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Investing in Child

Human Capability Formation while Nurturing the Childhood and its Transition to Adulthood

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Investing in Child: Human Capability Formation while Nurturing the Childhood and its transition to Adulthood[£]

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Abstract

The present paper attempted to develop an investment perspective for the child development on the lines of human capital, human development and child rights perspectives. In this regard the present paper observes that the child budgeting as an analytical tool for the purpose.

Key Words*: India, Child Development, Child Budgeting, Early Childhood Development.*

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I Introduction

Children comprise more than one-third of total population across countries. The growth and development of children is being recognised as critical in the process of overall development. Research across relevant disciplines observes the importance of early childhood development in shaping the adult outcomes. The paradigm shift in development and the emerging multi-dimensionality of development along with the perspectives of human capital and human development, observed such a critical importance. The rights perspective has drawn further impetus of policy priority for the development of children. Accordingly, children have received appropriate attention of global community and national governments. Consequently, the agenda 2015 of Millennium Development Goals (MDGs) and subsequent agenda 2030 with Sustainable Development Goals (SDGs) set an important place for children in the set of goals.

However, children have been one of those most vulnerable population groups. Millions of children below 5 years of age die each year across the globe and millions of children who could survive do not reach their developmental potential. Considerable proportion of children across countries have been deprived of their developmental needs. It has been a cause of concern for policy makers the continuing high incidences and prevalence of neo-natal, infant and child mortality. Also, the malnourishment or under-nutrition reflected in the form of stunting, wasting and under-weight along with anaemia. Further, incidences of child marriages, child trafficking and child abuse, child labour, street children, children of respective age-groups not attending pre-school and formal schooling and many are deprived of appropriate care and protection. Therefore, many children are vulnerable to risks involved with chances of survival, lack of or inadequate opportunities for their development and participation and lack of appropriate protective measures. Some of the most important risk factors are maternal under nutrition, lack of recommended breastfeeding, malnutrition, lack of access to clean water and

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sanitation, lack of stimulation and learning opportunities. All these risk factors and deprivations during the childhood phase would lead to loss of their human (capability formation) potential. The severity of such phenomena is more prevalent in developing countries like India, and across relatively backward regions and it is associated with socio-economic conditions at the household level.

In this backdrop the present paper made an attempt to develop an investment perspective for the child development in India on the lines of human capital, human development and child rights perspectives. As we present in the following discussion, holistic development at childhood and adolescence has far reaching implications in human capability formation which has certain instrumental value for labour productivity, income and economic growth. While recognising the reality of disparities in socio-economic conditions at the households and disadvantages of the poor, although family is the natural environment and parents are natural stakeholders, the nation state or regional/local ones (governments) has to play key role and hence the main stakeholder especially in the welfare state context. As it has been shown by the research studies, along with private return there are exceeding social returns to child schooling and development. Externalities (positive or negative) pertained to childhood development would result in certain social benefits (labour productivity, income gain, economic growth, social harmony etc.,), lack of it has costs as well (delinquency, crime, social disharmony etc.,). The state mandate of social justice, social inclusion and economic growth with equity could be made possible with providing level playing field in the childhood for the children of disadvantaged. Therefore, the case for social policy in general that enabling the household environment for child development along with child policy and prioritising the public spending on social protection and for child development that could be seen as public investment. In this regard the present paper observes that the child budgeting as an analytical tool for the purpose.

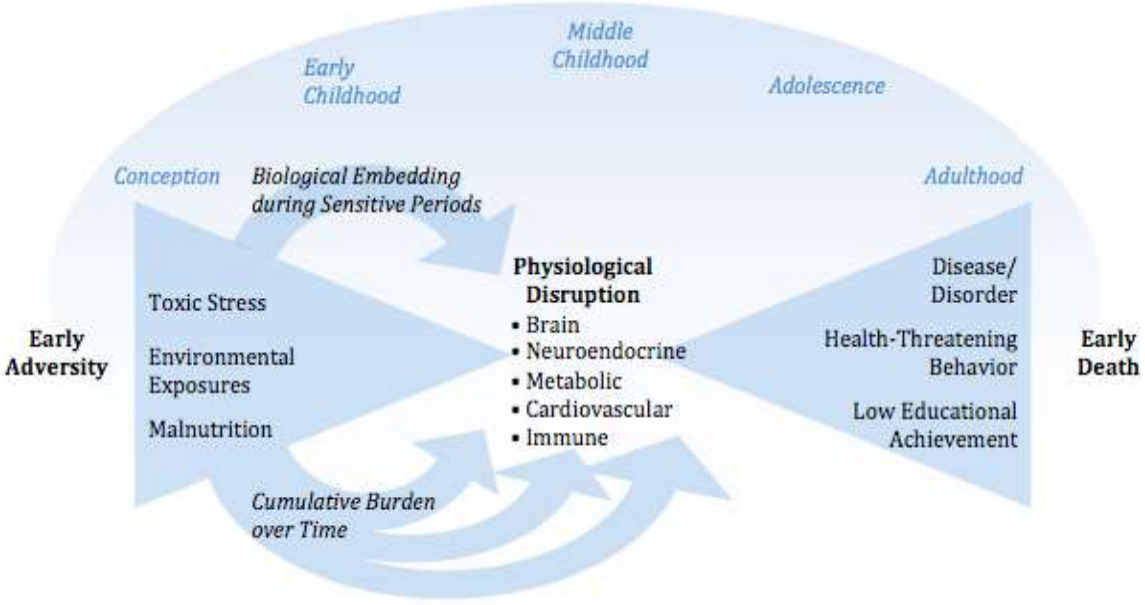
II Why Investing in Child

Science and Economics on Childhood Development: A Review

A body of research, epidemiological and clinical studies related to *Helsinki Birth Cohort Study*[1] (HBCS) and Fetal (pre-natal) *Programming*[2] along with *Barker Hypothesis,* have observed that fetal (or foetus) environment and growth and health conditions during infancy and early childhood have long-term impact in the sense that they permanently programme the metabolism, body growth, disease risk and hence the pathology of a child and their later life i.e. adult and older ages (Barker, 1990;1998; Barker *et al.*, 2001; Gluckman and Hanson, 2005; Heckman, 2007; Cooper, 2013). Research studies have also established an empirical evidence of relationship between early nutrition and adult health (Fogel, 2003). As these studies have shown, adult health is determined by the birth-weight, fetal and maternal nutrition and growth during the infancy (Heckman, 2007). It is observed that adversities experienced at the early childhood phase would turn out be biological "memories" that can lie dormant for years and make individuals vulnerable to health problems by weakening their physiological systems (Shonkoff *et al.*, 2009). Although controversial in the beginning, all such findings could bring forth is that it triggered the further robust research (Cooper, 2013). Such research is indicating all about critical nature of health endowments formed during the childhood.

Further, there is a body of research with the aid of the advancements in cognitive science[3] or developmental psychology[4] and neuroscience in studying the human mind and behaviour along with brain development (including growth and maturation) which helped in understanding the potential learning skills and human capability formation (Miller, 2000; Hogan, 2003; Heckman, 2006; 2007; Heckman and Masterov, 2007). Neuroscience through *imaging* has mapped the brain growth and maturation into mental growth of child (Crone and Ridderinkhof, 2011). It observes that the most rapid growth period of the brain development (growth and maturation) is the pre-natal stage and then post-natal infancy and early childhood stages[5] (Stiles and Jernigan, 2010; Gauvain and Cole, 2008). Clinical research studies in this regard have observed the *critical periods* of brain development in foetus stage, infancy and early childhood (Takesian and Hench, 2013). Post-natal phase extended up to early childhood is a window of opportunity to developing sensory system (*vision and hearing)* and lay foundation for *certain critical new skills (e.g. language, emotional regulation etc.,), traits and habits*. The critical periods are related to activating the neurons (or brain cells) and forming *the network of synaptic connections*[6], neuron (brain) *plasticity*[7] and the *synaptic pruning*[8] during this period and forming new skills, traits and habits along establishing critical functions of the body (Takesian and Hench, 2013; Hench, 2004).

Figure 1: Flow Chart showing Impact of Early Adversity on Later Life



***Source**: Adopted from Shonkoff et al. (2009).*

Network of synaptic connections in different regions of brain are formed and strengthened based on critical life-experiences during this period. In these critical periods, synaptic networks are more plastic, sensitive and malleable to change and adapt according to life-experiences. Beyond this critical period, if missed critical life-experiences, it is harder or impossible to form such skills hence brain growth and maturation. Hence, brain growth and maturation is environmental stimuli during the pre-natal and post-natal stages (Aoki and Siekevitz, 1988). The critical period hypothesis[9] in the developmental psychology that supported by

neuroscience, indicates that appropriate environmental stimulus received during these critical periods has an impact on the completeness of brain growth and maturation with certain critical skills (see, for instance, Lenneberg, 1967; Knudsen, 2004).

Research have also shown that life experiences during the childhood not only affect brain growth and maturation but also the gene expressions[10] (called as *epigenetics*) that synthesises the nature (i.e. genetic or biological predisposition) verses nurture (i.e. environment/exposure condition) debate into gene-environment interaction (see Heckman, 2007). *Fetal Programming theory* and studies based on it indicate that environment in which foetus develops affects the disease risk and epigenetics (disease risk and genes of the future generations). Therefore, it is all about fetal environment and life-experiences of children in the post-natal and early childhood stages that have profound impact on *human capability formation* in terms of the ***cognitive, social, emotional and psycho-motor skills development*** during the childhood. As it is observed early life experiences build a foundation for eventual achievements in school and economic productivity along with lifelong physical and mental health (Shonkoff *et al.,* 2009). In all, it would form the base for human capabilities at their adulthood. Conversely, the risk of social and economic failure is associated with adverse environments in which children grow (Heckman and Masterov, 2007).

Nutrition forms one of the factors along with environmental conditions in child development (Nyaradi *et al.*, 2013; Barker, 1997). Malnutrition affects not only the morbidity and mortality risk of children, but also their physical and mental development. In the pre-natal stage, it is maternal nutrition and in the post-natal stage it is the child nutrition that affect the physical and mental growth of children. As Fetal Programming studies and Barker hypothesis have shown maternal under-nutrition would cause permanent alterations to certain structural and physiological metabolic functions of the foetus (Lucas, 1991; Barker, 1997; 1998; Barker *et al.*, 1989; Fleming *et al.*, 2012). Research studies have demonstrated the impact on brain growth and maturation and cognitive development (Nyaradi *et al.*, 2013; Talge, 2007). The impact of nutrition in the post-natal phase has also been very well investigated and the consequences of malnutrition in different aspect of child's life-cycle is studied and demonstrated (Alderman *et al.*, 2006; 2016; Behrman and Rosenzweig, 2004; Beherman *et al.*, 2016; Beherman, 1996). The longitudinal cohort study of Young Lives Project in four developing countries (India, Peru, Ethiopia and Vietnam) observes a structural relationship between nutrition, cognition and non-cognitive skills (Sanchez, 2013). In India as well research studies have observed certain positive impact of early childhood interventions including the integrated child development services (ICDS) programme (see Dhamija and Sen, 2021; Nandi *et al.*, 2016;2018;2019;2020; Jain, 2015; 2018, Hazarika and Viren, 2013).

Further, it is observed that one of the stimulating factors during one of these critical periods of brain development is pre-school education in the early childhood stage. In this regard, research studies beginning with assessment and evaluation of the intervention programs such as Perry Pre-School Project[11] of 1962-67, Early Training Project[12] of 1962-65, Project Head Start of 1965 and Abecedarian Project[13] of 1972-85 along with Early Intervention Collaborative Study[14] (EICS) have been establishing the lasting impact of early childhood education interventions and its human and economic value (Schweinhart *et al.*, 1993; Schweinhart, 2004; Heckman, 2007; Heckman *et al.*, 2010; see Young, 2007; Garcia *et al.*, 2016). When the famous Coleman report of 1968 observed that the inequality in school achievement of children is associated with the environment in which children are located, the Perry Project and others

demonstrated that such disadvantages could be reduced with strong foundation of quality education in early childhood (Heckman *et al.*, 2010). Such intervention programmes and landmark studies on that changed the trajectory of early childhood education. It established large effects of pre-school education on educational attainment, income, criminal activity, and other important life outcomes, sustained well into adulthood.

In this regard, there is a growing evidence of scientific studies[15] which have been increasing substantially over a period, on critical nature of early childhood development (below 6 years of age) in the later course of one's life. Any growth failure in this stage of life has harmful effects on adult health and human capital (Lo *et al.*, 2017). Therefore, investment in the early childhood is considered to be essential to improving health, human capital and well-being across the life course (see Daelmans *et al.*, 2017; Shonkoff *et al.*, 2017; Richter *et al.*, 2017; Machel, 2017; Lo *et al.*, 2017; Chan *et al.*, 2017).

With the emergence of human capital perspective, quality of children over quantity is considered where educational attainment and health condition are key aspects in this regard (Becker, 1964). Since the classical economists including the Adam Smith and J.S. Mill, education has been considered as an important factor in labour productivity and economic growth. The growth puzzle in the 1950s and 1960s sharpened the focus further on human capital (Schultz, 1961; Denison, 1967). The growth accounting models explained through factoring in the human capital as the residual growth associated with conventional factors of production i.e. labour and capital (see Solow, 1956; 1957; Schultz, 1961, Nelson and Phelps, 1966; Denison, 1971). It is argued that knowledge and skills are a form capital and a product of deliberate investment, hence the case for investment in human capital came forth (Schulz, 1961; Nelson and Phelps, 1966). With the methodological advancements in economic science, research studies have been establishing the economic value in terms of private and social returns to school education and its contribution to economic growth through labour productivity (Mincer, 1974; Psacharopoulos, 1994; Glewwe, 1991; Barro and Sala-i-Martin, 1995; Glewwe, Maiga and Zheng, 2014; Psacharopoulos and Patrinos, 2018). Such advancements in estimates on returns to schooling countered out the argument about opportunity cost (i.e. returns to child labour) of child schooling. Not only its intrinsic value but also the instrumental value of education at the individual as well as social level has been recognised. Hence the critical nature of the quality schooling/education.

Adolescence: Another Window of Opportunity to Human Development/Capital

Adolescence is not just a transitional phase between childhood and adulthood[16] (Hall, 1904). It is, in continuum to childhood, one of the most rapid phases of human development. The changes that takes place in adolescence phase have health and psycho-social consequence not only in adolescence but also over the life-course. In this stage of human life-cycle, biological maturity precedes psychosocial maturity and the individual characteristic (like sex) along with the environment or external factors (such as health, nutrition, abusive environment etc.,) influence the changes taking place in this period[17]. Biologically, changes in adolescent is dominated by body morphology, pubertal hormones and sexual along with brain/neuronal development (The Lancet Commission, 2016). Beyond childhood phase, certain regions of brain growth and maturation (pre-frontal cortex and limbic system) occurs in this adolescence period and these developments are responsible for social relations, emotional regulation and executive functions (UNICEF, 2017). The hormonal and neuronal changes in this stage are

linked to changes in psycho-social and emotional conditions, cognitive development and intellectual capacities.

This phase of life-cycle faces difficult choices with respect to personality traits and habits, it cultivates self and struggles for independence and identity, develops gender identity, grapple with insecurities and develops anxiety about physical development, and a phase that lead to disorientation or discovery. The capacities of younger adolescents are in developing stage and they are vulnerable when they are exposed to external environment as they begin to move outside their family confines. This phase is vulnerable to certain highly risky behaviours being adopted, substance abuse and mental illness (see Mokdad *et al.*, 2016; Petroni *et al.*, 2016; Lupien, 2012). A recent survey (2015-16) of the Millennium Cohort Study[18] (MCS) facilitated a study on risky behaviours of adolescents and the finding indicate such risk behaviours of adolescents that includes anti-social behaviour (see Fitzsimons *et al.*, 2018). The disease burden related to sexual and reproductive health, mental illness and injuries depends on the health behaviour of adolescents. Further, along with health conditions and critical nutritional status of adolescence have far researching implications in their physical and mental growth (see Aurino *et al*., 2019; Beherman, 1996).

In this regard, adolescence is considered as 'unique window' of human development where it presents opportunity as well as vulnerability and a 'second window' for development that missed in childhood (UNICEF, 2017; Banati and Camilletti, 2017). The most critical factor influencing all these changes in adolescence as is case of childhood is environment and the social context in which adolescence stage of life is embedded with. Adolescence is central to the development of capabilities which are dependent on available opportunities and environment. Therefore, such a unique nature and importance of adolescence urges appropriate attention in health policy and programmes along with social policy and protection.

Child Rights and Legal Framework

Beyond the discussion above, it is the rights perspective why the growth and development children including adolescents is important in policy making and programme implementation. As the United Nations (UN) Universal Declaration on Human Rights (UDHR) 1948 observed childhood is entitled to special care and assistance. Further, the UN Declaration on the Rights of the Child (DRC) 1959 had declared that 'Mankind owes to the child the best it has to give' and as the child by reason of his physical and mental immaturity needs special safeguards and care including appropriate legal protection before as well after birth. As the DRC 1959 observed, although family is the natural environment and fundamental stakeholder in respect of growth and development of children, it should be supported with necessary protection and assistance. Hence the role of state parties as main stakeholders.

The UN Convention on Rights of the Child (UNCRC) 1989 made it a binding obligation of the nation states. The UNCRC has a fourfold classification of child rights: ***survival***, ***development***, ***participation*** and ***protection***. Article 1 of UNCRC say that state parties shall respect and ensure the rights of children within their jurisdiction and without discrimination. The UNCRC's Article 4 made it that the state parties shall undertake legislative / legal, administrative and other measures while devoting maximum extent of their available resources, for the realization of child rights. Most of the countries are signatories of UNCRC and committed to ensuring the rights of children in their respective nation states. The Government

of India has ratified the same (UNCRC) in 1992 and hence the commitment of all the sub-national state parties (Governments).

Concern of Global Community and Children in Development Goals

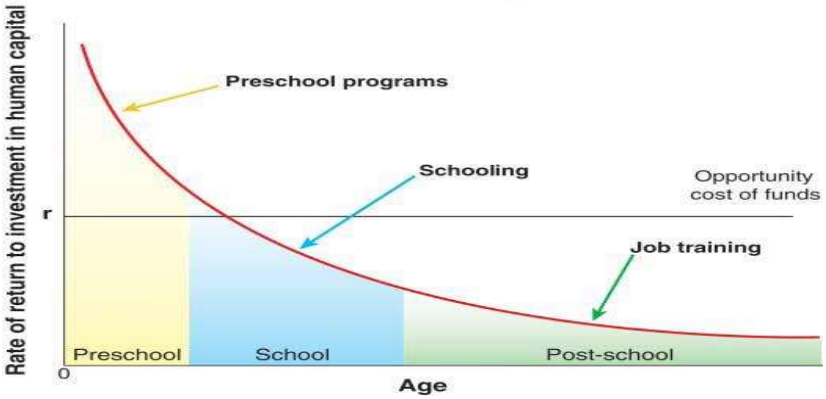
The welfare and the development of children is critical in the perspectives of human development and human capital also (see Young, 2002). Recognising the fact the global community and the relevant statutes and instruments of international organizations like that of United Nations and other specialized agencies are concerned with the welfare and development of children. In the World Summit for Children 1990 (New York) it endorsed 27 goals related to health and well-being of children and women, to be achieved by 2000. In the Millennium Development Goals (MDGs), there were six of the eight goals related to survival and the developmental needs of children. Child development is linked to the sustainable development (Chan, 2013). In this respect, of the 17 Sustainable Development Goals (SDGs), eight of them are directly or considerably related to child development. Further, of the total 244 indicators for monitoring SDGs in the Global Indicators Framework, 44 indicators are concerned with welfare and development of children[19]. Most of the countries including India have committed to achieving the SDGs including the targets related to children.

Investment Framework and beyond

Advancements in research methods, science and technology especially human biology and neurosciences helped understanding the human capability formation with the growth and development at the early age beginning with foetus to adolescence. Simultaneously, the evolving theoretical frameworks, research methods and methodologies in social sciences particularly in economics along with advancements in estimation methods got an economic value of education and human health condition in terms of its contribution to economic growth especially in the perspectives of human capital (see Weil, 2007; Beherman, 1996; Mincer, 1974; Psacharopoulos, 1994; Glewwe, 1991; Glewwe *et al.*, 2014; Psacharopoulos and Patrinos, 2018; Heckman, 2007; Heckman and Masterov, 2007). As it is observed human capability formation is laid on cognitive and non-cognitive skills along with health condition (Heckman, 2007). All they are largely better formed and developed during the childhood and adolescence.

More interestingly, research studies have also shown that early stages investment has better return than investment or remediation in later stages of life (Heckman, 2006; 2007). As Heckman summarised the results of studies and presented it in a diagram returns exceed the costs of intervention in the early stages but in the later stages of life costs exceed return (see Figure 2). It is to signify the early stage investment in human capital and development.

Figure 2:
Rates of return to human capital investment



***Source**: Adapted from Heckman (2006).*

In the perspective of human capital, the investment framework unifies all the body of research observation to make all the policy efforts in childhood and adolescent development as an investment in human capital. Beyond the rate of return to investment in human capital perspective, it is all about human development, the intrinsic value of child development and welfare, child rights and normative social policy.

Children as Public Goods: Public Investment through Child Budgeting

In economics theory, although children were initially considered as consumer durables having certain utility function, later they are considered investment goods providing income support to the parents and as public goods given the externalities (positive as well as negative) associated with children (Becker, 1994; Folbre, 1994). The emerging public goods perspective justifies public resources investing in children for their development and welfare. It is so because, despite the fact that parents and children themselves as adults benefit (private returns) out of their growth and development, there are externalities where benefits are socialised (social returns). Moreover, the negative externalities of malnourished, poor-health, unproductive, and spoiled child will be cost to the society. Further, in the changing circumstances with increasing cost of raising a child in the context of poor socio-economic environment and backgrounds of parents, it exerts tremendous pressure private resources of parents. Therefore, role of the state and public investment in child development.

As observed in UNDRC 1959 and reiterated in UNCRC 1989, although family is the natural environment and fundamental stakeholder in respect of growth and development of children, it should be supported with necessary protection and assistance. Here comes the role of state parties as main stakeholders. The United Nations (UN) Committee on Rights of Children (known as CRC) in 2014 made certain recommendations for the state parties in respect of public spending on children is that to increase substantially the allocation of resources, establish budgetary process and mechanisms to monitor and evaluate the adequacy, efficiency and equitability of resources allocated (CRC, 2014). Further, the UN's Addis Ababa Action Agenda 2015[20] laid certain foundations in this regard in the context of Agenda 2030 (i.e. SDGs). The Committee (CRC) in 2016 made it a legal obligation of the state to invest in child rights. It mandated in CRC that State parties need to 'carry out adequate budget analysis to determine the portion of public funds spent on children and to ensure that these resources are being used effectively' (Jha *et al.*, 2019).

In this regard, Child budgeting an emerging idea/concept and analytical tool in understanding the public investment in child development. Child Budgeting[21] is in fact not a separate budget for children. It is an accounting exercise in annual budgets mapping, consolidating and presenting it as quantifying the total public expenditure on activities, programmes and schemes related to children below 18 years of age (Save the Children, 2003; 2016; 2018). As it is observed *child budgeting* is a national or sub-national budget to address children's developmental needs while realising the rights of children (UNICEF, 2007 and 2016). Child budgeting delineating the fiscal space in the public expenditure management system, in addressing the development needs of children and their welfare.

III Situation Analysis of Children in India and Investment through Child Budgeting

Children below 18 years of age, as defined by UN, were 444.2 million comprising 36.7 per cent of total population in India in 2011. At present (by 2020) the size of the population in the country might have grown to roughly 500 million at the rate of growth one per cent per annum. Children are the most vulnerable section of population by age-group in terms of their survival, and deprivations in care and health, nutrition and education. Mortality rates (neo-natal, infant and child mortality) and malnutrition levels among children is considerably high across the globe especially developing countries like India. According to NFHS-4 (2015-16), the under-five mortality rate (CMR) in India is 50 while the infant mortality rate (IMR) being 41 per 1000 live births. About 38.4 per cent of children in India are stunted.

The recent Comprehensive National Nutrition Survey (2016-18) exhibits various forms of such undernourishment of children across age-groups from 0 to 18 years. According to UNICEF's Report on Sate of the World's Children 2016, of the total children of 74 million in the age group 3-6 years living in India about 20 million are not attending pre-school which is considered as critical aspect of the growth and development of children. The National Crime Record Bureau (NCRB) reports, the crime against children is increasing. As per the NCRB Report 2016, there were one lakh cases of crimes against children. Along with kidnapping and abduction (52.3% of such cases), sexual offences (34.4%) were the major crimes against children. Child marriages are another issue concerned with the children in India. According to Census of India 2011, there were 78.5 lakh women got married when they were not even 10 years old (i.e. their Age at marriage was less than 10 years)[22].

It is a fact that universalisation of integrated child development services (ICDS) intervention scheme for children below 6 years of age across habitations and villages in rural India through establishing Anganwadi Centres (AWC). Its functioning and providing services vary across states and villages/service providing AWCs. The World Bank study assessing the institutional arrangements and capacity in health and nutritional programmes (NRHM and ICDS) in India it is observed that the size of the ICDS workforce is insufficient to accomplish the quantity and quality of work (see Kathuria *et al.*, 2014). It is also observed that the ICDS and NRHM workforce is short of possessing the necessary knowledge and skills to effectively and efficiently perform the functions expected of them (*ibid*). In another longitudinal study, AWCs are not successfully meeting requirement of early childhood care and education i.e. the age- and developmentally appropriate quality pre-school education (see Kaul *et al.*, 2017).

Taking into account such adversities that children in India have been experiencing, it seems the human capital development actual to their potential is very low. The World Bank's recent

report in fact reveals the same (see World Bank, 2019). The Human Capital Project of the World Bank has developed a metric Human Capital Index (HCI) measuring the level of human capital that a child born today can expect to attain by her 18th birthday reflecting the status of health and education that prevail across countries. It shown in the report that India with its score 0.43, it is one of those 60 countries with HCI scores below 0.5 and that account for 56 percent of the world's children (see World Bank, 2019). HCI score with reference to benchmark of complete education and full health reflects the expected productivity of future worker. The HCI score for India indicates loss of more than half of their potential productivity and lifetime earnings for children born in India. It is definitely due to lack of effective public investments to ensure a healthy and educated population.

The situation of children in India indicate need for augmented effort in policy, planning, strategies and intervention along with resources allocations particularly that of public ones. Acknowledging the fact in the National Plan of Action for Children 2005, the Govt. of India committed to carry out a child budget analysis at central and state levels (UNICEF, 2016). The same was reiterated in the 11th and 12 the Five-Year Plan (2008-12 and 2012-17) documents. The National Policy for Children (NPC) 2013 also had an objective of initiating child budgeting exercise. The NPC 2013 also directs the respective governments to track allocation and utilisation of resources and their impact on outcomes for children. Further, while noting the gaps in this regard, the UN Committee on Rights of Children (CRC) in 2014, made certain recommendations particularly to the Govt. of India in respect of its spending on children and monitoring the same especially at the state level (CRC, 2014).

Child Budgeting in India

In India child budgeting studies have been initiated since the year 2000 when HAQ[23] has begun dissecting the Union Budget statements to aggregate and quantify the child budgeting at the national level. There were such initiatives at the state level for a few states but they were discontinued after a point of time during first decade itself. Recently, there have been however, some efforts in this regard in some states. Along with HAQ such child budgeting studies are being conducted by several other organisations like Centre for Budget and Policy Studies (CBPS), Bangalore; Centre for Budget and Governance Accountability (CBGA), New Delhi; and Child Rights Trust, Bangalore. Such an analyses is in the perspective of public finance for children (PF4C) for either the union government's budget or specific state's budget or for a group of flagship programmes (see Jha *et al.*, 2019). UNICEF and Save the Children are two important organisation supporting such studies.

Further, the Government of India introduced presenting a Child Budgeting statement in the Union Budget since the year 2008-09[24] along with gender budgeting[25]. Child Budgeting statement of Union Government initially captured expenditure on child-related schemes in ten Ministries and Departments. Subsequently the coverage of expenditure on schemes related to children is expanded to 21 different Ministries and Departments (UNICEF, 2016). However at the state level, as of now only four states, Kerala[26], Assam[27], Bihar[28] and Odisha[29], have adopted such a practice of presenting a child budgeting statement in state budgets. There are many other states to follow the suit.

The latest Union Budget statement 12 (child budget) shows that the allocations (budget estimates) for the welfare of children (we refer to it as child budget), across 24 ministries /

departments of Government of India, in 2021-22 is Rs. 85712.56 Crores which comprises 2.46 per cent of total expenditure in the Union Budget. It is less than half a per cent of GDP, especially in the recent past. There is an increase in total expenditure for children and per capita per child (almost three times in nominal terms) when compared with the allocations a decade ago i.e. since 2007-08 (see Table 1). But considerable part of the increase is due to expanded coverage of allocations for children across various Ministries and Departments (initially around 10 and now they are 24). The major player departments or ministries are, Department of School Education and Literacy (DSLE) of Ministry of Human Resource Development (MHRD) followed by Ministry of Women and Child Development (MWCD). By schemes of the Central Government, more than one-third of the child budget is allocated for the Samagra Shiksha Abhiyan (i.e. Integrated Scheme for School Education including/subsuming Sarava Shiksha Abhiyan and Rashtriya Madhyamik Shiksha Abhiyan) followed by Anganwadi services (21.1%) and Mid-Day Meals (13.1%) are the major players (Figure 3).

Table 1: Allocation for the Welfare of Children (Union Budget), Govt. of India

Year	Expenditure (Rs. Crores)		Child Population (in Million)	Per Child (Rs.)		% of GDP	% of Total Expenditure
	Budget Estimates	Revised Estimates		Budget Estimates	Revised Estimates		
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
2007-08	28028.56	28258.91	436.6	642	647	0.57	3.98
2008-09	33433.82	34546.43	438.7	762	787	0.61	3.83
2009-10	39647.18	38182.66	440.9	899	866	0.59	3.74
2010-11	44961.41	49461.18	443.1	1015	1116	0.64	4.07
2011-12	56748.60	60523.36	445.2	1275	1359	0.69	4.59
2012-13	71028.11	67060.59	447.4	1587	1499	0.67	4.69
2013-14	77235.95	72496.21	449.7	1718	1612	0.65	4.56
2014-15	81075.26	69887.99	451.9	1794	1547	0.56	4.16
2015-16	58016.72	64635.09	454.1	1278	1423	0.47	3.62
2016-17	65758.45	66248.62	456.4	1441	1452	0.43	3.29
2017-18	71305.35	71817.96	458.6	1555	1566	0.42	3.24
2018-19	79090.35	81235.63	460.9	1716	1763	0.43	3.31
2019-20	91644.29	87641.94	463.1	1979	1892	0.43	3.25
2020-21	96042.43	80461.94	465.4	2064	1729	0.41	3.16
2021-22	85712.56	-	467.7	1833	-	-	2.46

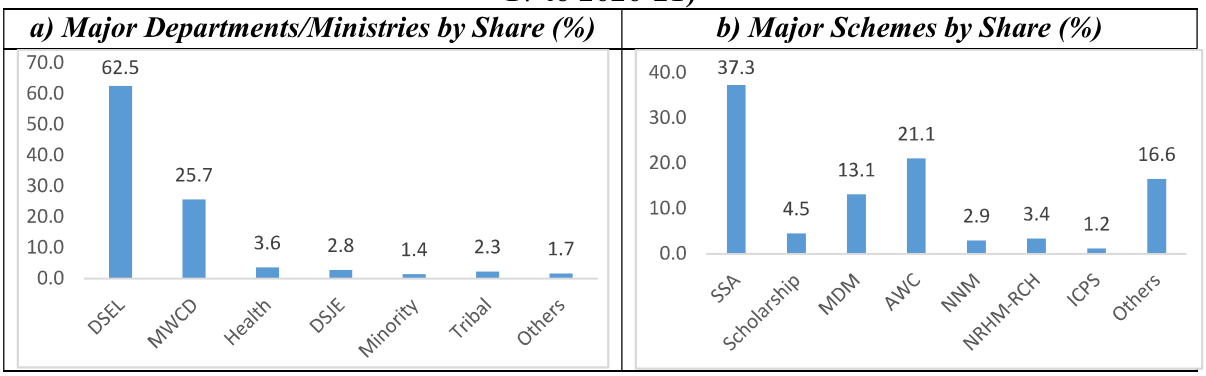
Notes: **1**. *Actuals were not presented in the budget document especially that of the statement 12 or 22 (earlier) of Union Budget;* **2**. *Children of 0-17 years age population is projected one to mid of the financial year, based on growth rate for the decade 2001-2011*; **3**. *Expenditure figures are in* ***nominal prices****;* **4.** "**-**" *not yet available.*

Source*: Union Budget Statement 12/22, Govt. of India and Author's Calculations.*

However, following the Fourteenth Finance Commission (FFC) award, the allocations for the welfare children in union budget had a substantial decline and it was largely due to scrapping of plan outlay. As Government of India after FFC award had increased the devolutions (tax transfers) to states which had resulted in cutting down parts of its allocations to schemes including those for the welfare of children. The Union Budget statement mentioned that the decline in central allocations will be met (compensated) by states through their increased share in the central tax transfers, so that the total allocation (central and state) to the welfare of children will not be declining. However, a study in this context observed that though there is an

increase in total transfers and total expenditures of the States, priority towards social sectors and child budgeting is declining (Singh *et al.*, 2018).

Figure 3: Dominant Player Departments/Ministries and Schemes in Budget Allocations to Welfare of Children, Union Budget (Average of Last Five Years: 2016-17 to 2020-21)



Notes: **1. *Departments/Ministries***: ***DSEL*** *– Department of School Education and Literacy under MHRD;* ***MWCD*** *– Ministry of Women and Child Development;* ***Health*** *– Ministry of Health and Family Welfare;* ***DSLE*** *– Department of Social Justice and Empowerment;* ***Minority*** *– Ministry of Minority Affairs;* ***Tribal*** *– Ministry of Tribal Affairs;* ***Others*** *– All others;* **2. *Schemes***: ***SSA*** *– Samagra Shiksha Abhiyan including Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA);* ***Scholarship*** *– pre and post metric scholarships;* ***MDM*** *– Mid-day Meals;* ***AWC*** *– Anganwadi Services;* ***NNM*** *– National Nutrition Mission;* ***NRHM-RCH*** *– National Rural Health Mission and Reproductive and Child Health component;* ***ICPS*** *– Integrated Child Protection Scheme;* ***Others*** *– All other Schemes.*

Source: *Author's calculations based on Union Budget Statement 12, Govt. of India.*

As mentioned above, different advocacy, research and/or child rights organisations have conducted analysis of the child budgeting in union budget. In a study that was conducted by CBPS, Bangalore with the support of UNICEF India, similar observations drawn from their analysis of union budget for the period 2013-14 to 2018-19 (see Jha *et al.*, 2019). It is observed the declining share of allocations to children in the total budget along with a declining trend as a percent of GDP. Study also observed the DSEL of MHRD followed by MWCD as major player departments or ministries and finds that more than half of the total allocations made to children are in respect of their education followed by nutrition (another 41%). The study observes that social protection and health have insignificant share. Further, by age group, the allocation in union budget made to different development needs of children in 6-14 years age group forms the major share in the total allocations made for children and it is followed by children in the 0-6 years age-group. It is observed in the study that more than 90 per cent of total allocations for children in the union budget are in the non-wage component, it so especially for the grants made to states (see Jha *et al.*, 2019).

The same study has also taken up the same exercise at the state level as well for selected states. It has established a relationship (with a correlation coefficient of 0.89 significant at 5% level) between child development and child budgeting (i.e. per capita expenditure on children related activities) across these selected states (Jha *et al.*, 2019). It indicate the significance of the financial allocations, as investment, for the child development. However, except a few states, many other states are yet to make their state level fiscal framework for child budgeting. The subject matter of child development in the federal structure of Indian Union, largely lies with

the state government. Health and nutrition is state subject, while education is in the concurrent list.

IV Concluding Remarks

The present paper made an attempt to develop an investment perspective for the child development on the lines of human capital, human development and child rights perspectives. It is considered that survival, development, participation and protection are the four critical dimensions of child development. Early childhood is a critical period in terms child survival, brain development and hence lays strong foundation for human capability formation. Economic perspective of child development indicates that investment in child (development) has far exceeding returns and positive externalities over the cost. Although the welfare state along with family and community are main and influential stakeholders in child development, social policy of the state and public investment plays key role. In this context it observes that the child budgeting as an analytical tool in this respect. It needs to be mentioned here that since subject matter of child development largely lies with state level implementation in the federal structure of Indian Union, state government start making child budgeting and analysing it for the correction in respect of child development in their respective political domains.

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End Notes

[1] HBCS is an ongoing study based on people who were a cohort all born during 1934-44 in Helsinki (Finland), particularly in Helsinki University Hospital. The epidemiological study has 13345 people of that cohort participants and clinical study has nearly 2000 people of that cohort. Such study is made possible as the data on their prenatal growth was recorded in their birth records and the information on growth during childhood was recorded in child welfare clinic records. See at: https://thl.fi/en/web/thlfi-en/research-and-expertwork/projects-and-programmes/helsinki-birth-cohort-study-hbcs-idefix.

[2] Here the *Programming* is referred to as the process of sustaining or affecting a stimulus or impairment that occurs at a crucial point in its development (see Lucas, 1991).

[3] To define the Cognitive science, it is scientific study of mind and its processes in a functionalist view and is concerned with the mental faculties related to language, perception, memory, attention, reasoning and emotion. It is in fact an interdisciplinary science connecting with Linguistics, Psychology, Artificial Intelligence, Philosophy, Neuroscience and Anthropology along with Biology. Although many of the Classical Philosophers touched up on the philosophical aspects of mind, the *cognitive revolution* in the 1950s made a place for it as a cognitive science (see Miller, 2003). When the discussions began to describe and explain mind and behaviour of humans, it formed base for psychology as science separating it from philosophy and biology. The first psychology lab founded in 1879 by Wilhelm Wundt (known as father of psychology) along with his student Edward Titchener advocated the structuralism (using the method of introspection), the first school of thought in the field. A reaction to structuralism was the development of functionalism which was influenced by the work William James and prominent ones in this school of thought are John Dewey and Harvey Carr. Similarly, the Gestalt school of psychology was also another reaction particularly to the molecular nature of structuralism (it breaks down the mental process into components) and looks at the unified whole of experience. The other schools of

thought in psychology are: Behaviourism (of Watson, Thorndike and Skinner), Psychoanalysis (of Sigmond Freud) and Cognitive Psychology (of Jean Piaget).

[4] Developmental Psychology is a scientific study of how and why changes particularly in three dimension of development (physical, cognitive and socio-emotional) takes place in the course of human life. While J. J. Rousseau is considered as the forerunner in this filed (through his *Emile: On Education*), as he described three stages of development: infancy, childhood (pure) and adolescence. John B. Watson laid foundation for modern developmental psychology through behaviourist view along with Edward Thorndike and B.F. Skinner among others (see Hogan, 2000). Watson experimented on humans the Ivan Pavlov's *classical conditioning* theory of *stimuli-response*, in his controversially conditioned ***Little Albert Experiment*** of 1920. As a theory of learning, behaviourism is about studying observable cognition and emotions through observation in a systematic way regardless of internal state of processing in mind. Following that, *operant conditioning* theory of B.F. Skinner in 1930s (influenced by the Edward Thorndike's concept of *reinforcement*) contributed to Behaviourism. The behaviourism school of thought based on classical (Ivan Pavlov) or operant (Skinner) conditioning observes that most of the human behaviours of acquired through conditioning. However, Sigmond Freud criticised it and formulated his psychoanalysis theory based on the processes in un-conscious and sub-conscious mind. As a reaction to Freud theory, the humanist school of thought emerged based on the concept of self-actualisation and it was advocated by Abraham Maslow among others. Further, the cognitive school in a reaction to behaviourism evolved to studying the mental processes while taking into account the scientific investigation and observations of neuroscience, philosophy and linguistics. Jean Piaget's *stages of cognitive development* is one of the influential theories in the cognitive school.

[5] Brain development begins with the production of *neurons* (or brain cells) in the foetus during the third week after the conception and they (neuron) move on to form *connections* (*synapses*) across neurons, rudimentary structure of the brain, central and peripheral nervous system and then plasticity of brain/neurons (Hench, 2004). There are as many neurons (some billions) as a brain can ever have when a child is born. However, the size of the new-born child's brain is 25 per cent that of adult and their synapses/connections are just 10 per cent of what the grown up brains could ever have. In the post-natal stage there is a rapid growth of *network of synaptic connections* during infancy (below 1 year) and the following year. When a child is three-years old, the potential of such connections is such that they could grow up to 20 times that of those at the time of birth. In the processes of what neuroscience refer to it as *myelination*, during this stage, certain neurons are activated, and synaptic connections are created and strengthened. However, in the process of *synaptic pruning* it eliminates all those unused synapses that results in almost halving the total synapses formed at the age of 3 years, thereafter gradually. It all depends up on the life-experiences of the child during the post-natal stage up to childhood (see Aoki and Siekevitz, 1988; Gauvain and Cole, 2008; Stiles and Jernigan, 2010; Takesian and Hench, 2013). How a child acts and thinks depends on this processes of brain growth and maturation.

[6] Synaptic Network are connections between (brain) cells / neurons through neural network.

[7] Neuron (Brain) plasticity is brain's ability to change and adapt according to the life-experiences during pre-natal, post-natal, infancy and early childhood.

8 The process in which unused neurons and connections are eliminated to increase efficiency in neuronal transmissions is called Synaptic pruning.

[9] As developed by Eric Lenneberg, who is a linguist and neurologist by profession, in 1967 particularly in respect of language acquisition of the child (see Lenneberg, 1967).

[10] In Molecular Biology, as formulated by Francis Crick in 1950s, *gene expression* is about synthesising the protein (functional gene product) using the information in gene and forming the structure of cell. Biological (genetic) pre-disposition is likelihood (chance) of having a particular (genetic) condition i.e. a disease or a pattern of behaviour inherited. Predispositions are, however, influenced by environmental factors. When born with certain predisposition (capacity/ability/condition), on the one hand, opposite environmental factor may bring down or displace the effect (positively or negatively) of that particular condition. On the other condition is activated with triggering environment. DNA forms the gene that directs the production of protein which is the base for forming a cell which in turn forms the tissue which leads to form the organ of the body (DNA-Gene-Protein-Cell-Tissue-Organ-Body). Herein the gene encoded protein dictates the cell function. While protein production process has primary control in regulating gene expression, availability of nutrients control the regulatory function of proteins. On the nutrition impact, research has been showing that in a famine-stricken conditions, the children or adolescent who are exposed to it have experienced reduction in their growth measured in terms of height. Further, children born to pregnant women who have exposed to it have shorter height than their parents.

[11] Based on the longitudinal documentary of the Perry Preschool participants throughout their lives, in United State of America (USA). The Perry Preschool Project of 1962-67, led by David Weikart and Charles Eugene Beatty had provided a high-quality preschool education to 3-4 years old African-American children living in poverty and who were assessed to be at high risk of school failure. In this project about 75 per cent of the children participated for two school years (at ages 3 and 4); the rest were participated for one year, at age 4 (see Schweinhart *et al.*, 1993; Schweinhart, 2004). Also as observed from https://evidencebasedprograms.org/programs/perry-preschool-project/ and https://highscope.org/perry-preschool-project/

[12] The Early Training Project was operated at Murfreesboro, Tennessee, USA, during the period 1962 and 1965. It was directed by Susan Gray, co-ordinated with Rupert A. Klaus. Two waves of 3-4 years children recruited for the intervention program (see Gray and Klaus, 1970).

[13] The Carolina ***Abecedarian Project*** is a program of the Frank Porter Graham (FPG) Child Development Institute, University of North Carolina (UNC) at Chapel Hill, USA. It is one of the oldest and most-often cited early childhood development programme led by principal investigator Frances A. Campbell along with James J. Heckman (Nobel laureate in economics) and colleagues. Two important components of the project are: pre-school and school-age intervention. The projected recruited 4 months old children for the intervention. The project also assessed outcomes of pre-school, primary, middle and high school-age along with adult outcomes through certain metrics using different instruments. See at: https://abc.fpg.unc.edu/abecedarian-project and http://www.promisingpractices.net/program.asp?programid=132. Research

conducted by Craig Ramsey among other shows the positive long-term effects of high-quality early care and education (see Ramey et al., 2000).

[14] The EISC is a longitudinal study of children with developmental disabilities and benefiting from about 29 intervention programmes.

[15] For instance, the Lancet landmark series on Child Development in Developing Countries in 2007 (see at https://www.thelancet.com/series/early-child-development-in-developing-countries-2007), followed by Child Development in Developing Countries in 2011 (see at https://www.thelancet.com/series/child-development-in-developing-countries-2) and the new series on Advancing Early Childhood Development: from Science to Scale (see at https://www.sciencedirect.com/journal/the-lancet/vol/389/issue/10064). Similarly the Harvard Centre for Developing Child has been working on the theme of child development (https://developingchild.harvard.edu/).

[16] Adolescents in general are those between 10 to 19 years of age but the upper age is extended from 19 to 24 years (see Sawyer *et al.*, 2018). As defined in the Lancet Commission on adolescent health and wellbeing it encompasses the three key phases—early adolescence (10–14 years), late adolescence (15–19 years), and young adulthood (20–24 years).

[17] See at https://www.who.int/maternal_child_adolescent/topics/adolescence/development/en/

[18] The Millennium Cohort Study (MCS) is a longitudinal survey following the lives of over 19,500 children who born at the turn of the century i.e. between the year 2000 and 2001 in the United Kingdom (UK). This longitudinal study is managed by the Centre for Longitudinal Studies (CLS), UCL Institute of Education, London and it is supported by Economic and Social Research Council (ESRC). Regular surveys (known as 'sweeps') are being carried out under the study. It is to collect information about participants' physical, socio-emotional, cognitive and behavioural development over time, alongside detailed information on their daily life, behaviour and experiences. The data collected is a rich and unique resource for researchers across a range of disciplines. See https://cls.ucl.ac.uk/wp-content/uploads/2018/01/CLS-Briefing-2017-Risky-behaviours-in-adolescence.pdf

[19] See https://data.unicef.org/children-sustainable-development-goals/

[20] At the United Nations Third International Conference on Financing for Development, in 2015, held at Addis Ababa (Ethiopia) discussed on global finance practices and generate investments for tackling a range of economic, social and environmental challenges. The agreement known as *Addis Ababa Action Agenda (AAAA)*, is to provide a foundation for implementing the global sustainable development agenda. See at https://sustainabledevelopment.un.org/content/documents/2051AAAA_Outcome.pdf

[21] There have been different nomenclatures referring to the same meaning. It is referred to as *child-related public expenditure (C-PE)*, *budget for children (BfC)*, *child budgeting, child friendly budgeting*, and *child responsive budgeting* (UNICEF, 2007; 2016; Save the Children, 2003; 2016; 2018).

[22] See Kalle, Amarnath and Alka Singh (2019) "Union Budget 2019: Child Welfare, Social Sector suffer as new sharing pattern put additional burden on states", First Post, 31 January, at https://www.firstpost.com/india/union-budget-2019-children-welfare-social-sector-suffer-as-new-revenue-sharing-pattern-puts-additional-burden-on-states-5999211.html

[23] They were initially introduced by HAQ: Centre for Child Rights which is a human rights civil society organization in India focusing on children's rights.

[24] The Govt of India in its Union Budget 2008-09 presented Child Budgeting in Statement 22 entitled "Budget Provisions for Schemes for the Welfare of Children". Since 2017-18 it is being presented in Statement 12 of Union's Budget. The Child Budgeting statement of the Union Government of India in its Annual Financial Bill presents the *plan as well non-plan* expenditure on children.

[25] Following the Ministry of Finance's Committee on Classification of Budgetary Transaction (Chairperson: Prof. Ashok Lahiri), the Government of India introduced a fiscal space in the form a financial statement of gender budgeting in the annual budget expenditure document of the year 2005-06. Thereafter, for the last one-and-half decade gender budgeting as a Statement 13) is being published in the Expenditure Budget document (in Volume I) of the Union Government.

[26] In the revised Kerala Budget 2016-17, it was announced that the projects for the development and welfare of children will be compiled and included in the State Budget following the practice of Union Budget since 2008-09 collating all schemes that substantially benefit children. Accordingly, Kerala's Budget for 2017-18 while placing considerable emphasis on the four pillars child rights proclaimed in UNCRC, its public spending on children is made. See at https://kerala.gov.in/documents/10180/ce9275b8-d3de-4946-b57d-38ec980ca3d9.

[27] In Assam, although child budgeting analysis has been carried by HAQ (Centre for Child Rights) in collaboration with North-Eastern Social Research Centre (NESRC) since 2006 (see http://haqcrc.org/wp-content/uploads/2017/02/budget-for-children-in-assam-2012-13-to-2016-17.pdf), the Govt of Assam began presenting it in its budget since 2018-19 (see https://finassam.in/budget_documents/).

[28] Bihar is one of three states in India that brings out a Child Budget document/statement. The Government of Bihar had begun such a process in 2013-14 but concrete form of it emerged as a separate budget statement in the recent budget 2019-20. See Santosh Singh (17 Nov 2019) in ***Indian Express*** at https://indianexpress.com/article/india/after-kerala-assam-bihar-to-start-special-child-budget-6123540/

[29] The Govt. of Odisha has recently released a fiscal statement on child budgeting along with gender budget, in its budget expenditure document for the year 2019-20.