of life. The potential consequence of this behavioural change is the second demographic dividend, which means the capacity of the working elderly population to sustain their consumption after retirement through the use of accumulated assets. To realise these benefits, Kenya needs to pursue policies that enhance the human capital of

BOX 1

Methodology

We use the NTA methodology described in Lee and Mason (2011) and on the project website (www.ntaccounts.org). This methodology enables us to construct labour income profiles and consumption profiles for Kenya. Income age profiles are self-reported. To estimate labour earnings we include both traditional employment and self-employment incomes (for both the formal and informal sectors). Labour income includes employee compensation such as wages and salaries, fringe benefits, deferred payments for labour and labour's share of mixed income. Consumption includes public and private consumption. Private consumption is estimated from the Kenya Household Integrated Budget Survey (KHIBS) of 2006, while public consumption is from administrative records. For both of those, health, education and other types of expenditures are considered.

We follow Mason et al. (2007) to estimate the first demographic dividend for Kenya. According to the authors, the output per effective consumer can be expressed by Equation 1:

$$\frac{Y_t}{N_t} = \frac{L_t}{N_t} * \frac{Y_t}{L_t} \quad (1)$$

where Y_t is the total output, N_t is the effective number of producers, and L_t is the 'effective number of consumers. The effective number of producers is the population weighted by the age income profile, and the effective number of consumers is the population weighted by the age consumption profile. The support ratio is given by the ratio of effective producers (N_t) to the number of effective consumers (L_t). Therefore, the rate of growth in output per effective consumer is equal to the sum of two components. The first component, given by the difference between the growth in the number of effective producers and the growth in the number of effective consumers (i.e. the rate of growth of the support ratio) is the first dividend. The second component—the rate of growth of productivity—reflects increases in the ratio of capital to labour and, therefore, represents the second dividend.

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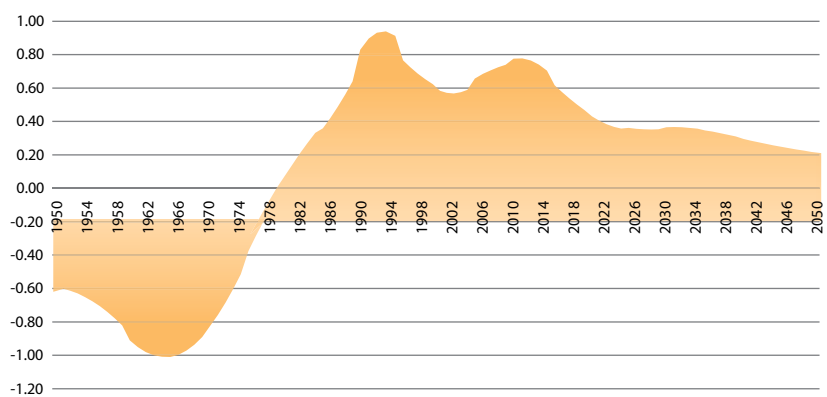
It is fundamental that the labour market creates enough opportunities for the growing working-age population, and that a developed financial market exists to support an individual's willingness to save money.

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Kenya can take advantage of opportunities resulting from the demographic transition to reap the first dividend; and, with growth in life expectancy, an incentive to save money has been created, because people expect to live beyond the labour income generation stage of life.

FIGURE 2

First Demographic Dividend, Kenya, 1950-2050



Source: Consumption and labour income from Kenya NTA data; population estimates from United Nations (2014).

the population. The public health and education consumption profiles show that the government is already pursuing policies that increase the prospects of higher demographic dividends in the future. Remarkably, the patterns of expenditure that enhance human capital documented in this article could only have been revealed through an NTA analysis, which shows its policy relevance.

The NTA approach has demonstrated that labour income is still low in Kenya and that some individuals are working almost throughout their entire lives. Policies that could improve the quality of employment need to be explored. Such policies include education to enhance skills,

which will enable individuals to earn a higher income in each age group. For employment opportunities to open up, other interrelated policies that enhance demand should also be analysed and implemented.

Using Kenya's data and comparing the results with other countries in the world, it has become obvious that to achieve a high surplus in Life Cycle Deficit (LCD—the difference between labour income and consumption), investments in human capital cannot be underrated, since the size of future surpluses will depend on the productivity of the current young generation that has yet to cross the left-hand side of the dependency curve.

Increasing the size of the demographic dividend will also increasingly depend on the following: investing in programmes geared towards increasing child survival; investing in meeting the reproductive health needs of both married and unmarried youth; investments in programmes and policies that discourage child marriage and delay the first pregnancy; and quality education—especially secondary education for girls, which is critical to increase the age of marriage and to allow women to acquire essential labour market skills. ■

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Photo: Alvaro Hoyos. 2009 IPC Photo Competition.
A young Maasai boy shelters himself from the sun with the help of his mother in Kenya.

1. University of Nairobi, Kenya.

The South African Generational Economy

by Morné J. Oosthuizen¹

Moving into its third decade after a democratic transition, South Africa is still beset by significant social and economic challenges. Unemployment is extremely high, with the narrow unemployment rate estimated at 25.4 per cent in mid-2014 (own calculations, Statistics South Africa 2014a). According to the official poverty line, poverty in South Africa was estimated to be 45.5 per cent in 2011 (Statistics South Africa, 2014b), and the country's Gini coefficient—63.1 in 2009 (World Bank, 2013)—ranks among the highest in the world.

South Africa's population is relatively young. In 2014, 29.4 per cent of the country's 53 million people were under the age of 15, and just 5.6 per cent were 65 years of age or older (own calculations, United Nations 2013). South African policymakers, in line with their counterparts across the continent, have, therefore, begun to recognise the demographic dividend as an important opportunity to boost economic growth and raise living standards. The National Development Plan, for example, recognises the challenge of converting this potential boost into a real dividend (NPC, 2011), and advocates a strong focus on young people as well as better health and health care, better education, and labour mobility and easier labour market access (Ibid.).

The demographic dividend arises as societies progress through the demographic transition. This transition initially sees mortality, particularly among children, decline, giving rise to unusually large cohorts of children (Bloom et al., 2000). As the demographic transition proceeds, these cohorts become of working age, and the working-age population grows relative to the rest of the population. As the dependency ratio falls, resources that would otherwise have been consumed by children are freed up, allowing living standards to rise. This is referred to as the first demographic dividend.

How big is this dividend, though, and what is the scope for policy to increase

its magnitude or prolong its duration? To answer these questions, we can use National Transfer Accounts (NTA).² NTA first asks to what extent an individual or cohort is able to finance their consumption through their labour income, whether there is a lifecycle surplus (labour income exceeds consumption) or deficit (consumption exceeds labour income). Then, it asks how deficits are financed (or how surpluses are used to finance deficits), through public or private transfer flows or through asset reallocations (asset income or saving).

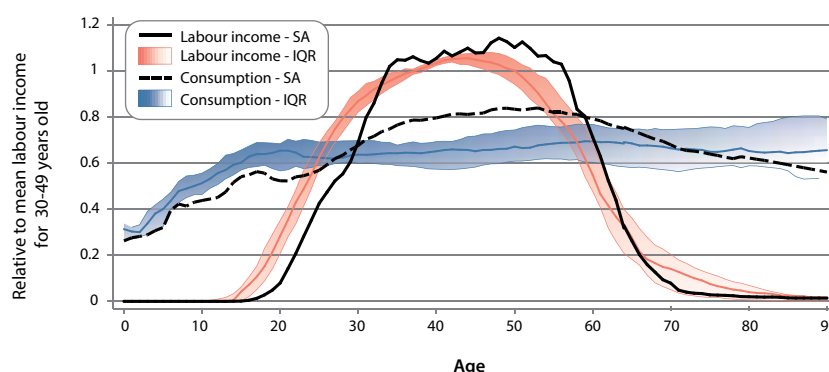
Labour income varies over the course of the lifecycle, with low per capita incomes for the very young and the very old driven primarily by low labour force participation rates within these age groups. In the case of children, participation is kept low by their involvement in education, while participation rates fall at older ages due to retirement.

Even among those of working age, per capita incomes can vary substantially, the result of age-related patterns in labour force participation, unemployment

rates, hours worked, sectoral and/or occupational specialisation, and mean wages. Consumption, on the other, hand is generally far more stable, rising during childhood and then plateauing. These patterns are illustrated for South Africa for 2005 in Figure 1, using the interquartile ranges and medians for labour income and consumption across 33 countries with available data.

The 2005 estimates for South Africa, while broadly similar to those of other countries, illustrate important features of the country's social and economic context. First, weaknesses in the country's labour market, particularly for the youth, are evident in the location of South Africa's labour income age profile that is to the right of those of most other countries. At the time, the expanded unemployment rate among youth aged 15 to 24 years was estimated at 65 per cent, falling to 42 per cent for 25 to 34-year-olds (own calculations, Statistics South Africa, 2006). Almost a decade later, the situation is no better, with expanded unemployment rates of 62 per cent and 38 per cent, respectively (own calculations, Statistics South Africa, 2014a).

FIGURE 1 Labour Income and Consumption across the Lifecycle, South Africa (2005)



Source: Author's elaboration.

Note: Labour income includes compensation and the return to labour from household-owned farms and businesses. Consumption includes private and public consumption. NTA countries included in calculating the interquartile ranges (IQR) are Argentina, Australia, Austria, Brazil, Chile, China, Colombia, Costa Rica, Finland, France, Germany, Hungary, India, Indonesia, Italy, Jamaica, Japan, Kenya, Mozambique, Nigeria, Peru, Philippines, Senegal, Slovenia, South Korea, Spain, Sweden, Taiwan, Thailand, UK, Uruguay, USA and Viet Nam. For comparability, all age profiles are normalised relative to each country's 'peak labour income'—mean per capita labour income between the ages of 30 and 49 years.

Second, consumption is far less equally distributed across age groups in South Africa than it is in the median country for which we have NTA estimates. For most countries, per capita consumption increases from birth to the early 20s, but generally flattens out for older cohorts. In South Africa, in contrast, there is a relatively strong correlation between the labour income and consumption age profiles, with per capita consumption peaking around age 50 and declining quite significantly thereafter.

The NTA labour income and consumption age profiles can be used to estimate the size of the first demographic dividend—the boost to economic growth as countries pass through the demographic transition. The first demographic dividend is calculated as the rate of growth of the support ratio, which relates the effective number of producers (the labour income profile multiplied by the population age structure) to the effective number of consumers (the consumption profile multiplied by the population age structure).

Based on the 2005 NTA profiles previously presented, South Africa's first demographic dividend is estimated to have been positive since 1975, peaking at just over one percentage point per annum in the mid-1990s (Oosthuizen, 2014). Based on the medium fertility variant projections, the dividend is expected to range between 0.2 and 0.4 percentage points between 2016 and 2040 and turn negative by the mid-2040s. In other words, of the roughly 70 years of positive first demographic dividend in South Africa, less than half remain.

Within the South African context, addressing the poor labour market outcomes for young people would seem to be crucial for successfully harnessing the first demographic dividend. Policies that raise mean labour income among the youth—by raising employment or mean hourly wages, for example—would narrow the gap between the labour income profile of South Africa and those of other countries. However, doing so neither raises the level of the first demographic dividend nor extends its duration. The reason for this is that the South African demographic transition has already progressed too far. The number of children under the age of 15 peaked in 2008, and the median age has

risen by five years to 26 years over the past two decades (own calculations, United Nations 2013). Over the next 10 years, for example, population growth among 35 to 44-year-olds and those 65 years of age or older—at 2.8 per cent per annum—is expected to be nearly five times as high as the total population growth rate, while the youth population is expected to grow by just 0.3 per cent per annum.

Nevertheless, these policies that aim to raise mean labour income among the youth are key to the achievement of the second demographic dividend, which, unlike the first dividend, may permanently raise incomes and consumption (Mason and Lee, 2007). Greater longevity increases the need to provide for retirement and, if this need is met through financial assets accumulated over the working life rather than through transfers from the State or from families, this may lead to capital deepening. It also makes investing in education more attractive.

Saving for retirement is key to achieving the second dividend, since there is no additional capital deepening without it. Employment is fundamental to the ability to generate savings over the lifecycle, and improvements in employment rates and remuneration would support the accumulation of financial assets, and would help to finance the accumulation of human capital.

Policy interventions that aim to encourage saving for retirement should, therefore, be supported. However, such policies may also actually have implications for the first dividend: they would reduce relative consumption in the prime working ages and, in the longer-run, raise relative consumption among the elderly. Such a reduction in the age-related inequality in consumption may actually boost the magnitude of the first dividend and even prolong its duration. For example, a simulation of South Africa's first dividend from 2005 onwards using the median NTA country consumption age profile instead of that of South Africa reveals that age-related inequalities in consumption are lowering the potential benefit of the dividend by roughly one quarter.

It is clear that much of the period of positive first demographic dividend

has been squandered, and, with just three decades remaining, the key constraint is time. While addressing the unemployment situation, particularly among youth, may not significantly boost the first demographic dividend, it is central to the achievement of the second dividend. In this context, economic policy should prioritise a fundamental shift towards more labour-intensive patterns of economic growth, while vigorously pursuing improvements in the education and health systems and encouraging individuals to save for retirement.



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1. University of Cape Town, South Africa.

2. More detail on the NTA project can be found at <www.ntaccounts.org>.

What Does India Need to Extend the Demographic Dividend?

by M.R. Narayana¹

India's 12th Five Year Plan (FYP) aims for an 8 per cent economic growth rate (in real Gross Domestic Product—GDP) over the plan period (2012–2017). An important determinant of this growth is the capacity to benefit from a demographic dividend because of growth in the labour force resulting from a transition in the country's age structure. For instance, according to the United Nations (2013), between 2005 and 2050, India is projected to have more than 60 per cent of its total population within working age (15–59 years).

National Transfer Accounts (NTA) is a useful macroeconomic methodology to calculate the nature, duration and magnitude of long-term impacts of age structure transition on economic growth through the first demographic dividend by distinguishing the different growth effects of age structure transition, productivity growth rate,

and productivity and consumption age profiles. These calculations are useful to derive implications for growth promotion policies in the hope of maximising the effects of the first demographic dividend.

Framework for analysis

India's labour market is divided into formal (comprising salary and wage earners with social security benefits) and informal (comprising self-employed persons and others with no social security benefits) sectors. The informal sector is marked by a bigger share of total employment (about 93 per cent in 2009/10) and lower productivity levels and growth (Narayana, 2014a).

Findings and insights for India

Figure 1 (on the next page) presents the age profile of per capita labour productivity and consumption. The shape of labour income profile increases rapidly and then slowly, and peaks in

the early to mid-40s. Consumption profile refers to the combined public and private consumptions. Both public and private consumptions comprise the consumption of health, education and others. Per capita consumption rises very fast up to the age of 23 and then stabilises beyond the age of 30. The crossing age from net consumers to net producers is found to be 27 years, and from net producers to net consumers is 61 years. Interestingly, people aged 60 and over account for a portion of aggregate labour income (about 4.26 per cent). This is mainly due to the prevalence of informal employment (e.g. self-employment), especially in the agricultural and service sectors.

Age profiles in Figure 2 (on the next page) show the productivity differentials between the sectors. First, labour productivity in the informal sector is

BOX 1 Methodology

This article introduces differential labour productivity growth rates and productivity age profiles for these sectors into the NTA-based first demographic dividend model in Mason and Lee (2007), as given in equation (1).

$$g[Y(t)/N(t)] = g[\{Y(t)/L(t)\} / \{Y_{IF}(t)/L_{IF}(t)\}] + g\{Y_{IF}(t)/L_{IF}(t)\} + g[L_F(t) + L_{IF}(t)] - g[N(t)] \quad (1)$$

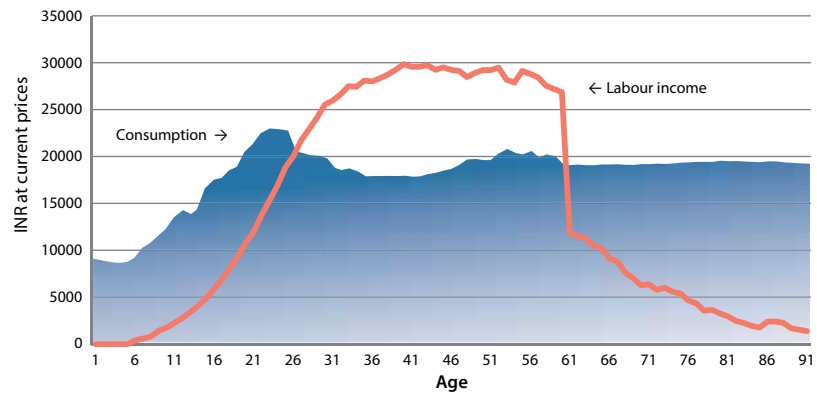
where g refers to growth rate, $[Y(t)/N(t)]$ is national income per effective consumer; $[\{Y(t)/L(t)\} / \{Y_{IF}(t)/L_{IF}(t)\}]$ is relative labour productivity between the formal and informal sectors; $\{Y_{IF}(t)/L_{IF}(t)\}$ is labour productivity in the informal sector; $L_F(t)$ and $L_{IF}(t)$ are the effective number of producers in the formal and informal sectors, respectively; and $N(t)$ is the effective number of consumers in year t . Furthermore, $L(t)$ is calculated by $\sum \gamma(a)P(a,t)$ and $N(t)$ by $\sum \phi(a)P(a,t)$, where $\gamma(a)$ is productivity at age- a or productivity age profile; $\phi(a)$ is consumption needs at age- a or consumption age profile; $P(a,t)$ is population at age- a ; and summation is over all ages (e.g. 0 to 90).

In technical terms, the ratio of effective producers to effective consumers of goods and services is called the economic support ratio (ESR). Age structure transition leads to large shifts in the support ratio and interacts with labour productivity to determine economic growth. The period during which the growth of the support ratio leads to an increase in the economic growth (or growth of national income per effective consumer) is called the first demographic dividend.

Equation (1) is calculated for the benchmark year 2004/2005 and projected over the period 2005–2050 for India. In addition, sensitivity of the projections is calculated as if India's productivity age profiles were to have the shape of select Asian countries. The database, calculation of age profiles and databases are elaborated in Narayana (2014b).

FIGURE 1

Age Profile of Per Capita Labour Income and Consumption, India, 2004-2005



Source: Author's elaboration.

higher than in the formal sector up to the age of 26. Prevalence of child labour in the informal sector is apparent by the start of the profile before age 14. Beyond age 26, however, labour productivity is higher in the formal sector than the informal sector for all ages (except around 88–90 years). Second, the labour productivity profile in the formal sector experiences a sudden drop at around 60 years of age. This is consistent with the official retirement age (around 60) associated with formal-sector jobs.

Table 1 presents the basic results of the growth effects of age structure transition at five-year intervals. These results are calculated under the assumptions that growth rates of productivity, age profile of labour productivity and

total consumption, and population distribution by sectors in the benchmark year of 2004/2005 are constant throughout the projection period (2005–2050). The growth rate of the ESR is remarkably different between the sectors, mainly determined by a higher growth rate of the effective number of producers. It is positive for the formal sector throughout and negative for the informal sector from 2025–2030. This implies that the first demographic dividend is lower, slower and ends earlier for the informal sector.

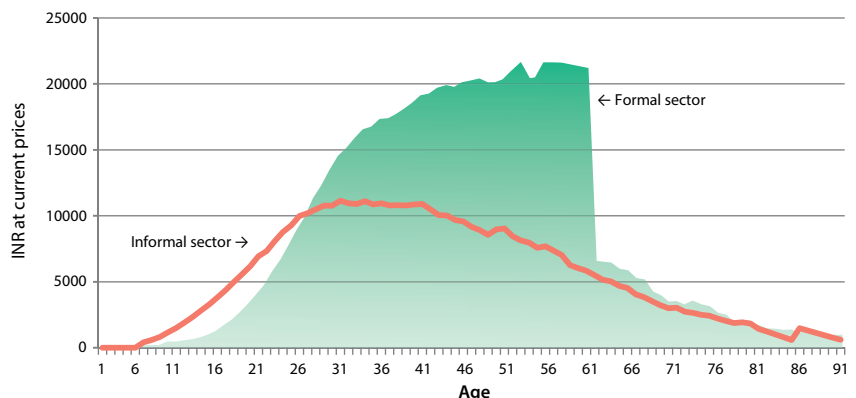
Furthermore, the projected annual economic growth rate is equal to 6.71 per cent over the period 2005–2010, 5.43 per cent over the period 2025–2030 and 4.80 per cent over the period 2045–2050.

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The growth rate of the ESR [Economic Support Ratio] is remarkably different between the sectors, mainly determined by a higher growth rate of the effective number of producers. It is positive for the formal sector throughout and negative for the informal sector from 2025–2030. This implies that the first demographic dividend is lower, slower and ends earlier for the informal sector.

FIGURE 2

Age Profile of Per Capita Labour Income by Formal and Informal Sectors, India, 2004-2005



Source: Author's elaboration.

TABLE 1

Growth Effects of Age Structure Transition by Formal and Informal Sectors, India, 2005-2050

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... the duration of India's first demographic dividend can be extended, or the negative growth rate of ESR can be averted, if the productivity age profile in the informal sector can be reshaped as that of the Philippines or Indonesia.

Year	Formal sector: Growth rate (%)			Informal sector: Growth rate (%)			Annual growth rate of per capita income
	SR	EP	EC	SR	EP	EC	
2005-2010	0.518	2.180	1.548	0.207	1.827	1.574	6.71
2010-2015	0.510	1.841	1.324	0.196	1.610	1.411	6.32
2015-2020	0.523	1.630	1.102	0.127	1.361	1.233	6.04
2020-2025	0.478	1.393	0.910	0.046	1.135	1.088	5.72
2025-2030	0.412	1.156	0.741	-0.020	0.907	0.926	5.43
2030-2035	0.337	0.915	0.576	-0.090	0.697	0.787	5.12
2035-2040	0.245	0.640	0.394	-0.129	0.510	0.639	4.80
2040-2045	0.178	0.392	0.214	-0.169	0.328	0.497	4.51
2045-2050	0.107	0.162	0.055	-0.205	0.168	0.374	4.25

Notes: SR = support ratio, EP = effective number of producers, and EC = effective number of consumers.

Source: Author's elaboration.

However, in the absence of sectoral differentials in productivity growth rate and productivity age profiles, these growth rates would have been lower and equal to 3.51 per cent, 3.19 per cent and 2.97 per cent, respectively, with the first demographic dividend ending by 2040.

What would have been the growth effects if sectoral age profiles of labour

productivity were to be different in shape from the profiles in Figure 2?

This question is answered by recalculating the results in Table 1 by applying the shape of the age profile of labour productivity of Japan and Taiwan on the formal sector and the Philippines and Indonesia on the informal sector. These shapes are calculated for India based on the available

profiles for NTA countries (NTA, 2014). The results are presented in Table 2.

First, the shape of productivity age profiles in Japan results in the positive growth of support ratios for India throughout the projection period and, hence, a higher and longer first demographic dividend. In the same way, the shape of the productivity profile for the Philippines

TABLE 2

Growth Effects of India's Age Structure Transition by Using Different Age Profiles by Sector, 2005-2050

Year	Growth rate (%) by using productivity profile in formal sector						Growth rate (%) by using productivity profile in informal sector					
	Japan			Taiwan			Philippines			Indonesia		
	SR	EP	Per capita income	SR	EP	Per capita income	SR	EP	Per capita income	SR	EP	Per capita income
2005-2010	0.538	2.235	6.505	0.359	2.017	6.542	0.579	2.277	7.155	0.544	2.235	7.113
2010-2015	0.553	1.902	6.172	0.403	1.750	6.225	0.705	2.125	6.831	0.627	2.045	6.751
2015-2020	0.537	1.657	5.927	0.366	1.484	5.892	0.671	1.911	6.588	0.594	1.832	6.509
2020-2025	0.525	1.446	5.721	0.314	1.233	5.563	0.577	1.669	6.249	0.516	1.608	6.188
2025-2030	0.450	1.188	5.461	0.213	0.949	5.219	0.477	1.408	5.928	0.448	1.379	5.899
2030-2035	0.360	0.939	5.212	0.105	0.682	4.882	0.363	1.152	5.572	0.360	1.149	5.569
2035-2040	0.263	0.670	4.940	0.046	0.453	4.613	0.282	0.921	5.211	0.285	0.924	5.214
2040-2045	0.181	0.409	4.681	0.004	0.232	4.352	0.204	0.700	4.880	0.215	0.711	4.891
2045-2050	0.113	0.180	4.452	-0.017	0.050	4.140	0.125	0.497	4.577	0.151	0.523	4.603

Note: SR = support ratio, and EP = effective producers.

Source: Author's calculations.



Photo: UN Photo/John Isaac. Banjara tribal community near Hyderabad, India.

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... an increase in the age-specific productivity of labour, especially in the informal sector, is important to maximise the growth effects of age structure transition through the first demographic dividend.

A higher growth rate in the relative and absolute productivity of labour may complement the growth effects of age structure transition.

and Indonesia in the informal sector shows a positive growth rate of the support ratio throughout. Third, the growth rate of per capita income is higher if India's productivity profile in the informal sector were to have the shape of Indonesia's.

In other words, other things being equal, the duration of India's first demographic dividend can be extended, or the negative growth rate of ESR can be averted, if the productivity age profile in the informal sector can be reshaped as that of the Philippines or Indonesia.

Policy implications

The NTA-based first demographic dividend model is useful to distinguish the growth effects of age structure transition through the growth rate of ESR and the growth rate of labour productivity by sectors. Other things being equal, an increase in the age-specific productivity of labour, especially in the informal sector, is important to maximise the growth effects of age structure transition through the first demographic dividend.

A higher growth rate in the relative and absolute productivity of labour may complement the growth effects of age structure transition. Thus, further increases in the size of the generation involved in productive employment (especially in the informal sector) and in human capital investment in education (including skill formation) and health are the current and future policy interventions required to extend India's first demographic dividend to 2050 and beyond.

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Japan's Dark Demographic Reality and a Possible Ray of Light in the Future

by Rikiya Matsukura¹

Japan is the world leader in terms of population transformations. The structure of the Japanese population has dramatically changed due to a precipitous fall in fertility and improvements in mortality rates, making Japan the society with the most pronounced population aging in the world. As of 2013, every fourth person in Japan was aged 65 or older (25.1 per cent of the entire population fall into this elderly category). No other country thus far has experienced changes of such a nature and magnitude in the process leading to population aging. In 2005 the size of Japan's total population started shrinking, marking the beginning of its transformation into a society characterised by a declining population, indicating that policies and other systemic reforms would not be able to keep up with the fast population changes.

In such circumstances, a few theories about how Japan's economy burned out in the 1990s have come to be accepted as 'facts' in Japanese contemporary history. Many analyses have been conducted about the causes of the economic slowdown spanning across the more than 20 years since the 1990s, which in Japan are referred to as the 'lost decades'. However, no conclusive evidence has been put forth as of yet. Recently, Krugman (2013), Cline (2013) and others have pointed out that the causes of the slowdown can be found in the changes in the population structure. Their argument comes in the context of the debates held in recent years in many different venues about the relationship between economic growth and population structural changes, and it points to the expiration of the demographic bonuses, also known as 'demographic dividends'.

In this article we use the analytical framework called the National Transfer Accounts (NTA) in an attempt to capture the structural population changes and analyse Japan's economic situation in

relation to its demographic dividends. We also take up the less known second demographic dividend and discuss possible future developments in Japan.

Population aging and the two demographic dividends

The NTA system enables us to calculate age-specific consumption and income, which has sparked a substantial development of the analysis of demographic dividends. Usually, demographic dividends are estimated based on the support ratio, an indicator of how many people are supporting how many others. In the NTA system, the support ratio is calculated by using age-specific data on individuals' ability to earn and their consumption as weights, which allows for a more detailed understanding of the changes in the support ratio.

The first demographic dividend occurs automatically when fertility drops and the age structure of the population changes. It consists of the rise in the proportion of workers (the supporters) versus non-workers (the supported) in the population. Wealth accumulation in relation to

population structural change has been attracting attention recently,² but it is worth noting that, while the first dividend arises spontaneously, the phenomenon of wealth accumulation in preparation for old age—known as the second demographic dividend—may not occur at all. Namely, the accumulation of wealth in the country will be greatly affected depending on what individuals choose to rely on as the financial source for supporting their livelihood in retirement under the conditions of an increasing average life span and economic growth, as well as on whether they fulfil their retirement needs through familial or government transfers or from their own savings. If a country relies on public and private transfers, the second demographic dividend may not emerge.

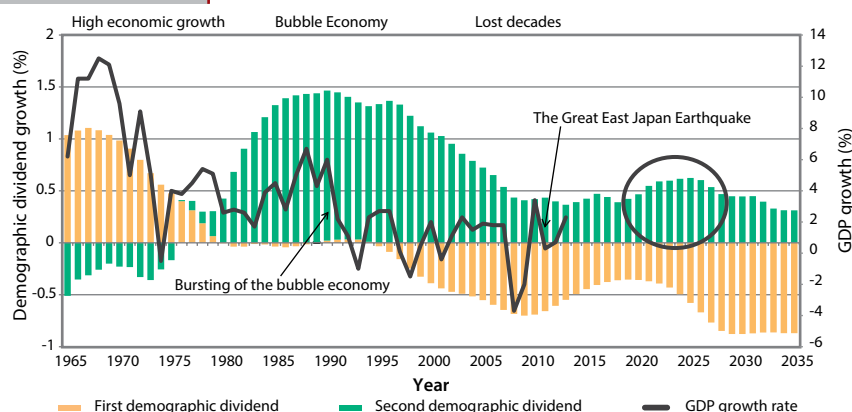
Therefore, among the beneficial influences of age structural transformations (population aging) on the economy, there is that which arises spontaneously, and that for which policy intervention is necessary. We call the former the 'first demographic dividend', and the latter the 'second demographic dividend'.



Photo: Teo Romera. Karakuwa Peninsula near the town of Kesennuma, Mlyagi prefecture in Japan.

FIGURE 1

Trends in GDP and Demographic Dividend Growth Rate: Japan, 1965-2035



Source: Author's elaboration.

Let us now turn our attention to the demographic dividends in Japan. Figure 1 shows the economic growth rate (measured in Gross Domestic Product—GDP) in Japan, as well as the first and second dividends. Since we do not have the real numbers for economic growth in 2013 and onwards, we have presented the estimated values. From the figure, one can observe that Japan achieved very high levels of economic growth from the 1960s until the oil shock in 1975, and again reported high growth during the economic bubble from 1986 to 1991.

The interrelation between the growth rate of the entire Japanese economy and the first demographic dividend can be noticed. The economic growth in the 1960s and early 1970s seems to have been supported by a very high growth rate of the first demographic dividend.

The economic growth turns negative in the second half of the 1970s at the time the first dividend expires. However, as economic growth slightly recovers at a sluggish pace at the beginning of the 1980s, the second demographic dividend arises, and, soaring high, it seems to prop up economic growth, which again increases during the bubble period. In 1990, after the second demographic dividend reaches its peak, economic growth slows down, and the negative effect of the first dividend becomes more pronounced. This marks the collapse of the bubble and the beginning of the prolonged recession that followed it.

In recent years, if we exclude the effect of the great earthquake disaster in 2011, GDP growth takes a positive turn around 2010, exactly as the easing of the negative growth of the first demographic dividend overlaps with the positive growth of the second dividend. The recovery of the economic growth rate in recent years has been attributed to the radical economic measures implemented under the leadership of Prime Minister Shinzo Abe (his 'Abenomics'),³ but, in fact, that growth might have been influenced to a considerable degree by the impact of the structural changes in the population.

Conclusion

The synchronicity between population dynamics and economic growth experienced by Japan seems persuasive enough and is useful news for the countries that are currently enjoying their first economic dividend. That is, since it is possible to predict with certainty the timing of an economic slowdown through an NTA estimation of demographic dividends, it is possible, under concrete time constraints, to devise policy measures to maintain the growth of demographic dividends and the economy as a whole. At the time Japan was experiencing economic growth, NTA indices did not exist, but had such information been available, Japan might have extended its economic growth further.

With this in mind, let us now turn to future possibilities for Japan. If we look at the future trends in demographic dividends, we can see that between 2020 and 2025 Japan

may have a positive economic opportunity that might even be referred to as its last chance. This is because at that time the second demographic dividend is also expected to grow again. It is very important to effectively use the benefits of this likely second demographic dividend through adequate policy intervention. This dividend is, in a way, Japan's asset, perhaps its last hope for renewed economic growth.

The cause of the expected rise in the second demographic dividend are the savings of the children of the post-war baby boomers, who will be entering retirement at that time. For example, a temporary lowering of taxes to encourage investment by this generation could be implemented. That is, policymaking tailored to each generation could be an option.

The first demographic dividend—which used to have a positive effect on economic growth in Japan in the past—is now a negative factor, but there is a large possibility that the savings of the increasing elderly population may compensate for such a negative effect. Thus, although the elderly are sometimes viewed by society as a liability, they hold new possibilities and can be a significant asset to any country.

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3. A set of economic measures introduced by the government of Prime Minister Shinzo Abe, formed in December 2012. The term was created by fusing his surname with the word 'economics' in a fashion similar to 'Reaganomics', which used to denote the economic policies of the US President Ronald Reagan in the 1980s. Abenomics consists of the so-called 'three arrows': fiscal stimulus, monetary easing and a growth strategy; its goal is to break out of the long-term deflationary spiral and achieve a 3 per cent nominal growth rate.

Implications of the Demographic Dividend on Government Policy in Indonesia

by Maliki ¹

Population structural change and demographic dividend

Populations of developing countries in Asia, including Indonesia, are experiencing an unavoidable process of structural change. Changes in age structure in Asia, especially in East and Southeast Asia, occurred faster than similar changes in developed countries (United Nations, 2002). Indonesia is expected to have a more 'mature' population in the next 20 years. The average life expectancy of the Indonesian population is set to increase, from 69 years of age in 2005 to 73.7 years of age by 2025, which has already led to a growing elderly segment of the population (Bappenas-BPS, 2005; Suwoko, 2004). This article attempts to review how changes in Indonesia's population structure can provide opportunities to improve the national economy by looking at the potential of the demographic dividend.

The changes in demographic factors have a significant relationship with levels of savings (Bloom et al., 2003; Kelley et al., 1996; Kinugasa, 2004; Williamson et al., 2001) and with economic growth (Bloom

et al., 2001; Bloom et al., 1998; Kelley et al., 1995). Further, this demographic dividend strongly contributed to the success of economic growth of East Asian countries during the 1990s (Bloom et al., 1998; Mason, 2001; Mason et al., 1999).

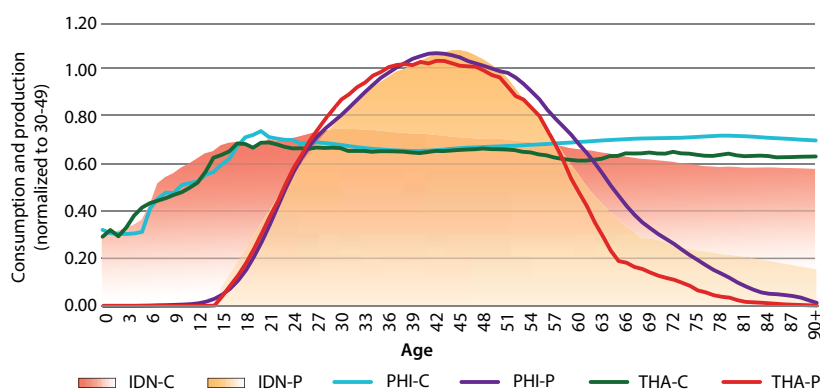
The literature on demographic dividends and the use of National Transfer Accounts features have been developed by Mason (2005). He estimated the benefit of population structural change relative to the potential of asset accumulation using consumption and production, estimated for constructing the National Transfer Accounts, as a weight representing the actual load of the non-productive population to be borne by the productive age group (20-55 years of age). We assume that the consumption and production per capita represent welfare, and their profiles are considered fixed during the time of analysis.

To estimate the Indonesian demographic dividend, the patterns of consumption and production are applied as shown in Figure 1. The profiles for the Philippines and Thailand were added for comparison purposes. Even

though the economic level is relatively similar across these countries, consumption and production patterns, particularly among the elderly, are different. The elderly in both the Philippines and Thailand have relatively high levels of consumption. Consumption in Thailand is high due to higher health consumption—either inpatient or outpatient care—in older age (Chawla, 2008). On the other hand, Indonesian elderly health care spending levels are not high, thus consumption levels tend to be flat.

On the production side, the elderly in Indonesia work more than those in the Philippines and Thailand. The absence of old-age insurance is one of the reasons why the production of the elderly in Indonesia remains relatively high. At the age of 65, the elderly in Indonesia still use labour income to finance about 40 per cent of their consumption needs (Maliki, 2008), in which the elderly poor and non-poor are not much different (Maliki 2009). This is consistent with earlier studies suggesting that the elderly population in Indonesia is still working,

FIGURE 1 Consumption and Production (Normalized to 30-49) for Selected Countries



Source: National Transfer Accounts database, 2013.

Note: IND-C (Indonesia - Consumption); IND-P (Indonesia - Production); PHI-C (Philippines - Consumption); PHI-P (Philippines - Production); THA-C (Thailand - Consumption); THA-P (Thailand - Production).

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The absence of old-age insurance is one of the reasons why the production of the elderly in Indonesia remains relatively high.

particularly in the informal sectors (Cameron et al., 2001; McKee, 2005).

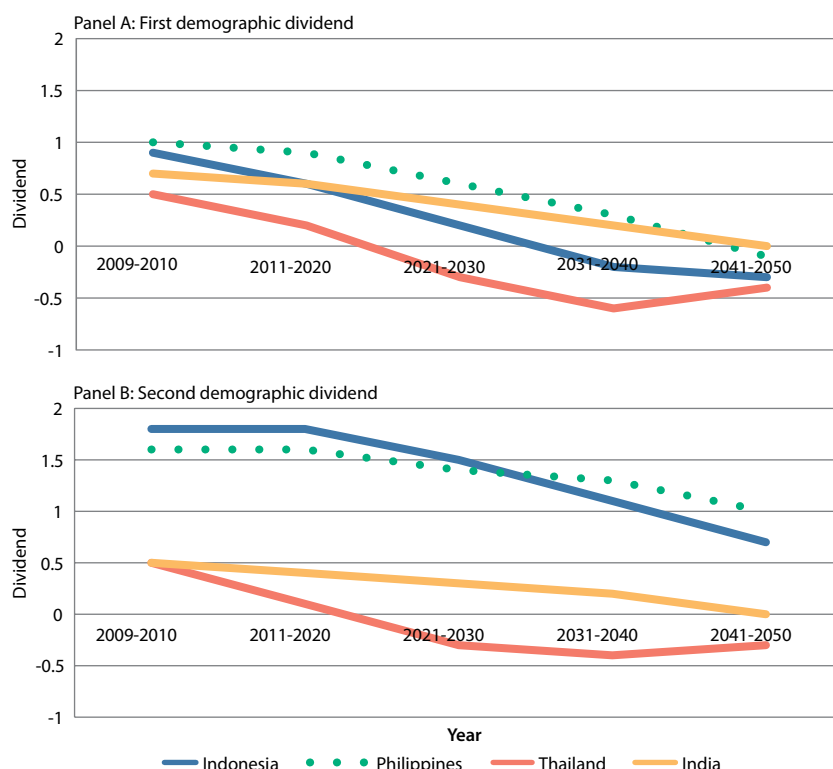
Based on these consumption and production patterns, the first and second demographic dividends are estimated and shown in Figure 2. Indonesia gains the first dividend with a magnitude of less than 1 per cent. The dividend declines over time and reaches zero by the 2030s. Thailand, whose population is relatively older than Indonesia, achieves positive gains from the first dividend over a short period of time, while India and the Philippines do so over a longer period. Meanwhile, India and the Philippines are almost at the same stage of population structure change as Indonesia.

The second demographic dividend is more promising for the next decades in Indonesia. It could contribute to economic growth with an average magnitude of around 1.8 per cent until 2020. While the second demographic dividend is associated with wealth accumulation, the benefits can only be realised if the accumulation of wealth is focused on investments that have a positive effect on economic growth or productive investment. For this purpose, the population of the productive age group should have good knowledge about the ways to invest their wealth. According to data from Social Accounting and Finance (Bank Indonesia and BPS, 2005), approximately 20 per cent of the national savings come from households. However, only 2 per cent of these savings are used for productive investments.

There still remains a large percentage of household savings that are not productive. Households conventionally invest most of their assets through regular savings, short- or medium-term bank deposits or properties. Only a few (8 per cent) have old-age insurance or pensions. The form of investment depends on household knowledge as well as level of trust in financial institutions.

FIGURE 2

First and Second Demographic Dividend for Indonesia, Philippines, Thailand and India



Source: Use Consumption and Production profile from National Account Data base 2013, and Population Estimates from UN Population Division 2014, final figures are own calculation.

Why is the demographic dividend so important for Indonesia?

Indonesia is now in going through a period of transition—both economically and regarding its population structure. Indonesia is attempting to improve its economy and move from lower middle-income to upper middle-income status. Without a big push, Indonesia will be trapped as a lower middle-income economy. The demographic dividend is a big opportunity that could be a catalyst in the process of pushing the country forward to upper middle-income status. The challenge related to using this opportunity lies in formulating the right policies, especially those for human capital, improving the investment climate, and social security.

More competitive human capital is the most important development strategy, especially in accordance with Indonesia's commitment to the Association of Southeast Asian Nations (ASEAN) Economic Community in 2015. Thus the development of skilled workers has to be more consistent with the direction

of industrial development policies and future investments. Without improving the skills and qualifications of domestic workers, Indonesia will not only lose the opportunity to gain from the demographic dividend but will also lose out to other more competitive international workers, particularly those of other ASEAN countries.

The Indonesian investment climate must also be improved and stabilised. Financial institutions—both banking and non-banking—should be strengthened.

Through regulations and policies, the government seeks to build public confidence in their capacity to invest their wealth. As far as demands are concerned, the government also needs to provide more intensive financial education.

With the continuing shift in population structures, an issue that emerges is how to turn elderly people into assets rather than burdens within the system. Although the main reason for continuing to work is the absence of old-age



Photo: UN Photo/Andrea Brizzi. Three generations of a family in Balikpapan, Indonesia.

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With the continuing shift in population structures, an issue that emerges is how to turn elderly people into assets rather than burdens within the system.

pensions, the high labour force participation of elderly people can be a positive phenomenon.

Even though they mostly work in the informal sectors or are self-employed, government policy might be needed to protect them by supporting or providing more entrepreneurship skills, access to microfinance and, more importantly, easy access to social security. ■

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The National Transfer Accounts (NTA) project helps us understand and analyse the consequences of changes in the population age distribution by estimating many aspects of economic behaviour by age.

Ronald Lee and Andrew Mason

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The twin challenges of population aging and confronting inequality are not often viewed as urgent demands—or are easily pushed off the policy agenda by the immediacy of other events. Both call for policy actions today in response to challenges that will unfold over decades to come.

Tim Miller, Paulo Saad and Mauricio Holz

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It is fundamental that the labour market creates enough opportunities for the growing working-age population...

Moses Muriithi, Reuben Mutegi and Germano Mwabu