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Full Length Article

## Impact of population ageing on sustainability of India's current fiscal policies: A Generational Accounting approach

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## ABSTRACT

Using the methodologies of Generational Accounting and National Transfer Accounts, this paper analyzes the sustainability of India's current fiscal policies in the context of population ageing from 2005 through 2100. Sustainability is evaluated by Generational Imbalance under the current policies (baseline scenario) and expected cash transfers reform on a universal old age pension scheme (expected reform scenario). Sources of sustainability are traced to net debt and demographic transition effects. Sensitivity of sustainability is determined by alternative assumptions on productivity growth, discount rate and income elasticity of public expenditure on the cash transfers. The main conclusion shows that India's current fiscal policies and the expected cash transfers reform are unsustainable. However, sustainability is restorable if policy makers can restrain the income elasticity of public expenditure on the cash transfers to about 0.60 (or 0.45) in the baseline (or expected reform) scenario. Further, given these income elasticities, a lower discount rate and a higher growth rate of productivity would make a remarkable impact on reduction in tax burden of current and future generations in order to sustain the fiscal policies in both scenarios. These evidences offer a cautious empirical support for implementation of the current policies and the expected reform on a universal old age pension scheme without sacrificing the sustainability, or intergenerational balance in the distribution of welfare, as India experiences population ageing.

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## Introduction

According to the [United Nations \(2011\)](#), India's elderly population at age 60 and above shows an increase from about 105 million (or about 8% of total population) in 2011 to 376 million (or 22% of total population) in 2051 and to 622 million in 2100 (or 37% of total population). This indicates that India is not and will not be an exception to the demographic phenomenon of population ageing.

An important public debate on India's population ageing is related to provisioning of old age income security. Lack of employability, disintegration of joint family system and decline in other built-in family supports are important justifications for old age income security [[Planning Commission \(2012\)](#), [Central Statistical Office \(2006\)](#)].<sup>1</sup> Further, the need for old age income security is

strengthened by recent findings of [UNFPA \(2012\)](#): 18.3% of elderly depends on publicly funded-social pensions while 43.3% have no source of income, 78% have no savings, and 84% received no retirement and pension benefits because more than 86% work in informal sector (including self-employment).<sup>2</sup> At the same time, a policy move towards universal provisioning of publicly funded income security programmes (e.g. universal old age pension scheme) for the increasing elderly population may be expected to exert a big fiscal pressure and question the sustainability of India's current fiscal policies because of persisting fiscal difficulties in the form of government deficits and its debt financing.

Studies on sustainability of India's fiscal policy have focused on fiscal stability (i.e. targeted reduction in fiscal deficit as a percentage of GDP) and debt sustainability (i.e. targeted reduction in debt/GDP ratio to an initial level) without reference to population ageing. These studies include [Olekals and Cashin \(2000\)](#), [Pattnaik et al. \(2004\)](#), [IMF \(2011\)](#) and [De \(2012\)](#). On the other hand, available literature on impact of population ageing on India's public finance is few and includes [Narayana \(2012\)](#).

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<sup>1</sup> Traditionally, economic dependency of elderly had been largely supported by family members (e.g. son, daughter and spouse) and partially by own asset incomes and savings. This is evident in different rounds of National Sample Survey on socio-economic profiles of aged in 1987–88, 1993–94, 1995–96 and 2004, and [UNFPA \(2012\)](#). Nevertheless, a decline in family support to elderly is recognized by the introduction of Maintenance and Welfare of Parents and Senior Citizens Act, 2007. Every senior citizen (aged 60+)/parent/grandparent, who is unable to maintain himself from his own income, can claim maintenance from his children through the Maintenance Tribunals up to INR10000 per month. In addition, abandonment of a senior citizen is punishable with imprisonment up to 3 months or fine up to INR5000 or both.

<sup>2</sup> The UNFPA report is based on a sample survey of 8329 elderly households (i.e. having at least one elderly member aged 60+) or 9852 elderly individuals in seven states (Himachal Pradesh, Kerala, Maharashtra, Odisha, Punjab, Tamil Nadu and West Bengal) in May–September 2011. These sample states were selected as they had a higher percent of elderly population above the national average.

Narayana (2012) integrated the methodology of the National Transfer Accounts and Budget Forecasting Model to forecast the impact of population ageing on India's current public finance from 2005 through 2050. The empirical results showed that increase in tax revenues result in a decline of debt-to-GDP ratio because population ageing would not lower tax buoyancy in the long run; and increasing total budget surplus and fiscal support ratio implied that the long term impact of population ageing would be fiscally sustainable. Nevertheless, fiscal sustainability of current policies or expected policy reforms and their implied intergenerational welfare, especially in the presence of inter-temporal budget constraint of the government, are yet to be explored in the context of population ageing in India.

This paper is a departure from the above existing Indian studies on fiscal sustainability by answering the following new research and policy relevant questions. Are current fiscal policies of India sustainable in view of populating ageing and expected fiscal challenges of a universal old age pension? What does fiscal sustainability imply for intergenerational distribution of welfare? Can the standard method of Generational Accounting (GA) be applied to answer these questions? If so, can we distinguish the nature and magnitude of fiscal sustainability by current policies and expected reforms? Or, can they be distinguished by sources of generational imbalance? Can policy makers be advised to introduce expected reforms without sacrificing fiscal sustainability of current fiscal policies? If not, what policy measures are suggestible to restore and ensure the sustainability or generational imbalance?

To answer the above questions, this paper constructs the standard GA for India for the benchmark year 2004–05, and assesses the long term impact of population ageing on India's fiscal policies by evaluating the sustainability and intergenerational distribution of welfare of current fiscal policies and expected reforms. Sustainability is explored in the context of (a) current fiscal policies and expected cash transfer reform on a universal old age pension scheme; (b) sensitivity of assumptions on growth rate of productivity, discount rate, and income elasticity of demand for cash transfers spending including civilian old age pensions; and (c) sources of generational imbalance by net debt and demographic transition effects. Construction of GA is new for Indian economics in general and for analysis of fiscal sustainability in the context of population ageing in particular.<sup>3</sup>

The standard method of GA assumes that age profile of tax payments and transfer receipts do not change over time. These profiles are calculated by using the new methodology of National Transfer Accounts (NTA), developed by Lee and Mason (2011) and Mason and Lee (2011) and used for estimation of net payment (i.e. tax payments minus transfer receipts) of current generation by age. This approach integrates the methodology of NTA with the GA in this paper.

Construction of GA is useful to India in many ways. First, GA, as a forward-looking approach, provides with a framework to explore how the sustainability of current fiscal policy can be affected by expected policy reforms due to population ageing.<sup>4</sup> Second, India's Fiscal Responsibility and Budget Management Act 2003 emphasizes on the responsibility of the Central Government, among others, to ensure inter-generational equity in fiscal management and macro-

economic stability by achieving sufficient revenue surplus, and prudent debt management consistent with fiscal sustainability through limits on borrowings, debt and deficits. Construction and analysis of GA is useful to evaluate the objectives of the Act for the general government and draw implications on intergenerational welfare of current fiscal policies, especially given the inter-temporal budget constraint. Third, GA approach fills in the policy research gap on fiscal effects of population ageing facing a developing country like India.<sup>5</sup> Subject to the comparability of economic and fiscal structures, the lessons from India's GA may be useful for other developing Asian countries to evaluate fiscal sustainability in the context of population ageing.

Rest of the paper is organized as follows. Section "Trends in India's population ageing" describes the trends in India's population ageing from 1961 through 2100. Section "Fiscal indicators of India" presents India's select fiscal indicators relating to public deficit, debt, net wealth and public expenditure on old age pensions. Section "Methodology of generational accounting" presents an overview of the standard GA methodology and details of variables and data descriptions for its construction for India. Section "Baseline results" gives the baseline results and their analyses by current policies. Section "Expected reforms and fiscal sustainability" introduces the expected reform on universal old age pension scheme and its impact on fiscal sustainability. Analyses of sensitivity results are given in Section "Sensitivity analysis". Major conclusions and implications are summarized in Section "Conclusion and implications".

### Trends in India's population ageing

Using the age distribution of population by single years from the Census of India from 1961 to 2011 and projected population by single years from the United Nations (2011), Fig. 1 shows the trends in India's age structure transition in general and population ageing in particular. Before 1991, share of young population (0–14) was higher than the working age population (25–59). In 1991, the two curves intersected with share of total population at about 37%. Since 1991, young population shows a continuous and rapid decline as compared to the rising working age population. Thus, the two curves show a scissor's shape. Age structure transition is also characterized by changes in youth and elderly population. Share of the youth population shows a gradual increase from about 17% in 1961 to about 19% in 2011 and a decline from about 17% in 2021 to about 13% in 2051 and to 10% in 2100. On the other hand, share of elderly population shows a gradual increase from about 6% in 1961 to about 7% in 2001 and a rapid increase from about 8% in 2011 to about 22% in 2051 and to 37% in 2100. Further, annual growth rate of projected population between 2011 and 2051 (or between 2051 and 2100) show interesting variations: –0.38 (or –0.62) percent for young, –0.03 (or –0.65) percent for youth, 1.25 (or –0.45) percent for working adults, and 3.27 (or 1.03) percent for elderly. Consequently, total projected population in 2100 is equal to 235 million of young, 166 million of youth, 655 million of working and 622 million of elderly population. An obvious impact of India's projected age structure transition would be on the changing dependency ratios. Fig. 2 shows India's young, youth and old-age dependency transition over the period 1961–2100. The decline in young and youth dependency ratios and a rise in old-age dependency ratio are the remarkable effects of India's demographic transition or interactive effects of fertility and mortality over the period up to 2100.

<sup>3</sup> Outside India, construction of GA is available for 17 countries in Auerbach et al. (1999) and for South Korea in Auerbach and Chun (2006, 2003).

<sup>4</sup> This is in contrast with the backward-looking approach to fiscal sustainability, generally based on time series properties of variables, such as, primary and non-primary government spending and revenues, interest payments, and public debt stocks. Adams et al. (2010) provide an excellent review of studies on the backward-looking approach and fresh evidence based on a sample of 33 Asian countries including India.

<sup>5</sup> This gap is identified, for instance, as a future direction of research, by the Report on a Technical Policy Seminar on the economic consequences of population ageing [jointly held by UNFPA and the East West Centre on 19–20 September 2011].

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