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THE PARADOX OF A YOUNG NATION: THE ECONOMICS OF PREMATURE AGEING IN A DEMOGRAPHICALLY YOUNG INDIA

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ABSTRACT

India is widely regarded as a young nation with significant demographic potential. Yet beneath this aggregate youthfulness lies a growing phenomenon of premature ageing, marked by early onset of chronic disease, functional decline, and economic vulnerability during working ages. This paper examines the economic foundations of premature ageing in India by linking epidemiological transition, informal labour, environmental stress and social inequality to productivity loss and household insecurity. It argues that it threatens India's demographic dividend and calls for a life course policy response integrating prevention, healthcare, labour adaptation and social protection.

Keywords: Young Nation, Paradox, Economics, Premature Ageing, India

INTRODUCTION

India's demographic profile is often celebrated as one of its greatest economic assets. With a median age substantially lower than that of most developed economies and a large proportion of its population in the working age group, India is frequently described as being in the midst of a demographic dividend. This narrative has shaped economic planning, labour market expectations, and growth projections over the past two decades. Implicit in this optimism is the assumption that India's working age population is not only numerically large but also physically capable, functionally productive and able to sustain long periods of economic participation.

However, this assumption warrants closer scrutiny. A growing body of evidence suggests that a substantial segment of India's working age population experiences health deterioration, functional limitations and economic vulnerability much earlier than expected. Non-communicable diseases like like blood pressure, muscle and skeletal disorders, respiratory illnesses and mental health conditions are increasingly prevalent among individuals not only in late 30's or 40's but as early as 20's. These conditions are not isolated medical issues, they translate directly into reduced labour productivity, employment, income instability and household insecurity.

This phenomenon may be described as premature ageing. Unlike conventional population ageing, which refers to a rising proportion of elderly individuals due to declining fertility and increased life expectancy, this captures the early onset of ageing related decline during economically productive years. In India, it is closely linked to long term exposure to physically demanding informal work, environmental pollution, nutritional deprivation, psychosocial stress and inadequate access to continuous healthcare. These factors combine to produce a workforce that is chronologically young but biologically and functionally older.

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From an economic perspective, it is particularly consequential. When health deterioration occurs during peak working years, its costs are borne not only by individuals but also by households, labour markets and the macroeconomy. Loss in productivity, rise in healthcare expenditure, reduced savings etc., threaten to undermine the very demographic conditions that are expected to drive growth.

Despite its importance, it remains largely absent from mainstream economic analysis in India. Health is often treated as an exogenous variable in labour studies, while ageing is confined to discussions of pensions and elderly welfare. This paper seeks to bridge that analytical gap by examining it as a structural economic challenge within a demographically young society.

LITERATURE REVIEW

The economic literature on ageing has traditionally emerged from the experience of high income countries facing rising life expectancy and declining fertility. In these contexts, ageing is primarily regarded as an increase in the share of elderly population relative to the working age population. Contributions by Bloom, Canning and Fink analyse how population ageing affects economic growth through changes in labour supply, savings behaviour and public expenditure. While influential, this largely equates ageing with chronological old age and offers limited insight into contexts where health deterioration occurs earlier in life.

In India, earlier academic studies on ageing focused predominantly on elderly welfare and social security. Studies by Irudaya Rajan and other scholars examined old age poverty, family based support systems and the limited pensions and formal social protection. This literature made an important contribution by highlighting the vulnerability of older persons in a rapidly changing socio economic environment. However, it implicitly assumed a clear demarcation between working age and old age, overlooking the possibility that ageing related decline could affect individuals well before retirement.

Over the past two decades, public health and demographic research has begun to challenge this assumption. India's disease shift has been marked by a sharp rise in non-communicable diseases such as cardiovascular disorders, diabetes, respiratory illness and certain cancers. These conditions often manifest at younger ages. Studies using data from the National Family Health Survey and the India State-Level Disease Burden Initiative demonstrate that a significant proportion of NCD prevalence occurs among adults in their 30's and 40's as well as late 20's particularly among economically and socially disadvantaged groups.

Influenced by the work of Marmot on social determinants of health, this literature emphasises how early life deprivation such as undernutrition or malnutrition, poor sanitation, limited education and repeated infections reduces physiological reserves and increases susceptibility to chronic disease later in life. High evidence strongly supports this perspective. Childhood stunting, low birth weight and adolescent undernutrition coexist with rising adult obesity and metabolic disorders, producing a dual burden that accelerates health decline.

Labour economics literature in India has only partially engaged with these insights. Research by NSS and PLFS data consistently finds that poor health is associated with lower labour force participation, high informality, and reduced or low earnings. However, health is typically treated as a static characteristic rather than a cumulative process. The dynamic relationship between long term health deterioration and labour outcomes remains underexplored. Occupational health studies offer important but fragmented evidence. Construction workers, agricultural labourers and informal factory workers documents high prevalence of muscle and skeletal pains and disorders, respiratory illness and early disability. This point to cumulative physical strain and unsafe working conditions as key drivers of early functional decline. But, they are rarely integrated into broader economic analyses of productivity or demographic change.

Health financing literature adds another layer to the discussion. India's reliance on out of pocket expenditure exposes households to catastrophic health spending, particularly in the case of chronic illness. Studies show that health shocks during working ages are especially damaging, as they coincide with peak earning periods while generating long term medical costs. Nevertheless, most analyses conceptualise illness as a short term shock rather than as part of an ageing process that erodes economic capacity over time.

Mental health research further strengthens the case for recognising premature ageing as an economic issue. Depression, anxiety, and stress related disorders account for a growing share of years lived with disability among working age adults in India. These conditions reduce productivity, increase absenteeism and impair social functioning. Yet mental health remains marginal in economic studies of ageing and labour markets.

Overall, the existing literature remains siloed across disciplines. While there is substantial evidence of early morbidity, occupational strain, and health related economic vulnerability, these strands have rarely been synthesised into a coherent framework of premature ageing. This paper seeks to address this gap by integrating insights from demographic economics, health economics and labour studies to conceptualise premature ageing as a critical constraint on India's demographic dividend.

CONCEPTUALISING PREMATURE AGEING IN AN ECONOMIC FRAMEWORK

From an economic standpoint, ageing becomes relevant not at a specific chronological age but when individuals experience a decline in functional capacity that affects productivity, employment and social participation. It can therefore be understood as the

early erosion of functional health during working ages, driven by cumulative disadvantages across the life course. It operates through multiple interacting mechanisms. Early life deprivation limits human capital formation and increases various health problems. Prolonged exposure to physically demanding work and hazardous environments accelerates physical deterioration. Inadequate or low access to preventive and continuous healthcare allows manageable conditions to progress into chronic and disabling illness. All these factors compress morbidity into economically productive years.

In India, it is also deeply structured by social inequality. Sex, caste, poverty, education and location shape both exposure to risks and access to protection. Women often experience compounded vulnerability due to nutritional deprivation, unpaid care burdens and limited healthcare access. Marginalised communities face greater exposure to hazardous work and environmental stress, increasing the likelihood of early functional decline. Recognising this as an economic phenomenon shifts the focus of policy from age based categories to functional capacity and life course vulnerability. It highlights the need to rethink labour, health and social protection systems in ways that preserve productivity and wellbeing throughout adulthood.

ECONOMIC CONSEQUENCES OF PREMATURE AGEING

The economic consequences of premature ageing are most immediately visible in labour markets. When functional health decline begins during working ages, individuals experience reduced physical stamina, chronic pain, fatigue and in many cases cognitive impairment. In an economy where a large share of employment is physically intensive and informal, even moderate health deterioration can significantly reduce productivity. Workers often respond by lowering work intensity, reducing work hours and shifting to less demanding but low paid occupations or withdrawing from the labour force altogether. These adjustments are rarely voluntary rather, they reflect constrained choices in the absence of workplace accommodation or alternative employment opportunities.

At the household level, it creates a dual burden of income loss and rising expenditure. Health problems during peak earning years disrupts regular income flows leading to poverty or absolute poverty while simultaneously increasing healthcare spending. India's healthcare system remains heavily reliant on out-of-pocket payments, particularly for outpatient care and long term medication. As a result, households affected by early functional decline often face catastrophic health expenditure, leading to depletion of savings, sale of productive assets and increased debt. These financial pressures frequently force households to cut back on essential expenditures, including children's education and nutrition, thereby transmitting disadvantage across generations.

This intergenerational effects are particularly important in the Indian context, where family based support systems remain central. When a working age adult experiences early health deterioration, caregiving responsibilities are often assumed by spouses, older parents or children. This unpaid care burden disproportionately falls on women and can reduce their labour force participation. In some cases, children are pulled out of school or encouraged to enter the labour market early to compensate for lost of income inorder to feed the family undermining long term human capital formation.

From a macroeconomic perspective, widespread premature ageing reduces the effective supply of labour and lowers aggregate productivity. Even if labour force participation rates appear stable, declining functional capacity reduces output per worker. This phenomenon is particularly damaging because it affects cohorts that are expected to contribute most to economic growth. Moreover, it increases demand for healthcare services and social support at earlier stages of development, placing fiscal and monetary pressure on governments that are simultaneously investing in infrastructure, education and poverty reduction.

It also alters the structure of labour markets. As physical capacity declines earlier, workers face barriers to remain employed in traditional occupations. In the absence of skills and opportunities, many are pushed into low productivity informal work or underemployment. This process reinforces informality and inequality, limiting the economy's ability to transition toward higher productivity sectors.

MEASUREMENT AND DATA CHALLENGES

Despite its economic significance, premature ageing remains difficult to measure in India. Most large scale surveys rely on chronological age as a proxy for ageing, obscuring early functional decline. Health surveys capture disease prevalence but often lack detailed information on functional limitations, work capacity and long term economic outcomes. Labour surveys, in turn record employment status and earnings but provide limited insight into health dynamics.

The cross sectional nature of most Indian datasets further complicates analysis. Without proper data tracking individuals over time, it is difficult to distinguish between temporary health shocks and cumulative ageing related decline. The absence of integrated administrative data linking health, employment and social protection also limits the ability to estimate effects and fiscal costs.

Improving measurement requires a shift toward functional indicators of ageing such as limitations in mobility, stamina and cognitive functioning alongside standard health measures. Incorporating such indicators into labour force surveys would provide a more accurate picture of effective labour supply. Expanding studies that follow individuals across the life course would allow researchers to trace the pathways linking early life conditions, occupational exposure, early health deterioration and economic outcomes.

STRUCTURAL DRIVERS OF PREMATURE AGEING IN THE INDIAN ECONOMY

Premature ageing in India cannot be understood solely through individual health behaviours or isolated medical conditions. It is fundamentally shaped by structural features of the Indian economy that systematically expose large segments of the population to cumulative physical, environmental and psychosocial stress. One of the most important of these features is the persistence of informal employment. A majority of Indian workers remain outside formal contracts and occupational safety regulations. Informal work is often characterised by long hours, physical intensity, job insecurity and lack of health protection, all of which accelerate functional decline.

Agriculture, construction, and low end manufacturing continue to absorb a large share of the workforce. These sectors rely heavily on manual labour and expose workers to repetitive strain, extreme weather conditions, dust, chemicals and unsafe machinery. Over time, such exposure results in various mobility disorders, chronic respiratory problems and early disability. The economic structure thus embeds health deterioration into the production process itself.

Urbanisation further compounds these risks. Rapid, unplanned urban growth has produced dense settlements with inadequate housing, sanitation and access to clean air and water. Urban informal workers are disproportionately exposed to various pollution like air pollution and heat stress, which have been linked to cardiovascular and respiratory disease. For migrants, the stress of such employment, social isolation and lack of access to public services intensifies vulnerability. These structural conditions mean that economic growth, when accompanied by environmental degradation and informality, can accelerate premature ageing among those who fuel that growth.

Gender norms also play a crucial role. Women's participation in such work often coexists with heavy unpaid responsibilities, nutritional deprivation, and limited access to healthcare. Reproductive health burdens, anaemia and chronic fatigue contribute to early functional decline. Yet women's health deterioration is frequently underreported and undervalued in economic analysis, leading to an underestimation of premature ageing's true economic cost.

MACROECONOMIC AND FISCAL IMPLICATIONS

At the macroeconomic level, it alters the relationship between population structure and growth. Traditional demographic dividend models assume that a rising share of working age individuals automatically translates into higher output. This breaks this link by reducing the effective productivity of the labour force. Even when employment rates remain stable, declining health reduces output per worker, dampening growth potential.

Fiscal implications are equally significant. Early onset of chronic illness increases demand for healthcare spending, reducing the tax base while raising public expenditure needs. Governments face rising costs for subsidised healthcare, disability support and social assistance often before achieving the income levels necessary to finance such commitments sustainably. This creates a form of fiscal compression, where resources are diverted from growth enhancing investments toward remedial expenditure.

Moreover, this increases inequality in both income and health which can further constrain growth through lower aggregate demand and social instability. Regions and communities with higher exposure to health risks may experience slower development, reinforcing spatial disparities. Without intervention, it risks transforming India's demographic dividend into a demographic drag.

Recognising these macroeconomic dynamics, it reframes health investment as a core component of growth strategy rather than a residual social expenditure. Policies that delay functional decline effectively increases the productive lifespan of workers, yielding returns comparable to investments in education or infrastructure.

POLICY RESPONSES AND ECONOMIC RATIONALE

Addressing this requires a policy response that extends beyond conventional ageing or health policy. At its core, it is a lifelong problem, shaped by cumulative exposure to risk and inequality. Consequently, prevention must play a central role. Policies aimed at reducing non-communicable disease risk factors such as tobacco use, unhealthy diets, physical inactivity and exposure to pollution can significantly delay the onset of functional decline. Investments in nutrition, sanitation and education during early life strengthen long term health resilience and yield high economic returns.

Strengthening primary healthcare systems is equally critical. Chronic conditions that drive premature ageing are often manageable with early detection and continuous care. However, fragmented or subpar healthcare delivery and high out of pocket costs lead to delayed treatment and poor adherence. A primary healthcare system aiming towards long term management rather than episodic care can reduce disability, preserve work capacity and lower long term costs. From an economic standpoint, such investments are not merely welfare enhancing but productivity preserving.

Social protection systems must also adapt to recognise functional impairment during working ages. Existing programs often focus on the elderly or the formally employed, leaving informally employed individuals with limited support when health

deteriorates. Expanding health insurance coverage, disability benefits and income support to include working age adults with functional limitations can prevent households from falling into poverty and enable continued economic participation.

Labour market policies play a crucial role in mitigating the economic impact of premature ageing. Reskilling and lifelong learning initiatives can help workers transition from physically demanding jobs to less strenuous and more productive roles. Flexible work arrangements, job redesign and ergonomic improvements can extend working lives and retain experienced workers. Public employment programs can be adapted to include tasks suitable for individuals with reduced physical capacity, combining income support with community benefit.

Technology and capital investment also offer pathways to reduce reliance on manual labour. Low cost mechanisation and improved tools in agriculture, construction, and small scale manufacturing can reduce physical strain while raising productivity. While such investments require upfront costs, their long term economic benefits in terms of sustained labour participation and output are substantial.

POLITICAL ECONOMY AND IMPLEMENTATION CONSTRAINTS

While the economic rationale for addressing premature ageing is strong, implementation faces significant challenges. Preventive measures such as pollution control, regulation of unhealthy commodities and workplace safety enforcement often encounter resistance from vested interests. Expanding social protection and healthcare coverage requires fiscal resources and administrative capacity, both of which are uneven across states.

Informality poses a particular challenge. Designing and delivering benefits to a workforce that is largely outside of formal employment structures demands innovative approaches, including community based targeting, digital platforms and integration of services at the local level. Coordination across sectors such as health, labour, social welfare and urban development is very essential but institutionally difficult.

Despite these constraints, the cost of inaction is likely to be higher. Ignoring this, risks eroding labour productivity, increasing inequality and undermining long term growth prospects. Framing policy responses in terms of economic returns rather than solely social welfare may help build political support.

CONCLUSION

India's demographic youthfulness has been widely celebrated as a source of economic opportunity. Yet this advantage is contingent on the health and functional capacity of the working-age population. Premature ageing, driven by early life deprivation, hazardous work, environmental stress and inadequate healthcare, threatens to undermine this potential. By compressing morbidity into productive years, premature ageing reduces labour productivity, destabilises households and places pressure on public finances.

This paper has argued that it should be recognised as a central concern of demographic and development economics in India. Addressing it requires a life course approach that integrates prevention, primary healthcare, labour market adaptation and inclusive social protection. Such investments are not merely compassionate responses to vulnerability, they are economically prudent strategies to sustain productivity and ensure that India's demographic dividend is realised rather than squandered.

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