

Mehdi, Ali; Chaudhry, Divya

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Human capital potential of India's future workforce

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Working Paper 308

Human capital potential of India's future workforce

Ali Mehdi

Divya Chaudhry

September 2015



INDIAN COUNCIL FOR RESEARCH ON INTERNATIONAL ECONOMIC RELATIONS

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Abstract

Indian policymakers – like most of their counterparts across the developing and developed world – have been concerned with the employability of their working-age populations in particular, for obvious economic and sociopolitical reasons. However, such concern has been largely missing as far as the future workforce is concerned. This paper discusses India’s demographic dynamics and argues that policymakers have the widest window of opportunity with that segment of population which is poised to enter the workforce between 2030 and 2050 – those in their infancy today and the following decades. They should realize that our employability crisis (as well as to some degree, inequality in the economic and human development sphere) has its roots, *inter alia*, in the country’s grossly inadequate, inefficient and inequitable early health and education systems. Early childhood interventions hold immense importance in fostering the employability potential of the future workforce, especially in developing countries that are still a few decades away from their peak demographic opportunity. Since early health has not received the attention it deserves within the human capital framework, we highlight pathways through which it potentially impacts not just health and productivity, but learning outcomes as well as cognitive and non-cognitive skill development during formative years. Another neglected area that we have discussed is soft skill development and the role of preprimary education. In conclusion, India will have to focus, *inter alia*, on early health and preschooling (soft skill development) to reap its demographic dividend in a manner that is commensurate with the demands of a knowledge economy.*

JEL classification: E24, I15, I26, J11, J24, O15.

Keywords: Early human capital formation, skill development, demographic dividend, knowledge economy, labour force.

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1. Introduction

Indian policymakers, like most of their counterparts across the developing as well as the developed world, have been concerned with the employability of their working-age populations in particular, for obvious economic and sociopolitical reasons. Boosting the skill development initiatives of the previous regime in a major way, the new dispensation at the Centre established a Ministry of Skill Development and Entrepreneurship within six months of assuming office, and brought out a highly *promising* ‘National Policy for Skill Development and Entrepreneurship 2015’ (*Skills Policy 2015*) within the next six months. However, like its precursor, the ‘National Policy on Skill Development 2009’, it takes 2022 as the timeframe for its skilling initiatives, given its focus on those who are in the workforce at the moment and those who would enter it until that year.

Without underestimating the significance of the present focus and initiatives for skill development, which seek to reap India’s demographic dividend largely in the context of low-/semi-skilled manufacturing jobs, this paper makes the case that, with a focus on making India a knowledge economy which is dynamic, highly-skilled and broad-based, Indian policymakers should concurrently focus on preparing the workforce that will be needed for such an economy. Fulfilling the requirements of today’s industry – which has been the predominant focus of both skills policies – does not mean that we cannot have and work towards a vision of the future economy and the workforce required for it. In this context, it is important to realize that India’s workforce will surpass that of China’s in 2030, and peak in 2050, and so we have the widest window of opportunity with respect to those who are in their infancy today and in the next two decades, to realize our workforce ambitions for a knowledge economy.

The World Economic Forum’s *Human Capital Report 2013* rightly argues that while, “long-term thinking around human capital often does not fit political cycles or business investment horizons; ... lack of such long term planning can perpetuate continued wasted potential in a country’s population and losses for a nation’s growth and productivity” (WEF 2013: 3). With measures indicating the quality of early childhood, the report ranked India 78th on overall human capital status out of 122 countries – 63rd in education and 112th in health and wellness. Technical and vocational education and training (TVET) might enhance the employability prospects of the present and near-term labor force. However, if we wish to become a knowledge economy, with highly skilled and dynamic rather than abundant, cheap labor force as our hallmark, we would have to revamp our profoundly inadequate, inefficient and inequitable early health and education systems. The nature of reforms that we bring about in those systems would, to a great degree, determine the nature of our economic growth and the quality of skill sets that we would be producing in the coming decades.

This paper highlights pathways through which early childhood development potentially influences educational and employment prospects and analyzes the present status of India’s children and lessons to be learnt from the development experience of some advanced economies. The paper begins

with a discussion of the potential size of India's future workforce, and argues that its gradual decline in child dependency ratio can potentially help it enjoy benefits of a wider demographic window, provided the human capital dimensions are taken well care of. It then goes on to discuss key concepts and the potential pathways of influence along with data on human capital status in India vis-à-vis selected countries. The importance of early health and preschooling, which has thus far remained neglected in the human capital discourse, has been brought to the fore by highlighting potential pathways through which they affect cognitive and non-cognitive development and later-life employability and productivity. Finally, in conclusion, we argue that policymakers need to pay equal attention to the adequacy as well as efficiency and equity dimensions of investments in early human capital formation and provide certain policy recommendations towards this end. Equity of such investments have the potential to address not just inequalities in human capital that start early on, but also in later-life economic inequalities, which too are a cause of concern for policymakers.

Although this paper is about the role of human capital in the context of employability, it does not imply that we underestimate the role of social (family or group networks) or other forms of capital. In fact, in several contexts, other forms of capital may play a more decisive role. However, from a policy perspective, governments must try to disincentivize the role of other vis-à-vis human capital, especially when the former tend to translate into discrimination and undue preferences in labor markets (in terms of employment, promotions, perks, etc.). In particular, governments should also try to minimize the impact of economic capital or inequalities vis-à-vis human capital formation – richer parents are in a position to invest more in the human capital of their children than those who are not so well-off – and this could, to some degree, be remedied through preferential focus on the latter, which is actually the case in many countries, including India. The goal should be to prepare a level-playing field to the extent possible in the context of human capital so that inter-generational economic inequality is also addressed in this context as well. Various forms of capital interact and influence employability in complex ways, but with a predominant emphasis on human capital, the possibilities of equity and fairness in labor markets could be increased. Governmental intervention should aim at reducing inequalities in human capital vis-à-vis other forms of capital, and the greatest scope here, as we shall discuss, is in the earliest stages of human capital formation.

2. Size of India's future workforce²

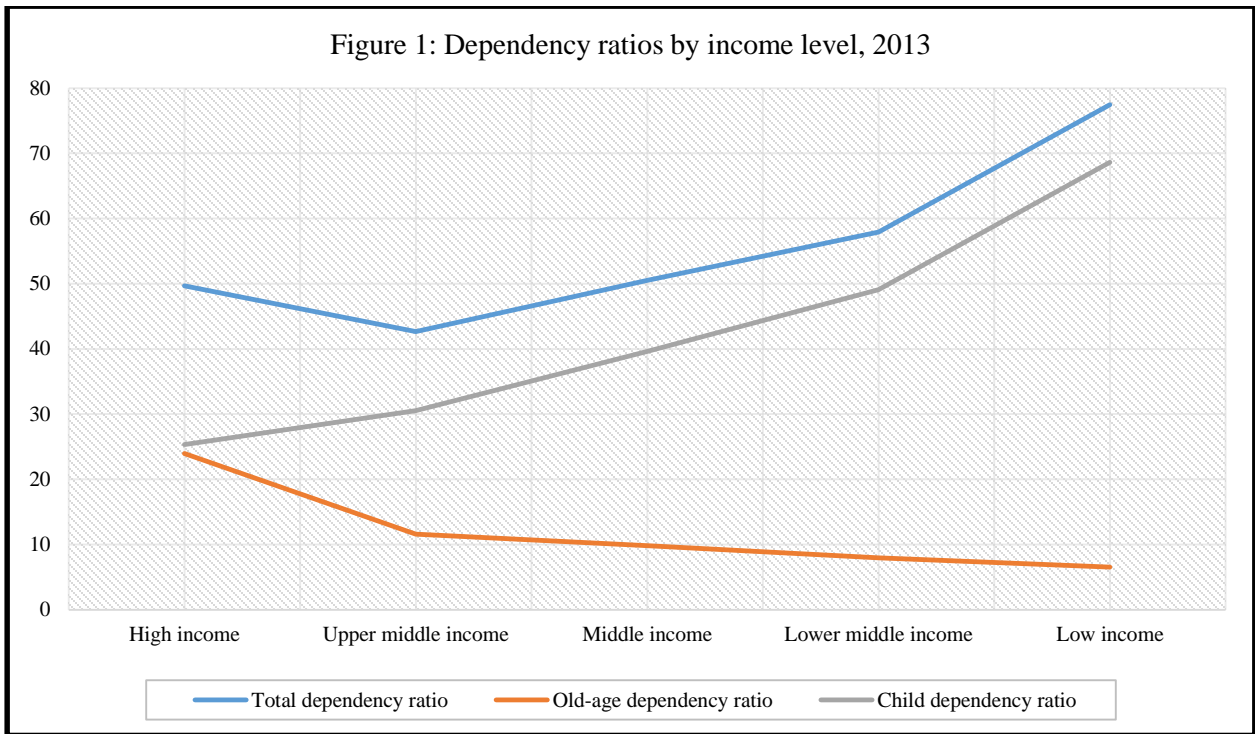
Moving away from general intuitions of higher population being problematic for economic growth (Coale, Hoover 1958), recent literature has highlighted a potentially positive two-way relation between population age-structure and economic growth, with East Asia's success cited as an example (Bloom et al. 1999; Bloom et al. 2011; Prskawetz et al. 2004; Bloom et al. 2011). Declines in dependency ratio – the proportion of population in the 0-14 and 65+ age-groups (dependents)³ vis-à-vis those in the working-age group of 15-64 years – lead to economically favorable population age-structures, and given supportive policies enhancing employability prospects, countries could experience higher growth. Dependency ratios initially decline by means of a 'demographic transition' – from high to low death and birth rates – leading to the 'first demographic dividend', which continues until the proportion of working-age population reaches its peak. Post-peak, the dependency ratio starts going up once again, this time towards the tail-end ('old-age dependency ratio'), with an increasing proportion of people in the 65+ age-group ('ageing'). If people accumulate savings and assets for their retirement, and national income remains high, a 'second dividend' is possible some time after the first, which could go on indefinitely (Mason, Lee 2006). However, whether it is the demographic transition or dividends later, human capital formation, especially early health and education, play the most critical role. Several studies have highlighted the prominent role of human capital in the economic growth of countries in the Asia-Pacific (World Bank 1993; Page 1994; Dobson 2013). Any discussion of demographic opportunity is, thus, conceptually and operationally inadequate without a simultaneous consideration of the human capital status.

Figure 1 demonstrates that lower income countries are characterized by higher child and lower old age dependency ratios, characteristic of pre-demographic transition stages. The situation gradually reverses the higher we move up on the income ladder. Although the total dependency ratio is higher in lower income countries, this may not necessarily be problematic from the perspective of the first demographic dividend. Let aside the intrinsic value of human development for the time being, from a purely instrumental perspective, if countries with higher child populations view them as future contributors to growth and 'invest' in their human capital – obviously with an array of other policies, especially those that enhance growth and job creation – this segment of dependents would become a 'window of opportunity' for future growth and development. This is not the case with old-age dependents, so a higher proportion of them in the total dependency ratio is, from an economic perspective, a burden. Lower income countries, thus, have a 'potential advantage' as far as growth 'prospects' are concerned.

² By 'workforce', we mean population in the internationally defined working-age group, i.e. 15 to 64 years.

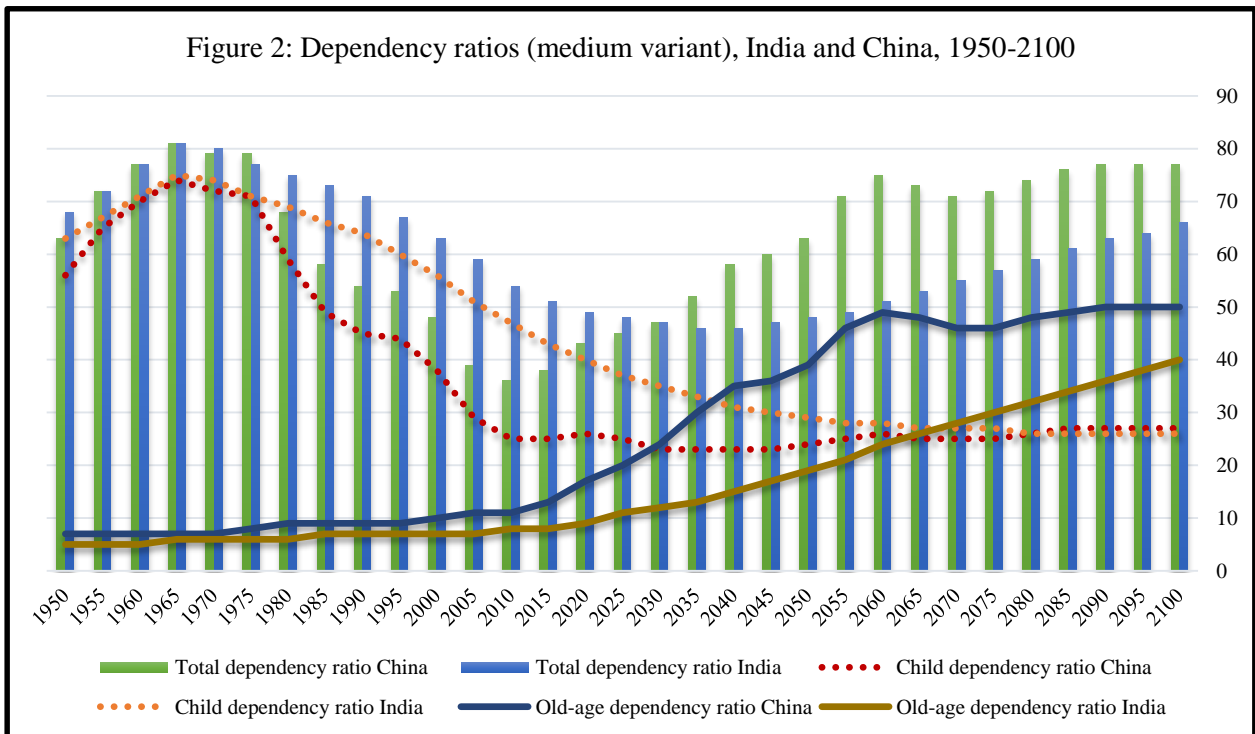
³ Although this may not always be the case, especially in countries like India with wide prevalence of child labor. In some sectors, their contribution could be significant. Indian child rights activist and Nobel Laureate, Kailash Satyarthi, mentioned during a TV interview that former Prime Minister of India, Chandra Shekhar, scolded him for having ruined the handmade carpet industry in India due to his activism (NDTV's 'Walk the Talk', 13/10/2014 by Shekhar Gupta).

Figure 1: Dependency ratios by income level, 2013



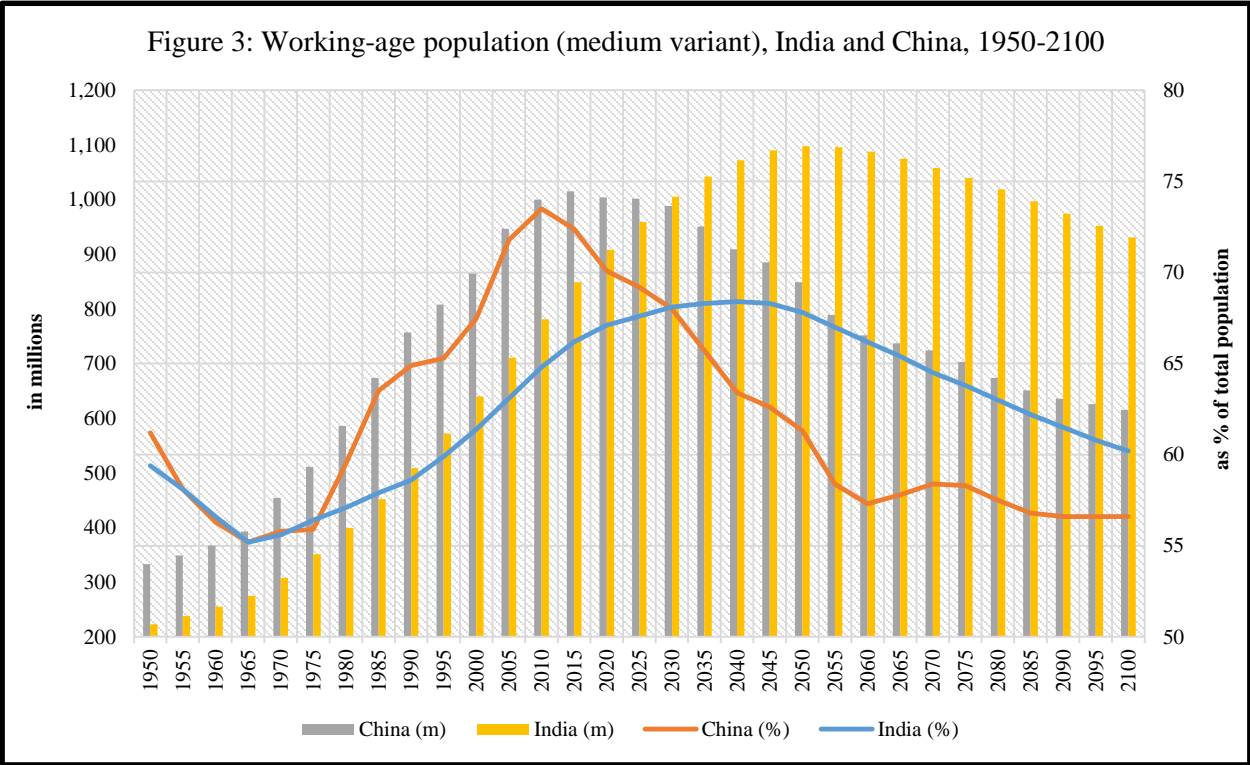
Source: World Development Indicators (WDI), The World Bank.

Figure 2: Dependency ratios (medium variant), India and China, 1950-2100



Source: World Population Prospects – 2012 Revision (WPP 2012), United Nations Population Division, New York.

How does India fare vis-à-vis China – the only country that is comparable to it in terms of population size as well as one of its chief economic competitors– in terms of dependency ratios (figure 2)? Starting out with similar levels, China’s total dependency ratio fell by 43 points between 1975 and 2010 (the corresponding figure for India was 23), which was largely due to a massive decline in its child dependency ratio and a minor increase in its old-age dependency ratio during that period. This was the period of its first demographic dividend. However, 2010 onwards, an equally sharp increase in China’s old-age dependency ratio is projected, which will impose huge welfare costs on it. While a strict implementation of its one-child policy – with simultaneous improvements in health, education and other broader socioeconomic determinants – helped it attain an impressive demographic dividend within a short span of time, this may not necessarily be a good model, considering that old-age dependency ratio is also going to increase at a similarly high pace. On the other hand, India’s decline in child dependency ratio, as well as rise in old-age dependency ratio later on, are gradual, but that would help it keep its total dependency ratio to less than 50 between 2020 and 2055, as far as these projections hold. It is only in 2070 that India’s old-age dependency ratio would overtake its child dependency ratio. Therefore, a gradual decline in child population might not necessarily be problematic, something which policymakers concerned with reproductive and child health (RCH), should take note of.



Source: WPP 2012.

India is poised to overtake China for the first time in 2030 in terms of the working-age population, with its workforce reaching its peak, in terms of numbers, in 2050 (figure 3). China's working-age population will continue to decline much more dramatically in later years, in terms of numbers, if not always in terms of percentage. The size of India's workforce will go up by 249 million between 2015 and 2050 (China's will go down by 166 million during that period). India can also potentially overtake China in terms of economic growth by 2030, *if* policymakers get serious about augmenting its human capital. They have the widest window of opportunity with respect to that segment of the population which is poised to enter the workforce between 2030 and 2050, those in their infancy today and in the next two decades.

Politicians can either engage the country's youth in identity politics or graduate to the politics of development. Much will depend on whether and how India reaps its demographic dividend. Alongside 'Make in India' and 'Think in India', the decision policymakers in India have to think about and make is: do they want to retain the country's reputation as one with abundant supply of cheap labour, or do they want to develop it into a knowledge economy, as a reservoir of highly skilled workforce before ageing sets in and we have to grapple with a very different set of issues?

3. Relevant concepts

3.1. Human capital

The term ‘human capital’ entered the lexicon of economists much after the term ‘physical capital’, and it was only after a long time that the notion of investing in physical infrastructure was applied to human beings as well (Becker 1964; Schultz 1961). Formation of human capital came to be seen as ‘changes in persons that bring about skills and capabilities that make them able to act in new ways’ (Coleman 1988: 100). Likewise, human capital investments came to be seen as the “process of adding to society’s stock of efficiency units of labour, just as investment in machines increases the stock of physical capital” (Krueger 1968: 646-647). Generally, human capital has been defined as ‘resources, qualifications, skills, and knowledge that are available to and acquired by individuals to maximize their own employability’ (Caspi et al. 1998: 427).

The transition of ‘human capital’ to incorporate ‘health’ in its purview took rather too long. While it was generally thought that improving life expectancy could enhance the future value of education by fetching greater returns to it over a longer working life (Kalemli-Ozcan et al. 1998; Bloom, Canning 2003; Becker 2007), focus on intrinsic significance of ‘health as human capital’ remained missing for a long time. Following the recognition of the indispensable role of health in enriching educational and labour market outcomes, the necessity of health-related investments across the life-course, more importantly in the early years, came to be acknowledged (Currie 2008; Bleakley 2010; Conti et al. 2010). In fact, the potential of such early investments, including instilling healthy skills and behaviors, is now being recognized by international organizations, which are proactively advocating the case for incorporating ‘skills-based health education’ in ‘health promoting schools’ (refer to WHO’s ‘Information Series on School Health’, for instance).

It is worth mentioning here that, though the terms *human development* and *human capital* are often used interchangeably, the former considers ‘life expectancy at birth’, ‘mean and expected years of schooling’ and ‘GNI per capita (PPP USD)’ – as in UNDP’s Human Development Index (HDI) – while human capital does not focus directly on the first or the last variable, but could make limited use of the second variable in terms of education, and in terms of health, it focuses on malnutrition and micro-nutrient deficiencies in the early years of life and their impact in later life. Nevertheless, the two notions are complementary inasmuch as they focus on enhancement of human capabilities in various ways, and should be considered in unison for a more holistic policy on the development of human capital, especially in developing countries like India where HDIs tend to be worrisome. If, for instance, children in particular, and individuals in general, are not surviving adequately in the first place (captured by first variable), the human capital project faces fundamental challenges. Children need to survive before their nutrition, health, or subsequent issues, can be of any concern. So, there is a strong case for focusing on both concepts in low HDI countries like India.

3.2. Skills

Although scholars have at times used the terms *skills* and *human capital* interchangeably (for instance, Lepak, Snell 1999; Lochner 2004), the former may be interpreted as a much narrower subset of the latter. In the Indian context particularly, *skill development* implicitly refers to equipping trainees with some form of basic expertise, with the prime objective of enabling them to gain quick employment. This sort of skilling is often remedial, an ultimate resort for school/college dropouts, and even though it may assist individuals in gaining immediate access to the labour market, longer term benefits of such form of skilling are often limited.

Skills have conventionally been categorized into two types: cognitive skills and non-cognitive/soft /character skills. Cognitive skills usually refer to the rate at which people learn (fluid intelligence) and their acquired/crystallized intelligence (Nisbett et al. 2012). While these skills are measured through achievement and IQ tests, a growing chunk of theoretical and empirical evidence has highlighted the dependability of cognitive skills on personality/character traits (for instance, Holmlund, Silva 2009). Even though measurability of non-cognitive/character skills involves complications, recent research has greatly emphasized that returns to interventions that target stimulation of such skills are far greater than those targeted at building/reinforcing cognitive skills (Heckman, Kautz 2013). Non-cognitive skills, as we shall argue in following sections, are increasingly being considered as dominant employability characteristics.

3.3. Employability

Consistent with a focus on soft skills, “the Confederation of British Industry defines employability as (1) values and attitudes compatible with the work, including a desire to learn, to apply that learning, to improve, and to take advantage of change; (2) basic skills (literacy and numeracy); (3) key skills (communication, application of numbers, information technology, improving one’s own learning and performance, working with others, problem solving) sufficient for the needs of the work; (4) other generic skills such as modern language and customer service skills; and (5) job-specific skills and the ability to manage one’s own career” (Heckman, Kautz 2013: 30).

We consider employability critical not just for the unemployed, but also for the currently employed – they also aspire to shift to better jobs, for which they need to be employable, and they could also be laid-off or resign and become unemployed. So, employability, in our usage, also denotes occupational mobility (OM). It also denotes inter-sectoral mobility/employability, in which case cognitive and non-cognitive skills rather than technical and vocational skills become more important, given that latter are more sector-specific. In an increasingly complex and dynamic economy, employability has to be defined in this broad sense. From this perspective, both non-cognitive skills and health play a much greater role than they would if we were to confine our focus to the unemployed only – *re-employability* would in most cases be dependent on performance in previous jobs.

4. Early human capital formation

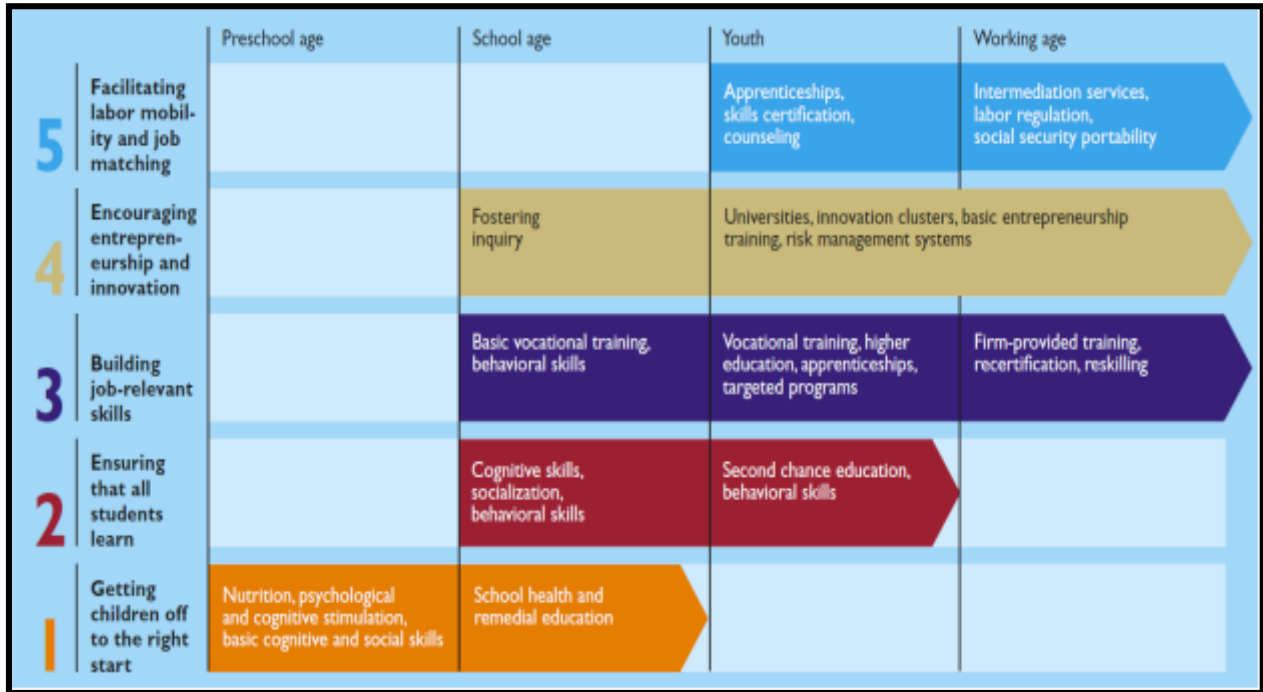
Early childhood development (ECD) refers to the sequential emergence of sensorimotor skills (coordination between stimuli and reflexes), cognitive development (use of language, gestures, symbols) and socioemotional functioning (development of traits and soft skills), and is dependent on a child's nutritional and health status since conception (UNICEF 2006a). The phenomenon in itself is complex as it is conditional on the genetic, biological, social and physical environments in which children are brought up (Ngure et al. 2014). A child's experiences and environments during early childhood are critical for the development of brain and many biological systems (Harvard University 2010). The brain develops rapidly during early years, with its structure and functioning influenced by its early environments – households, communities and institutions – and ECD interventions have to be focused at ameliorating the potentially negative influences of these environments through an engagement of present as well as prospective stakeholders. 'Many children raised in disadvantaged environments start behind and stay behind' (Heckman, Kautz 2013).

The consequences can be devastating not just for individuals, but also for these environments and the economy at large. As far as individuals are concerned, lack of ECD has profound implications not only for children's educational performance, which is widely recognized, but also for later-life employability, professional mobility and productivity, as we have tried to argue here. Several studies in neurobiology, development psychology and economics have established that "the most efficient strategy for strengthening the future workforce, both economically and neurobiologically, and improving its quality of life" is investments in ECD (Knudsen et al. 2006). The recognition of jobs as 'the center piece of a development strategy' (World Bank 2013) not only highlights the critical role that employment can play in poverty reduction and improving the quality of life of households and communities, but also the critical importance of investments in early child development in the first place. This is where the role of institutions – local, national and, to some degree, international – is most fundamental. A knowledge economy is human capital-intensive, and investments in human capital have to begin early on to mature into such an economy. The requirements of the future (knowledge) economy have to be addressed along with the requirements of today's industry and the immediate economy, as India's Skills Policy 2009 and 2015 seem to stress so prominently.

The World Bank's STEP (Skills Toward Employment and Productivity) framework offers relevant guidelines to policymakers, particularly in developing countries, to develop employable skills and enhance the productivity of their labour force, starting with 'getting children off to the right start' (figure 4). Without underplaying context-specific nature of policies, it offers an open-ended blueprint for countries to help understand challenges which they face in addressing their skill gaps. It is a holistic framework engaging interdependent sectors – education, training, labour, social protection, broader economic policy, etc. – for the present as well as future workforces (Banerji et al. 2010). The essence of programs in STEP lies in the timings of their implementation. For a country like India, for instance, where the status of early human capital is nothing less than catastrophic,

as we shall see subsequently, and where effective ECD schemes are yet to be launched, adequate, efficient and equitable spending on steps 1 and 2 would help generate maximum payoffs in narrowing skill deficits in the country. Though universalizing primary education is critical for educating children aged 6-14 years, initiating both cognitive and non-cognitive skill development before the onset of that period (i.e. during the age of 0 to 5 years) is even more critical.

Figure 4: The STEP framework



Source: Banerji et al. 2010, The World Bank.

4.1. Early health

In contrast to education and skills (vocational and technical), there has been much less discussion on the role of health in both academic and policy discourse on human capital. For employers too, health of employees has rarely been of serious concern, despite its impact on worker productivity and firm profitability. This is gradually changing, though. Earlier, one could find several studies on the physical and psychological health impact of employment or unemployment (Graetz 1993; Murphy, Athanasou 1999; Bartley 1994; Jin et al. 1995; Schuring et al. 2011). There is now a growing body of literature, highlighting pathways in the other direction (Butterworth et al. 2012; Wagenaar et al. 2012; Schuring et al. 2013). Companies are also paying more attention to their employees' health – in a firm survey conducted by us in 2007, 82 percent respondents felt that preventive health increases productivity, and more than half offered it to their employees (Chadha et al. 2007). Section 80D of India's Income Tax Act now provides tax exemption of INR 5,000 for preventive checkups. Nonetheless, the role of early health on later-life employability and productivity remains grossly under-focused, although its impact is much more fundamental, and at times

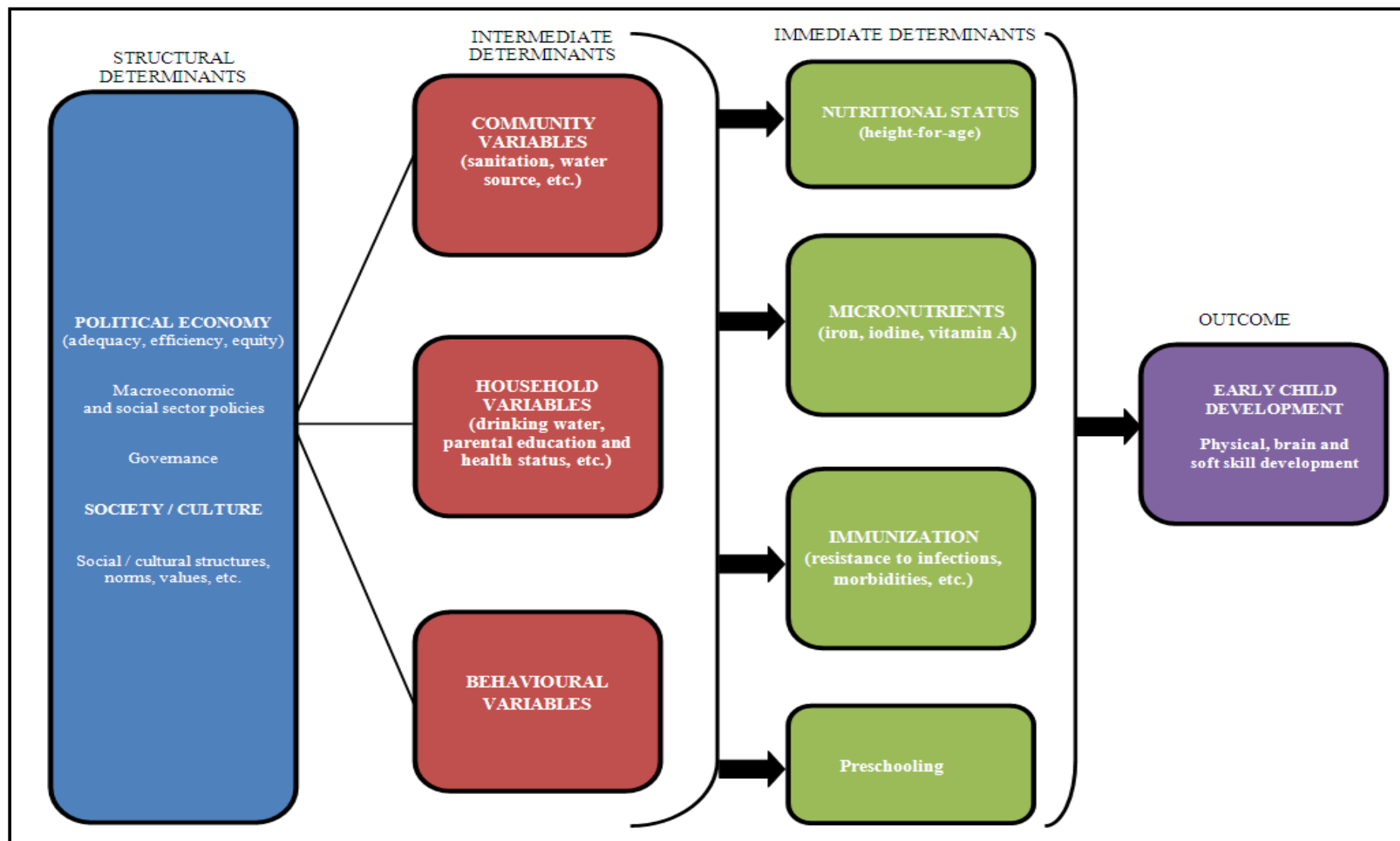
irreversible. *Getting children off to the right start* (figure 4) is based on several simultaneous and sequential interventions in health that are indispensable at that stage itself, and not later.

Child survival could be considered as a summary indicator of child welfare – it also tells us about the condition of survivors. Putting the global realization of MDG4 in jeopardy, India continues to be the world’s largest contributor to all levels of child deaths. With the exception of Pakistan (86) and Afghanistan (97), all its South Asian neighbors are doing better – Sri Lanka (10), Maldives (10), Bhutan (36), Nepal (40), Bangladesh (41), with the former two doing better than even China. This is human capital wasted in its most blatant form, and shows how India is still far away from realizing its demographic potential. The remainder of this section will focus on the pathways of influence of some of the major early health conditions. While the role of socioeconomic characteristics in human capital formation is widely appreciated – children belonging to rich and educated parents have better health and education – the impact of the physical environment in this regard is not, hence some prefatory remarks are called for here to demonstrate the ways in which the latter impacts not just biological and brain development, but subsequently, soft skill and educational attainment as well (figure 5).

While access to clean drinking water is important for preventing water-borne diseases in children, recent research has highlighted the effects of community-level sanitation and hygiene on childhood morbidity and cognitive development. Sanitation is a public good which has important externalities for the community at large. For instance, unsafe disposal of human feces spreads disease either by direct contact or through insect/animal transmission. Poor sanitation is linked to adverse nutritional outcomes by leading to frequent incidence of diarrhea and other gastrointestinal disorders that distort nutrient absorption (Spears et al. 2013). Disorders caused by alarmingly high levels of fecal contamination are known to increase small intestine’s permeability to pathogens, leading to reduced nutrient absorption, stunting and cognitive deficits (Humphrey 2009). It has also been demonstrated that children exposed to poor sanitation conditions are more likely to suffer from lower hemoglobin levels (Coffey 2013). With 64 percent of its population lacking access to improved sanitation facilities, India’s under-five population is confronted with serious risk factors in exploiting its development potential. Thus, although 92 percent of Indian population has access to improved water source, the figure is less enthralling, given extensive prevalence of open defecation in the country (table 1). As such, GOI’s renewed focus on sanitation and cleanliness (*Swachh Bharat Abhiyan*) is a step in the right direction, given the impact that they have on human capital formation at the early stages.

A fundamental indicator of physical growth of young children is their height. Children whose height-for-age Z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age and referred to as ‘stunted’. Malnutrition, a

Figure 5: Determinants of early child and soft skill development



Source: Authors.

shortfall in amount of food energy consumed on a regular basis, is an underlying cause of severe and recurrent infections, particularly among disadvantaged groups (WDI). Stunting is chronic malnourishment and exhibits the inability of the body to receive adequate nutrition over a long period of time. Height-for-age, therefore, represents long-term effects of malnutrition in a population, and does not vary according to recent dietary intake (NFHS-3 2007, 2007). With 48 percent of its 0-5 year children chronically malnourished, India only does better than Afghanistan in South Asia (table 1). More than 200 million U5 children cannot realize their cognitive potential due to poverty, poor health and nutrition, which affects educational outcomes (Grantham-McGregor et al. 2007).

Iron and iodine deficiencies are leading micro-nutrient challenges being faced by low- and middle-income countries. Iron deficiency develops into an acute condition commonly referred to as anemia. It is characterized by low levels of hemoglobin in the blood, which acts as a carrier of oxygen from lungs to other organs of the body. Anemia in young children is a serious concern because it can result in impaired motor, behavioural and language development, poor cognitive performance and scholastic achievement and increased morbidity from infectious diseases (NFHS-3 2007). As high as 59 percent of Indian children are anemic in their early years, and in comparison with others, India again fares badly (table 1). Similar to early development challenges posed by anemia, iodine deficiency is the single most important and preventable cause of mental retardation worldwide. It is commonly prevalent in areas where the soil is depleted of iodine. Iodine deficiency precludes the ability of children to learn and reach their development potential (NFHS-3 2007). While iodized salt is the richest and most commonly available source of iodine, 29 percent of Indian households were reportedly consuming inadequately iodized salt (table 1).

Indian children are also at risk of succumbing to ill-effects associated with vitamin A deficiency and inadequate immunization. Vitamin A deficiency, a leading risk factor for blindness in children, is said to be prevalent in societies where fruits and vegetables are chief sources of vitamin A and their daily consumption is often insufficient to meet dietary requirements. Vitamin A is essential for immune system functioning, and insufficient consumption may lead to a range of childhood ailments such as measles, malaria and diarrhea (WDI). As per table 1, vitamin A supplementation rate has remained modest in India (59 percent).⁴ Immunization is widely considered to generate vaccine-mediated protection, mainly by activating the immune system (Siegrist 2008). A child is considered adequately immunized against diphtheria, pertussis or whooping cough and tetanus (DPT) after receiving three doses of vaccines (WDI). While DPT is a component of basic public health package, its reach is far from universal in the Indian context (72 percent), with potentially threatening implications for child survival and immunity.

⁴ It needs to be noted that, based on several experiments in Asia and Africa, the effects of Vitamin A supplementation have proved to be doubtful and two of its earlier proponents themselves argued that “we must now focus on alternative strategies to improve the nutritional status of populations at risk of deficiency in vitamin A and other micronutrients” (Haider, Bhutta 2014). Evidence regarding the non-specific effects of vaccines and other childhood interventions also exists (Sankoh et al. 2014; Iannotti et al. 2006; Gupta, Indrayan 2002; Ramakrishnan et al. 1995), which is why it is important to focus on conditions rather than interventions.

Table 1: Early health indicators in India vis-à-vis its South Asian neighbors and 3 global manufacturing giants, 2003-13

Indicators	Year	India	Afghanistan	Pakistan	Maldives	Nepal	Bhutan	Bangladesh	Sri Lanka	China	South Korea	Germany
Children (0-14 years) with HIV	2013	140,000	500	1,600	..	1,900	..	500
Chronic malnutrition (% of children under 5 years)	2003-11	48 (2006)	59 (2004)	43 (2011)	20 (2009)	41 (2011)	34 (2010)	41 (2011)	19 (2009)	9 (2010)	3 (2003)	1 (2005)
Anemia (% of children under 5 years)	2011	59	44	61	30	51	55	56	36	19	15	14
Household consuming iodized salt (%)	2011	71 (2009)	20	69	44 (2001)	80	96 (2002)	82	92 (2007)	97
Vitamin A supplementation (% of children ages 6-59 months)	2012	59	100 (2011)	99	52 (2009)	95	43	99	90
Immunization, DPT (% of children ages 12-23 months)	2013	72	71	72	99	92	97	97	99	99	99	96
Improved water source (% of population with access)	2012	93	64	91	99	88	98	85	94	92	98	100
Improved sanitation facilities (% of population with access)	2012	36	29	48	99	37	47	57	92	65	100	100
Health expenditure, public (% of total health expenditure)	2012	33	21	31	45	39	84	34	40	56	54	76
Out-of-pocket health expenditure (% of total health expenditure)	2012	58	74	62	48	49	15	63	50	34	36	12

Source: WDI.

Table 2: Importance level by three factor skills

Core Employability	Mean	Professional Skills	Mean	Communication Skills	Mean
Integrity	4.48	Use of modern tools	4.08	Communication in English	4.26
Reliability	4.42	Apply Math / Sci / Engg know.	4.07	Written Communication	4.07
Teamwork	4.41	Creativity	4.07	Reading	4.04
Willingness to learn	4.40	Problem solving	3.93	Technical skills	4.02
Entrepreneurship	4.35	System design to needs	3.84	Experiment / data analysis	4.01
Self-discipline	4.26	Contemporary issues	3.83	Verbal communication	4.00
Self-motivated	4.22	Customer service	3.51	Basic computer	3.95
Flexibility	4.15			Advanced computer	3.71
Understand / take directions	4.14				
Empathy	3.92				
<i>Average</i>	4.27	<i>Average</i>	3.91	<i>Average</i>	4.01

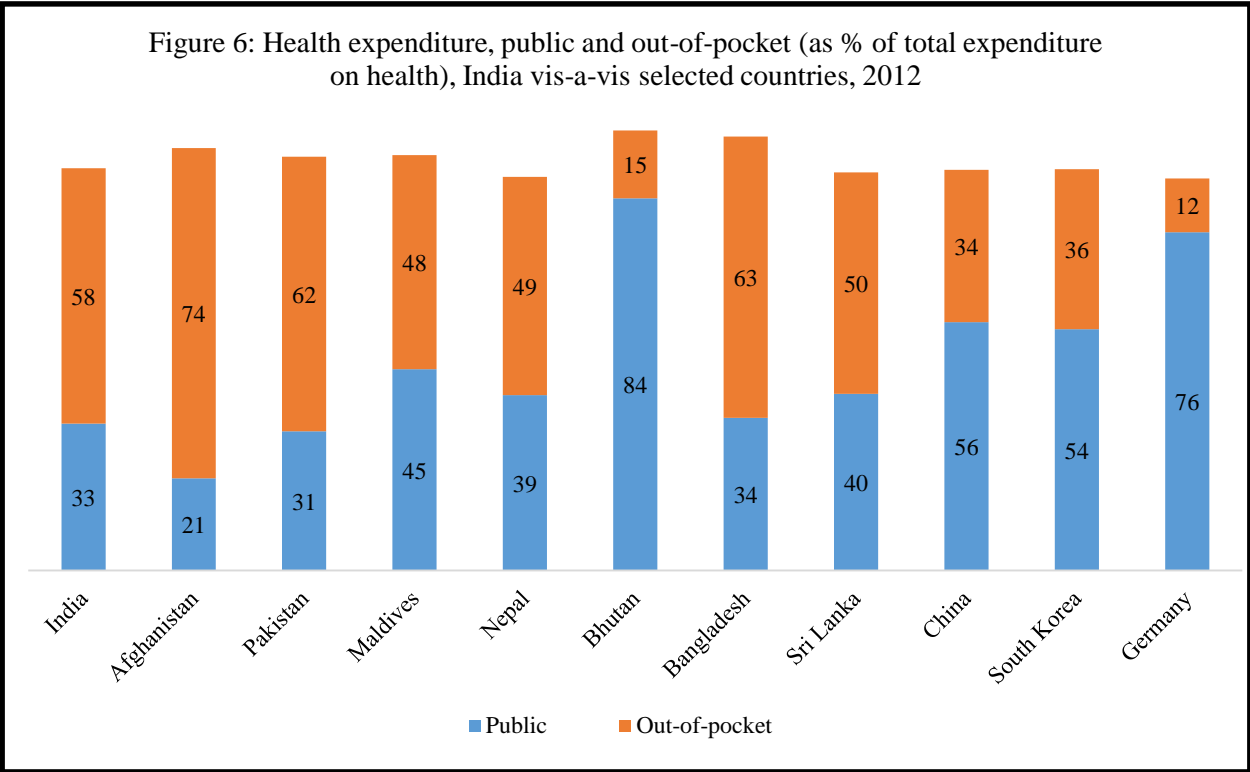
Source: Blom and Saeki 2011: 14.

Table 3: Measures of non-cognitive outcomes included in PISA 2015 field trial

Area	Non-Cognitive Skills	Relevance
Self	Self-concept Self-efficacy Dealing with uncertainty and ambiguity	Academic self-efficacy (perceived control of success in school) Test Anxiety Well-being: <i>Life satisfaction</i> , well-being at school (sense of belonging)
Interest, attitudes, and motivation	Interest in school subjects Interest in broad topics Enjoyment of science Instrumental Motivation	Attitudes towards school: learning activities & outcomes Achievement motivation
Beliefs and preferences	Value of science: general, personal, labour market-related Occupational prestige Valuing scientific approaches to enquiry Epistemological beliefs Environmental Awareness / Optimism	Openness Perseverance Industriousness Planning & Organization Procrastination
Technology –ICT	Perceived competence Technology commitment Technology-related beliefs (benefits & harms)	Interest in ICT Perceived competence Autonomy in using ICT ICT in social interaction
Behavior	Frequency of use of technical devices	Health School drop-out*

Source: PISA Draft Questionnaire Framework 2015: 16.

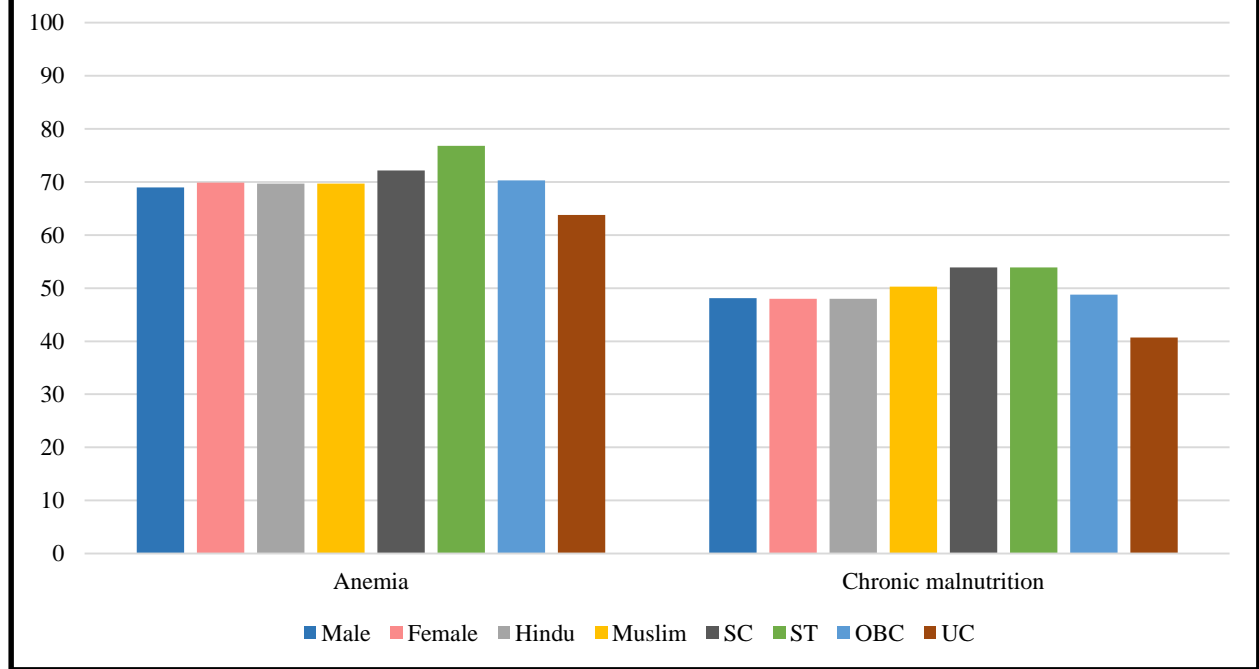
Children afflicted with HIV are more frequently exposed to common childhood infections that may cause nutritional deficiencies, and hence encumber their development potential (WDI). HIV prevalence among children below 14 years may be low in India in absolute terms – 140,000 (table 1) – but it has the third-highest number of HIV-infected people in the world (2.1 million), despite abysmally low HIV detection rates due to surveillance bottlenecks and stigma associated with it. There has been a proactive public/private campaign to address HIV/AIDS among various sections of the adult population, but not as much targeted towards children. The low numbers in this context must be seen as the tip of the iceberg and along with strengthening statistical systems that capture prevalence better, interventions focused on children have to be intensified, given their debilitating impact on their overall health and development prospects. It is not simply through its impact on health that HIV affects employability – it is one of the rare health conditions which stigmatizes the victim and directly affects his/her employability prospects.



Note: Totals do not add up to 100 percent since there are other components of total expenditure on health, and here we have only showed their ‘public’ and ‘OOP’ components.

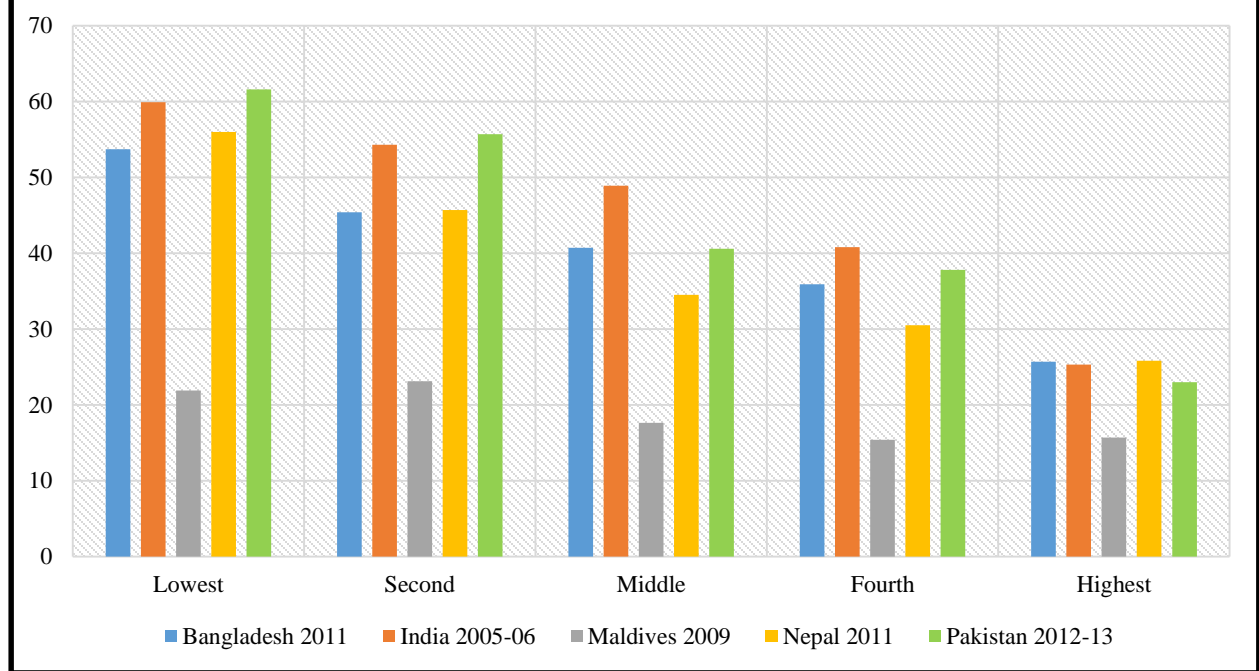
Source: WDI.

Figure 7: Percentage anemia (6-59 months) and chronic malnutrition (below 5 years) among children in India by gender, religion and caste, 2005-06



Source: NFHS-3.

Figure 8: Percentage chronic malnutrition by wealth quintiles, South Asian countries, most recent DHS survey



Source: Demographic and Health Surveys (DHS), ICF International.

4.1.1. Access to healthcare

Healthcare provision in India has not just been grossly inadequate, access to whatever is available has been thoroughly inefficient and inequitable (Mahal et al. 2002; Paul et al. 2006; Nayar 2007; Baru et al. 2010). Figure 6 shows that the out-of-pocket (OOP) health expenditure in India is comparable to its regional counterparts, but way higher than the more developed (China, South Korea and Germany). The onus of public sector in healthcare is more pronounced in developed countries (Musgrove 1996). By reducing the burden of OOP expenditure on households that cannot afford it, public health systems not only enable them to access healthcare, but also prevent impoverishment, which reduces their capacity or disables them from investing in the human capital of their children, leading to inequalities in early development that in turn persist and permeate other spheres of life in subsequent years. Experience of developed countries such as Germany, South Korea and Japan shows that universal/near-universal public finance of healthcare is strongly related to relative equity in access to healthcare and health outcomes (Duggal 2007), which is particularly critical for providing citizens as equal a start as is possible and a level-playing field in the context of future educational and professional pursuits.

At the same time, without undermining the importance of public health spending, it has also been argued that higher public health spending is not necessarily linked with improved health outcomes (Filmer, Pritchett 1997). Even though the Indian government has consistently increased expenditure on social services over the past few years – without compromising on welfare expenditures even during times of global economic shocks (Ministry of Finance, GOI) – much less has been done to ensure efficiency and equity of such expenditures. Nevertheless, while expanding access to public services may help parties gain political mileage, quality and effectiveness are seldom measured, and are much less noticed (Paul et al. 2006). The public inefficiency dimension has been widely highlighted, but discussions on the inequity aspect of public services are not that prominent. Inequities in healthcare provision and access are evident in a number of child health conditions. For instance, while anemia and chronic malnutrition are high at the aggregate level, disadvantaged groups fare worse (figures 7 and 8). Maldives in India’s vicinity needs special mention here, given its relatively equitable standing. In all other cases, there is a clear-cut wealth gradient in nutrition.

4.2. Early education

There is a fair amount of consensus that universalization of primary education, and wide access to secondary and tertiary education, was one of the principal drivers of East Asia’s economic growth. For instance, according to World Bank’s *The East Asian Miracle* report (1993), “primary education is by far the largest single contributor to the HPAEs⁵ predicted growth rates [during 1960-1985]. ... Physical investment comes second ... followed by secondary school enrollment” (World

⁵ HPAE: High Performing Asian Economies.

Bank 1993): 52). Figure 9 below shows that primary enrollment has remained consistently high in China, South Korea and Japan, while India has made dramatic progress since the late 1990s,⁶ with female gross primary enrollment going up considerably to surpass male enrollment in 2011, thanks to the universalization of elementary education drive for 6-14 year old children under SSA. Nevertheless, even in terms of numbers, India has a long journey ahead – 11.9 million children (aged 6 to 13), the highest in the world, are still out-of-school (UNESCO, UNICEF 2014). High enrollment does not always mean children are in attendance, leave alone learning – children are usually quite irregular in public schools and at times do not show up for even a year, but are still enrolled (Kang 2014).

While recent primary enrollment rates are encouraging, basic literacy – the ability to read and write – in the overall population has progressed modestly, with persistent gender differentials (figure 10). From the perspective of ‘functional literacy’, the situation is much more pathetic – only 38 percent of census literates can read a grade 2 level text – 45 percent males and 26 percent females (Kothari, Bandyopadhyay 2010). In Japan and South Korea, gender variations at the primary and secondary levels have been negligible, and this is another feature of their growth experience that needs to be taken note of. Growth in East Asia was rapid as well as quite equitable (World Bank 1993). While India has had one of the longest running affirmative action programs in the world – with a special focus on education – we still find major differentials by caste and religion as well (figure 11). What needs to be realized is that most inequities are inefficient too, and unless disaggregated *outcomes* are systematically addressed, the aggregate picture will continue to be embarrassing. Several inefficiencies are also inequitable, given that better-off sections benefit more from public services and suffer less due to their absence or inefficiency in countries like India.

Given the state of enrollment at various levels until a decade back, the educational status of India’s current labour force in figure 12 isn’t very surprising – 40 percent of them do not even have primary education, while it has one of the lowest percentages of labour force with tertiary education – only 10 percent vis-à-vis 17 percent in Brazil, South Africa and Thailand, 25 percent in Malaysia, 28 percent in Germany, going up to 37 percent in United Kingdom and 40 percent in Ireland (2011: WDI). With the state of functional literacy and professional skills, one can well imagine the employability and productivity levels of the labour force in India. One interesting finding here is that the percentage of primary educated labour force is similar in India and Germany, and it is at the secondary and tertiary levels that differentials build up, highlighting the importance of progression to these levels – tackling progressive dropout rates is the key. Since we are not concerned with the educational status of existing labour force in this paper, we are not going to discuss it further. One important paper highlighting the role of local power relations in curbing the educational mobility of the labour force is (Tendler 2002).

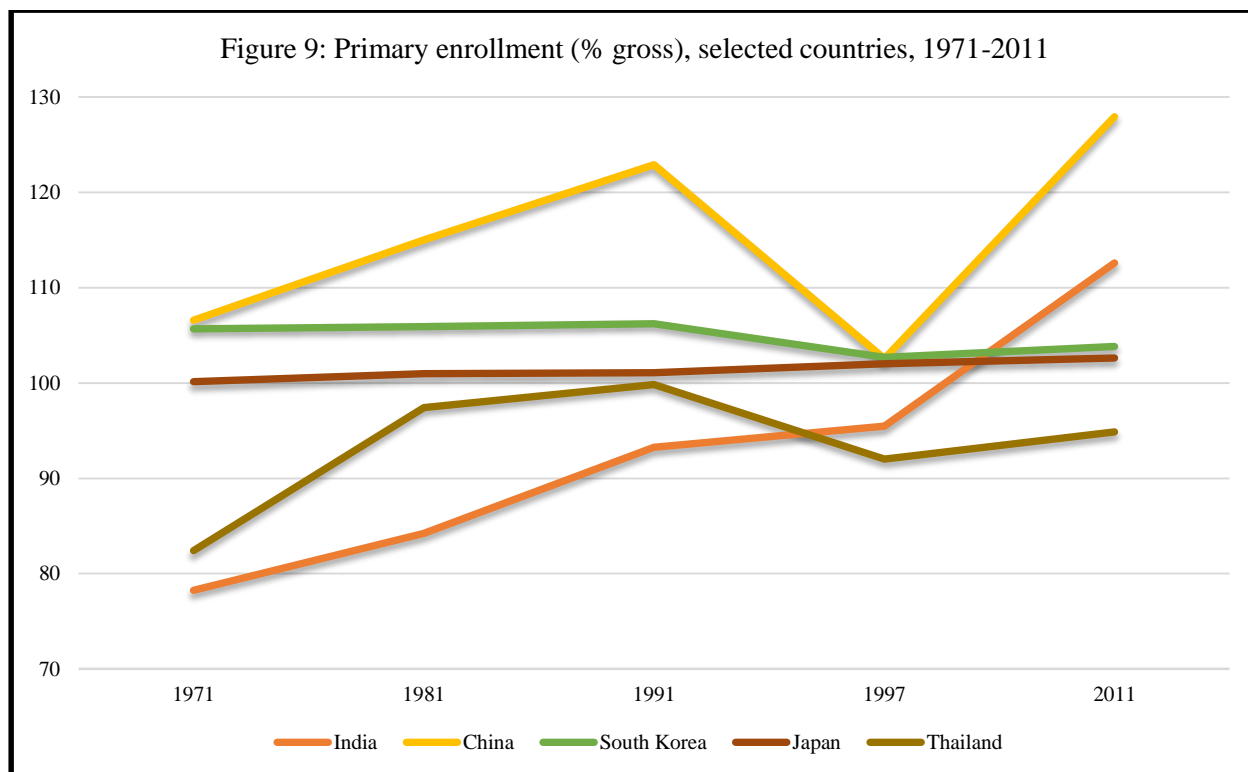
⁶ Gross enrollment refers to total enrollment, and includes even those who are outside the official reference population age group. This is why developed countries, which have had near-universal enrollment over a long period of time, stabilize around 100 percent, while rapidly developing countries on an enrollment drive, but with a huge backlog, depict huge spikes, as in China and India.

In India, the understandable eagerness for rapid growth and development after independence led the first Prime Minister, Jawaharlal Nehru, to focus on building centers of technical and scientific excellence. However, while we do have a number of such centers now, whose students are highly coveted in India and abroad, an inadvertent consequence of this focus has been a relative neglect of primary education, a trend which has more or less persisted till this day. Figure 13 below shows how expenditures at the primary level in particular have been so miniscule vis-à-vis tertiary level. While there has been an increase at all levels in the case of other countries – with the exception of Thailand at the tertiary level – expenditure per student in India (as percent of GDP per capita) has gone down in each case in the last decade. The fallout of this has been higher private enrollment, which also casts a shadow on the high primary enrollment rates. In 2003 (the most recent year for which relevant data is available for India), private enrollment at primary level stood at 17 percent in India – for US, it was 10.8 percent; China 3.6 (2006), Germany 2.7, South Korea 1.3, Japan 0.9. For South Korea, private primary enrollment has remained between 1.1 and 1.8 percent since 1971, while in the US, it started out with 19.2 percent in 1971 and came down to 8.4 percent in 2012. In China and Germany, it rose to 5.7 and 4.5 respectively in 2012 (UNESCO Institute for Statistics).

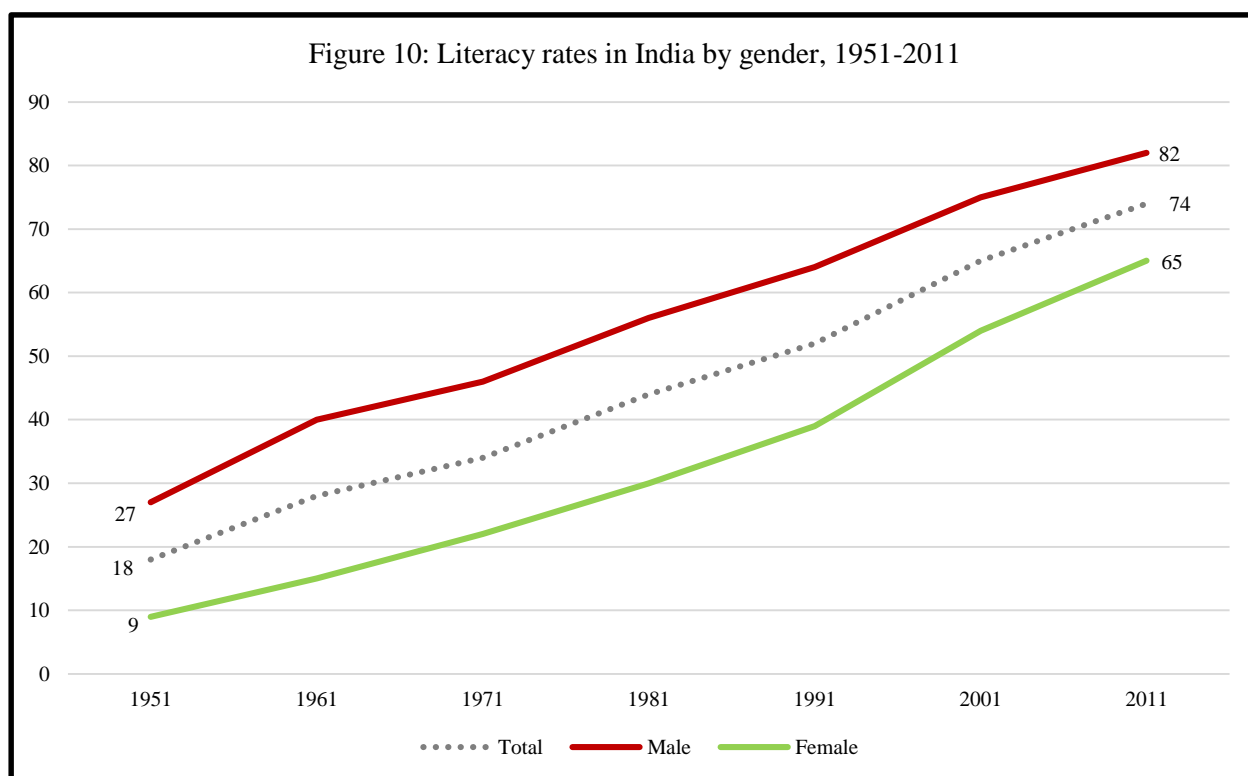
This is particularly worrisome at primary level, given its foundational significance in comparison to other levels of education and the worse shape in which it is at the moment. What has happened, in effect, is mushrooming of top-class schools in India, catering to Indian and international students who can afford them, with those who cannot going to either low-quality private or the usual public schools. This is not only raising educational inequality, but overall inequality of opportunity at the most basic levels. Same is the case with healthcare. So, what we should be expecting in the years to come is an intensification of deep-rooted inequalities in human capital – with a particular section of highly-skilled population being in high demand in developed countries, and the other struggling to find a decent job within the country or experiencing distress migration to regions like the Gulf.

A related issue is the teacher-pupil ratio, reflecting the quality of education, remaining high (figure 14). Population cannot be an excuse if we compare ourselves with China here. We need to look at the example of South Korea once again, given its dramatic improvements on this aspect over time. Not only would we have to effectively deal with teacher absenteeism, but also raise the number of teachers, especially at the primary level. For this to translate into improved learning outcomes, the local dynamics of caste and religion⁷ – which probably threaten primary education and healthcare in India much more than allocations or any other factor – would have to be sternly dealt with.

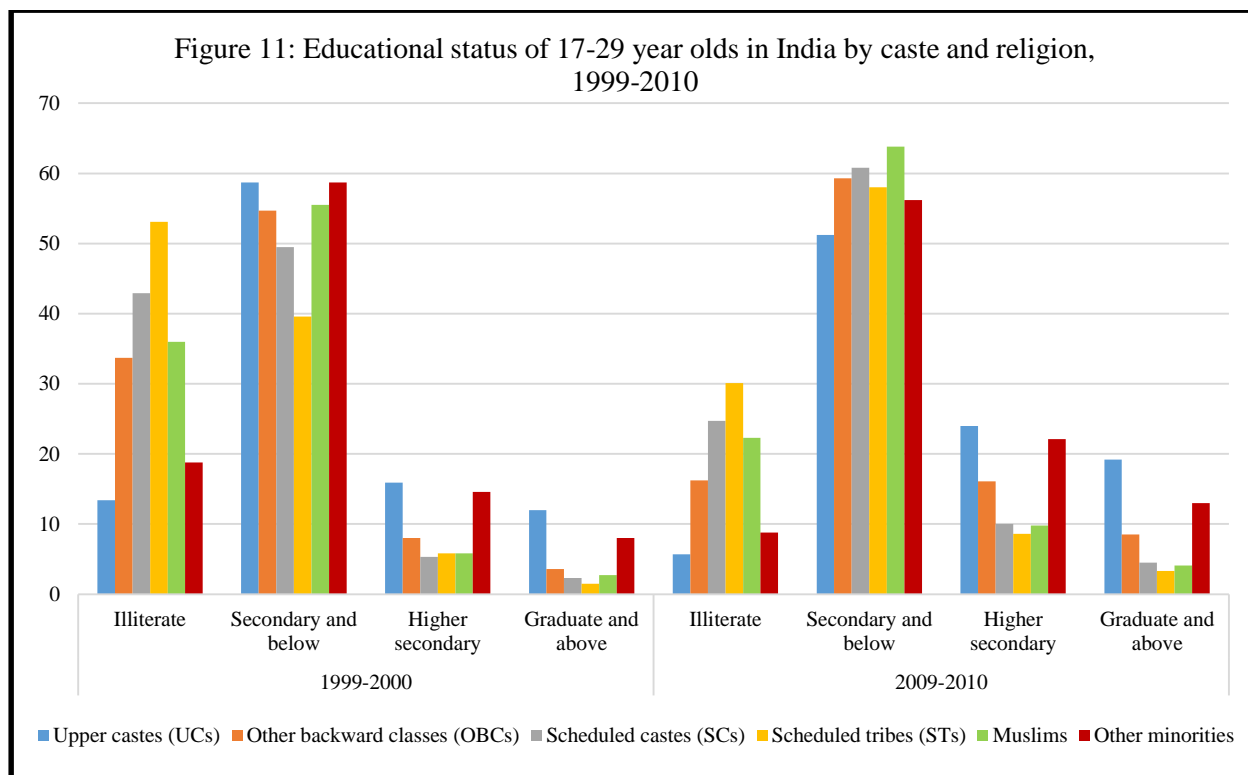
⁷ For structural and specific forms of discrimination in schools, one could refer to, among others, PROBE 1998; Kaur, Pattanaik 2000; Sudha 2000; World Bank 2002; Jefferey et al. 2005; Srivastava 2006; UNICEF 2006b; Drèze, Gazdar 1997.



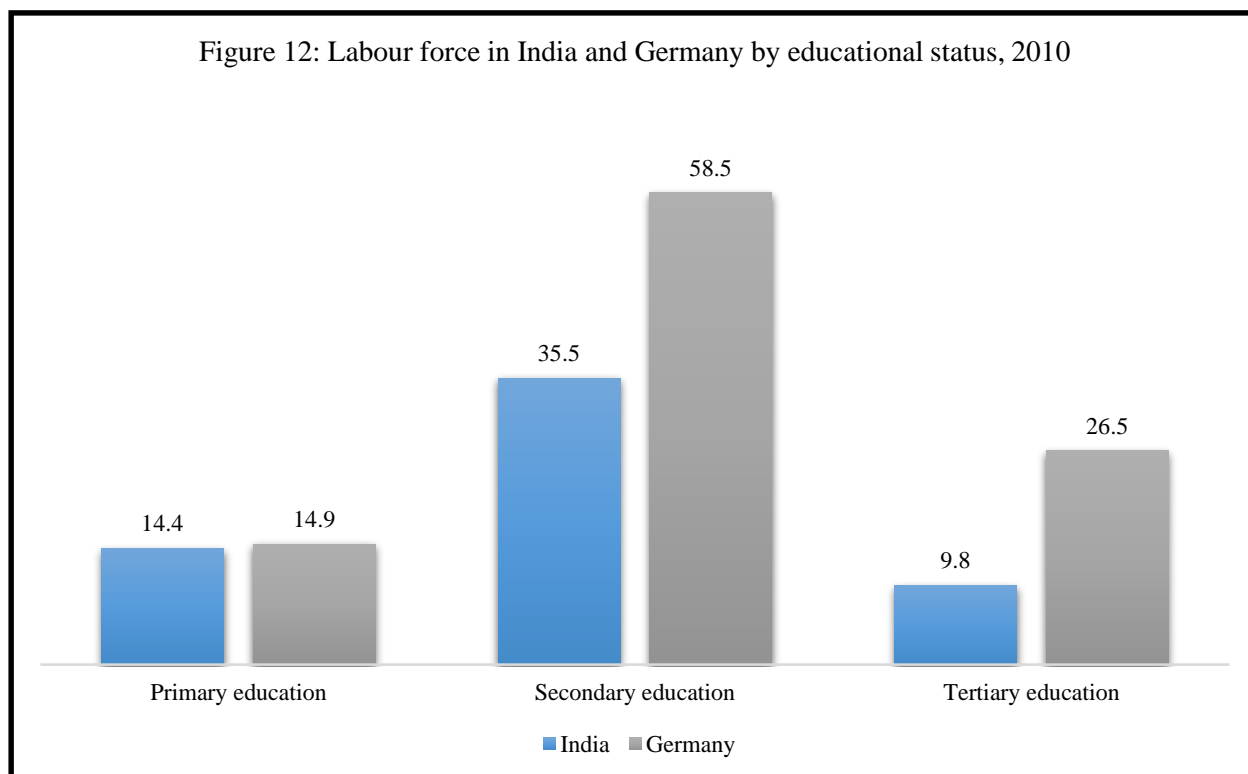
Source: WDI.



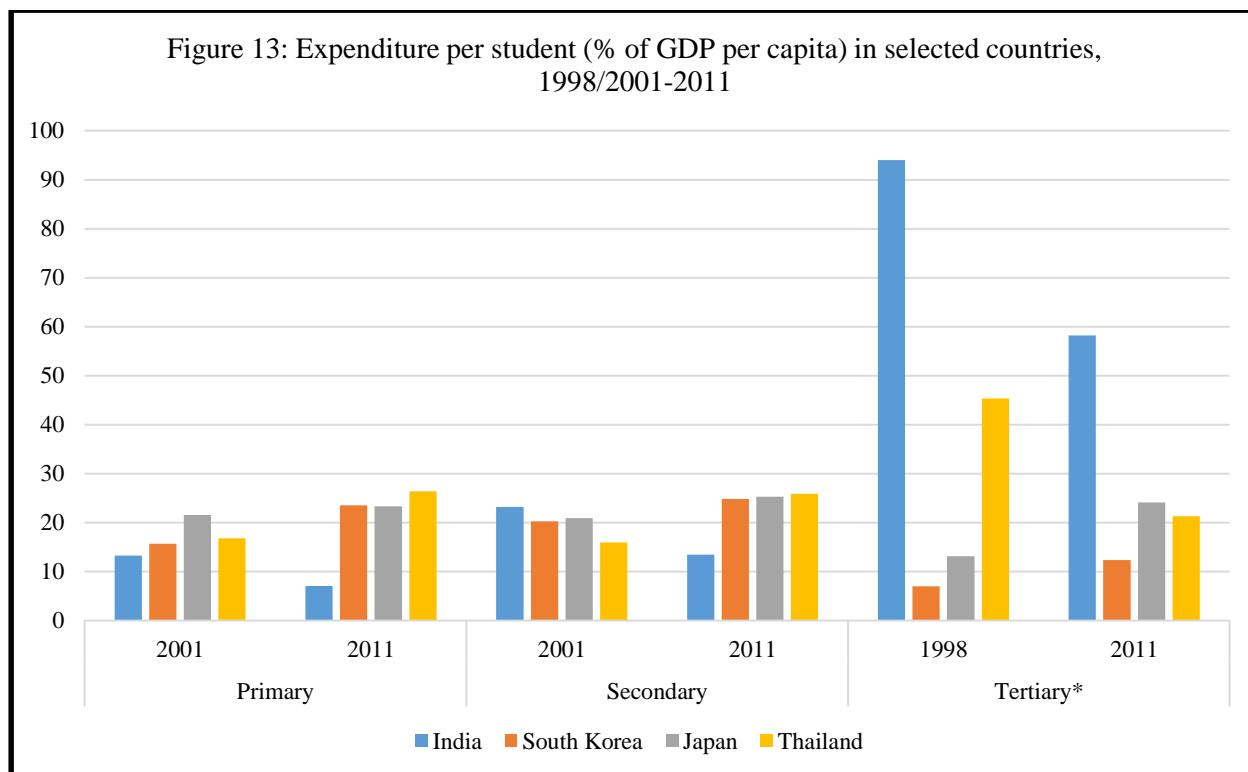
Source: National Commission on Population, Ministry of Health and Family Welfare (MOHFW), Government of India.



Source: Basant 2012.

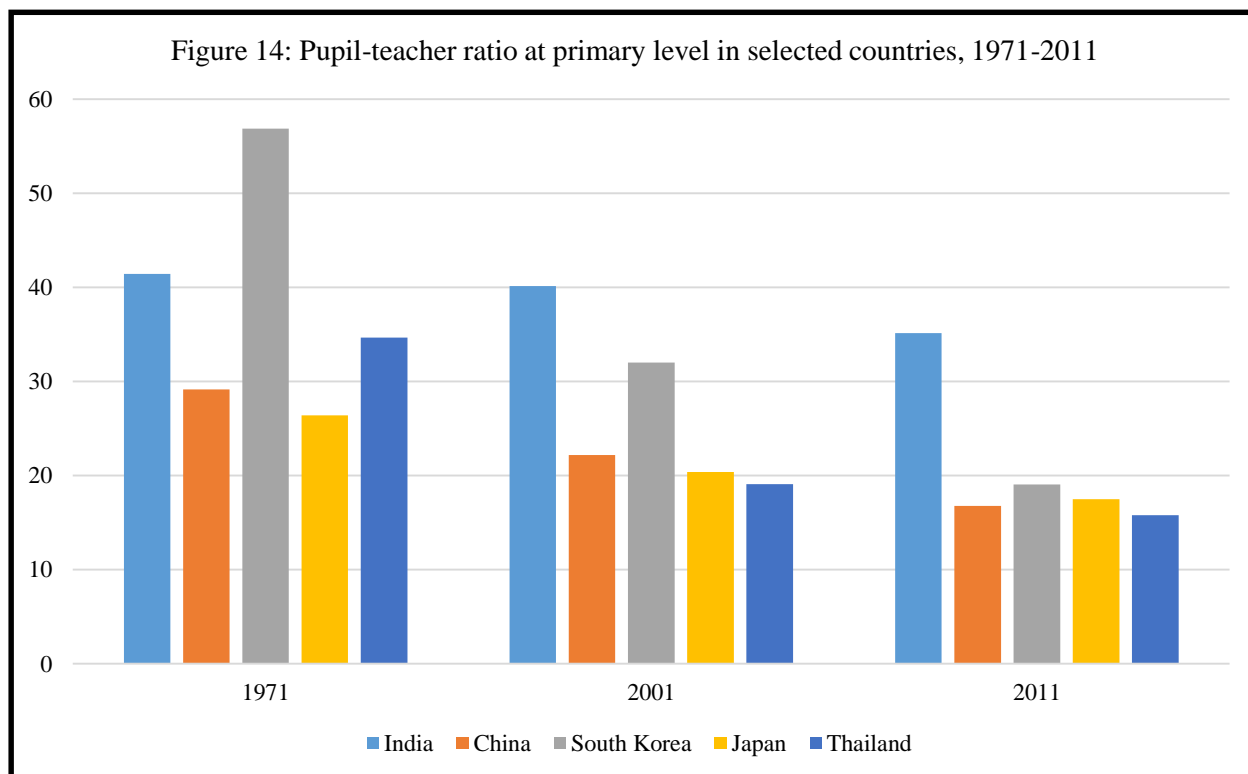


Source: WDI.



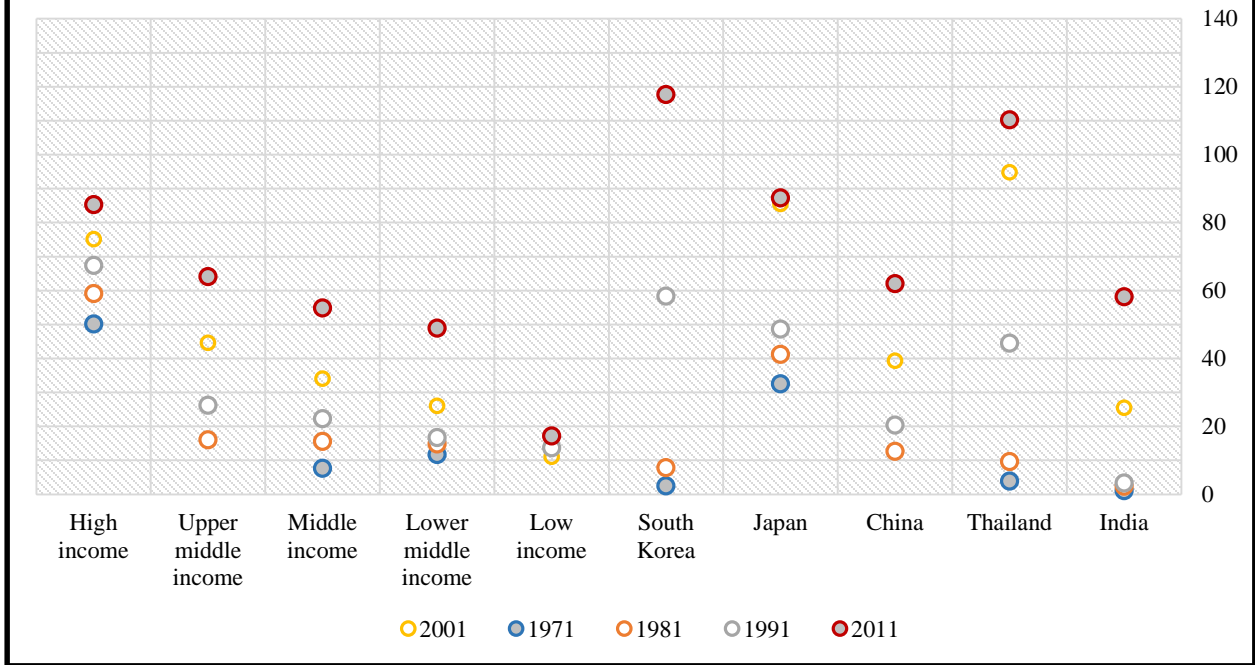
* For India, the data is available for the year 2000 and not 1998.

Source: WDI.



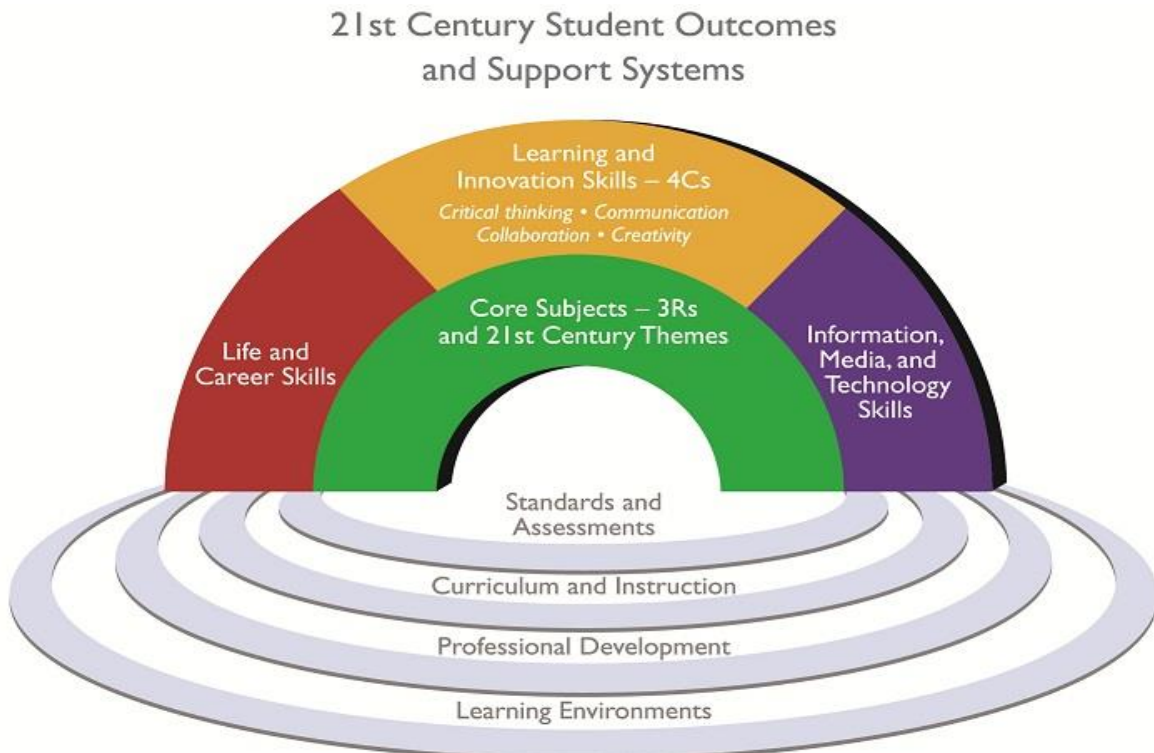
Source: WDI.

Figure 15: Preprimary enrollment (% gross) for selected income groups and countries, 1971-2011



Source: WDI.

Figure 16: Twenty-first century skill development framework



Partnership for 21st Century Skills: Framework for 21st Century Learning

4.3. Soft skills and preprimary education

Overall cognitive development (for e.g. IQ) and achievement test scores have long been considered as measures of educational quality and success, and their amenability to quantification has added to the preference accorded to them (Rosales et al. 2009). Preprimary schools and families, however, share the onus of inculcating another set of employability skills, which have been variably referred to as non-cognitive / soft / generic / life skills. While these skills are difficult to measure, they play a significant role in determining formal schooling / cognitive and later labour market success. This is not just supported by psycho-educational research that stresses the importance of early childhood interventions like fostering emotional security and motivation in children – traits which trigger child exploration in early years of life (Heckman 2003) – but also by emerging empirical evidence based on employer surveys.

The first of its kind, a joint MHRD-FICCI-World Bank⁸ employer survey (n=157) was conducted in India in 2009, in which respondents from 20 sectors were asked to rate the importance of 26 skills for an engineering graduate to be an effective employee. Along with English communication, ‘core employability’ or soft skills emerged as significantly higher in importance than professional skills. Soft skills enhance employability directly as well as via their indirect impact on professional trainability (Blom, Saeki 2011). The Chinese education system has been criticized for promoting memorization and conformity at the cost of creativity and analytical rigor, as a result of which, as multinational employers in China complain, while it is easy to find employees for junior positions, it is difficult to get good managers (Waldmeir 2014). In Peru, ‘the lack of a core set of generic (cognitive and socio-emotional)’ skills is considered as the biggest constraint in ‘the labor market insertion of workers, especially from lower-income families’. Employers from other middle income countries as well as in OECD have reflected similar concerns (World Bank 2011): 8, 28). Heckman, Kautz 2013) have mentioned a number of employer surveys and reports that emphasize the role of soft skills.

General 21st or 22nd century skills (figure 16) are important because: 1) we have to give individuals the choice of profession(s) when they are able to make those decisions, 2) we do not know what skills would be required by the time they enter the workforce. ‘Both firms and workers may lack the information needed to identify skill gaps’. As such, given structural changes in the economy, “success depends on whether the generic skills needed to learn and adapt to different tasks and problem-solving environments have been acquired. These general skills are especially important in more dynamic economic environments” (World Bank 2013). The foundation for personality-oriented soft skills has to be laid very early on and also need to be developed over a longer timeframe – and hence the need to be focused upon since early childhood. Preschooling years are regarded as best time for inculcating many of these skills through very simple activities like finger painting, playing with blocks, sharing and interacting with peers, which help children learn control

⁸ MHRD = Ministry of Human Resource Development; FICCI = Federation of Indian Chambers of Commerce and Industry.

their impulses, keep anger in check, stay determined on their tasks, listen, develop curiosity, etc. (Rallo 2013). Soft skills are regarded more important when it comes to entrepreneurial success as well (Ellsberg 2012).

Philosophers like Bertrand Russell and John Dewey highlighted the importance of early education for later learning and development. Russell made a distinction between *education of character* and *education in knowledge*, and argued that one's character is influenced by early education to a much greater extent than thought by most educationists. He believed that 'education of character' instills several traits in a pupil who is to gain 'education in knowledge' (or 'instruction in strict sense') in formal education institutions (Russell 2010). Dewey, too, emphasized the need for connecting with 'natural interests and activities of young children' to enable them give direction in learning (Dewey 1956). Significantly, he also viewed children as 'co-constructors of their learning', as active agents and participants in shaping their learning environments and skills (Cutter-Mackenzie et al. 2014).

Given rising recognition of the importance of soft skills, PISA (Program for International Student Assessment) has decided to include non-cognitive skills as part of its triennial survey that aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. The *Draft Questionnaire Framework* of PISA 2015 (PISA in Focus 2014) brings forth the cognizance of OECD nations to gauge skills like 'commitment to work, sharing values and beliefs, respecting and understanding others, being motivated to learn and to collaborate, and being able to regulate one's learning behaviour' (table 3). These skills are perceived as important predictors and precursors of cognitive learning and labour market success, and therefore considered as crucial determinants of societal and individual well-being (Almlund et al. 2011; Heckman et al. 2006).

While the role of primary education in the success of East Asian economies in particular, and that of advanced economies in general, is widely recognized, we tend to ignore the rise in preprimary enrollment in these vis-à-vis other countries over the decades. Figure 15 shows how enrollment at this level is clearly graded by income status. As far as individual countries are concerned, although India, Thailand and South Korea started out at similar levels in 1971, preprimary enrollment rose dramatically from early 1980s in the latter two, with India being two decades behind South Korea, despite major improvements during the last two decades. However, one positive thing to note about India's case is that, while the lower middle income group, to which India presently belongs, started out with a much better enrollment rate, India is now doing better than not only that, but also vis-à-vis the middle income group. We also need to note that it is not just developed countries that do well on preschool enrollment – developing countries like Ecuador (140) and Thailand (110) appeared among the top ten in 2011 – with Ecuador, in fact, ranking at the very top. Surprisingly, China ranks very low on this, doing only slightly better than India, which, in turn, only does better than Afghanistan, Bhutan and Bangladesh in its vicinity – Sri Lanka, Pakistan, Maldives and Nepal fare better than China.

China's low priority to preprimary education could be one of the main reasons for its employability predicament referred to above. It has overtaken US to become the manufacturing powerhouse of the world, but given that the future lies in graduating to a knowledge-based economy, it will have to effect major changes in its education system to keep pace. There are numerous lessons to be learnt from China's experience – many of them positive – but as far as its education system is concerned, it also involves knowing what to avoid as India aspires to reap its demographic dividend. We have to be cautious not to let our manufacturing fetish, embodied in the 'Make in India' and 'Skill India' campaigns, make our education system become oriented towards technical skills required in manufacturing. The mantra for early education in particular is to keep it focused on generic, soft skills which can enable the future workforce to not only keep pace with structural transformations in the economy, but also be active participants in its design and direction.

5. Conclusions

Employability and inequality – largely economic, but increasingly in terms of health and education as well – are two of the biggest challenges facing India at the moment. The country’s inadequate, inefficient and inequitable health and education systems, particularly at the early levels, are largely responsible for both these challenges. This is the most important conclusion of this paper.

The Government of India is doing a lot in terms of skilling the existing workforce and those who would enter it by 2022. However, without undermining the significance of these efforts, there are a number of limitations in the existing approach that this study points to:

1. The focus is on skilling – and that too, in a narrow technical/vocational sense, not even on soft skills – rather than on human capital formation, let alone during the highly critical initial stages, with almost no focus on health in this context.
2. There is a continued dichotomy between educational and skill institutes, with negligible mainstreaming of skill development, in its broadest sense, in educational institutes.
3. There is no action plan for preparing the workforce for the knowledge economy, with the entire focus being on the requirements of present-day industry and specific sectors. This has not only led to a limited time-horizon in skilling efforts, but also sector-specificity, that too focused on low-/semi-skilled manufacturing jobs.

A dynamic economy cannot sustain time-/sector-specific skills for long, and with rapidly changing contexts and demands of the economy, what we need to emphasize is the development of flexible skills which can help individuals shift between sectors and contexts (especially, when they migrate out of the country – both Skills policies also talk of filling the skills gaps in other countries, which is also one of their weaknesses, given bleak situation within the country). From this perspective, the concept of employability as occupational mobility, as we have used it here, holds special significance. It might be difficult to adopt this approach with regard to the existing workforce or those who are poised to enter it in the immediate future, but we do have a wide window of opportunity vis-à-vis those who are still a decade or more away from it. Policymakers talk of making India a knowledge economy, but that would not happen until we start preparing the workforce for it today onwards, and focus particularly on the 0-5 year age group of the present and the future, an age which holds the highest promise for development of both cognitive and non-cognitive skills.

We can have a simultaneity in our efforts – there could be different strategies for different age and social groups. Given ageing concerns, at least in certain parts of the country, we need to think of employability not just for the present and future working-age populations, but also the past ones. Similarly, given the traditional division of labor in India, we also need to think of occupational mobility of those who have been caught up in disadvantaged job roles previously. Affirmative action can provide employment for creamy layers of reserved categories – creating large-scale

resentment among others – but it does not focus even on their employability as such, thereby making them dependent on state support in the long-term. Employability in the sense of occupational mobility matters even more for these groups. Even in terms of religious groups, there is a concentration of certain groups in particular sectors and levels of jobs, and that too needs to be considered from this perspective. Skilling programs cannot simply be based on the status quo (how do we meet the current demands of the industry given the current matrix) – they have to be sensitive to a dynamic vision for economy and society at large. Human capital matters more for such professionally marginalized groups since they are also susceptible to discrimination in the labor market based on other forms of capital.

Policymakers in India have a wide window of opportunity for enhancing the human capital profile of the country's future workforce. To do so, they will not only have to make adequate investments in early health and education, but also focus on efficiency and equity aspects of these investments down to the local level. Public inefficiencies in health and education are also inequitable, and with more specific inequities in these systems, lay the foundation for not just inequities in early human capital formation, but later-life employability prospects and socioeconomic inequalities. The well-off not only benefit more from public services, and suffer less from their inefficiencies, not least because they can afford world-class health and education that private sector in India provides. Those who cannot afford them are resigned to poor quality public health and education, widening the gap in early human capital formation and employability prospects of India's future workforce.

Given the crucial role of soft skills, whose development has to start at the preprimary level itself, the government needs to go down deeper and focus on preprimary enrollment and schooling quality at this level. One suggestion here is to develop close coordination between primary health and preprimary schooling institutions as early childhood development should happen in a holistic way. Teachers, parents and health providers should work together to ensure that children are developing adequately, at their own pace and in their own directions. One central feature of education system should be the identification and promotion of individual skills, in which individual students have a comparative advantage. The identification process should be tripartite, including schools, parents and children as well, since arbitrary decisions by teachers or parents can prove to be detrimental to their growth. Preschools also have a substantial role in minimizing inequities between children coming from varied socioeconomic backgrounds.

There are good and bad practices to be learnt from various countries in terms of early child development and later-life prospects for employability. We need not be infatuated with China's present success, since it neither seems better placed than India in terms of demographic window of opportunity and its aftermath, or the quality of the workforce that its education system is producing. On the other side, the experience of South Korea and Germany seems more relevant, and as the next step, we would like to study them as our case studies with the aim of developing operational policy recommendations for the Indian context.

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