

Integrating Time and Monetary Transfers to Understand Generational Support and Ageing in India

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Introduction

Shifting population age structures are reshaping economic, social, and institutional systems worldwide. Among the most significant of these demographic changes is the rapid ageing of populations, driven by declining fertility and rising life expectancy (National Research Council, 2001). These trends have far-reaching consequences for global economies and require timely policy interventions (Lee & Mason, 2011). According to United Nations projections, by 2050, individuals aged 65 and above will comprise 16% of the global population, twice the number of children under the age of five (UNDESA, 2022). Ageing is occurring at an especially rapid pace across Asia (United Nations, 2019; UNESCAP, 2017). UNESCAP (2017) identifies four distinct characteristics of ageing in Asia: (a) a growing share of older persons in the population, (b) a rapid transition from ageing to aged status occurring at earlier stages of development, (c) large absolute numbers of elderly individuals even in countries with relatively low ageing shares, and (d) a sharp rise in the population of the “oldest old” (those aged 80 and above).

India demonstrates these trends very evidently. In 2021, the country had approximately 138 million people aged 60 and above (NSO, 2021). This number is projected to reach 158.7 million by 2025. By 2050, India’s elderly population is projected to reach 347 million, accounting for 20.8% of the total population, and is expected to surpass the number of children under the age of 14 (International Institute for Population Sciences & United Nations Population Fund, 2023; UNDESA, 2008; Raju, 2006; Dey et al., 2012).

As individuals proceed through their lives, their economic behaviour varies in a systematic way. The demographic transition is reflected in the proportion of the population in school, working, or retired, which further affects the savings rate or their per capita wealth. Other than the direct impact on the economy through the proportion of population in each age group, the change in the number and behaviour of the population in an age group affects the economic circumstances and behaviour of another. This interdependency may not function just through the ‘marketplace’, but also through economic resource flows happening through households, government tax systems, etc. Hence, the population age structure affects the number of people receiving or giving the resources and thus disrupts these economic structures (Lee & Mason, 2011).

The National Transfer Accounts (NTA) framework is used to analyse how, at each age group, resources are acquired and used. NTA introduces age into the National Income and Product Accounts (NIPA), thus creating an age-specific input-output system. The framework gives the measure of deficits of each age group and reallocations happening from one age group to another (Bhaumik & Ladusingh, 2021; Narayana & Ladusingh, 2009). While NTA is useful for

analysing economic flows across age groups, it does not fully capture gender differences or non-market production. To address this, the National Time Transfer Accounts (NTTA) framework was developed as an extension of NTA by introducing age and generational transfers into household production. NTTA gives cross-sectional age profiles, i.e., the average by age and gender, of household production, consumption, and net time transfers. Net time transfers are obtained from the difference between production and consumption for each age and gender, thus indicating whether they are net beneficiaries or net givers of household products and services (Vargha et al., 2016).

This expanded framework not only improves the visibility of women's economic roles but also enhances our understanding of generational support systems across the full lifecycle. Just as women's contributions are often understated due to the exclusion of unpaid work, older adults also remain largely invisible in conventional economic frameworks. The emphasis on market participation and formal employment tends to marginalize those who have exited the labour force due to age. Despite their continued roles in household production and intergenerational support, the elderly are often perceived solely as consumers (Donehower, 2023). Frameworks like NTTA help move beyond this narrow view, capturing the unpaid contributions of older adults and challenging the assumption that they are economically inactive or wholly dependent.

Methods

Data Sources: NTA (Monetary Transfers): Macro-level aggregates for labour income, public and private consumption on health, education, and other goods were compiled from National Accounts Statistics (Ministry of Statistics and Programme Implementation, 2021) and budget documents (Ministry of Education, 2022; 2024). Labour income includes compensation of employees, two-thirds of mixed income, and net compensation from the rest of the world. Micro-level per capita age profiles were derived from IHDS-II (labour income), NSS 75th Round (health and private education consumption), and UDISE+ 2019–20 (public education).

NTTA (Time Transfers): Data on unpaid household production was drawn from the Time Use Survey 2019 (NSSO), covering 4,47,250 individuals aged six and above. Wage data for monetization was obtained from PLFS 2019–20.

NTA Methods: Age-specific per capita profiles were calculated from micro-level data, smoothed, and scaled to macro aggregates using the adjustment factor $\theta = X / \sum x(a)N(a)$, where X is the macro control total, $x(a)$ the per capita value at age a , and $N(a)$ the population at age a . Lifecycle deficit (LCD) was computed as consumption minus labour income:

$$LCD_i = (C_{f,i} + C_{g,i}) - YL_i,$$

Support ratios were calculated conventionally and using NTA-adjusted effective numbers of producers and consumers, weighted relative to the 30–49 age group.

NTTA Methods: Productive household activities were identified using the third-party criterion and ICATUS 2016 classification. Survey-weighted mean time spent on each activity by age and gender provided production profiles. Consumption profiles were allocated based on household membership and age groups, with child care assigned to under-18s and adult care to 18+. Net transfers were calculated as production minus consumption, and time was monetized

using the specialist replacement method, multiplying annualized hours by age- and activity-specific wages from PLFS. Aggregate production equaled aggregate consumption after smoothing and minor adjustments.

Integration of NTA and NTTA: Unified lifecycle profiles were created by combining NTA labour income and consumption with monetized NTTA outputs:

- Unified Production = Labour Income + Monetary Value of Unpaid Care Production
- Unified Consumption = Consumption + Monetary Value of Unpaid Care Consumption
- Unified LCD = Unified Production – Unified Consumption

Life cycle balance sheets and redefined support ratios were calculated for the total population and for the elderly (60+) to assess the impact of including unpaid care work on economic dependency.

Results

The integration of NTA and NTTA presents a more comprehensive view of the lifecycle deficit (LCD) in India for 2019. Gender-specific lifecycle deficit profiles reveal distinct patterns in how non-market production reshapes economic dependency across ages.

For men, the NTA-LCD profile shows a pronounced surplus during working ages, driven by high labour income, and deficits at both ends of the age spectrum. The inclusion of NTTA slightly reduces their surplus during working ages, as men receive more household services than they produce. In old age, NTTA has a mild deficit-reducing effect, but elderly men remain in a lifecycle deficit even after accounting for non-market contributions. Overall, the male economic lifecycle remains dominated by market flows, with NTTA playing a small but visible adjustment role.

For women, the addition of NTTA has a much larger impact, especially during working ages. Their lifecycle deficit narrows significantly as substantial unpaid household production offsets low market income. In some age groups, this shift brings their lifecycle balance closer to surplus. Among the elderly (60+), both men and women continue to experience a lifecycle deficit even after adding NTTA. For elderly women, NTTA moderately narrows the deficit, reflecting ongoing engagement in unpaid household tasks and caregiving roles. For elderly men, the effect is smaller but still present, slightly reducing overall deficit.

These gendered shifts highlight that while NTTA offers some relief in old age, it remains insufficient to fully offset economic dependency for both elderly men and women. The unified perspective challenges the common narrative of the elderly as dependents or consumers. When NTTA is added to NTA, the combined lifecycle deficit narrows for women, especially in working and early old age, due to their large unpaid contributions. However, the elderly, particularly elderly men, remain in deficit. The composite support ratio, adjusted for non-market consumption, falls further from 0.55 to 0.48, revealing a higher true dependency burden.

Discussion

The integration of time and monetary transfers demonstrates that older adults are active participants in intergenerational economic flows rather than passive dependents. Elderly women, in particular, continue to contribute substantial unpaid work, which reduces but does not eliminate their lifecycle deficit. Elderly men receive modest adjustments from NNTA.

This unified lifecycle framework provides a more nuanced view of ageing and support. Ignoring non-market production misrepresents dependency ratios and undervalues the contributions of older adults, especially women. Accounting for both market and non-market flows highlights intergenerational interdependencies and underscores the importance of including unpaid care in policy planning.

For India, where families bear the primary responsibility for older adult care and formal care systems are limited, these findings emphasise the economic significance of unpaid contributions. Policies targeting ageing and gender equity must recognise the invisible labour of older adults to better support care sustainability and generational equity.

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