Public Financial Management and Crime Against Children: A State level Analysis in India

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**National Institute of Public Finance and Policy
New Delhi**

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Abstract

Using fixed effects models, we explore the efficacy of Public Financial Management (PFM) in tackling crime against children, controlling for economic growth. The fiscal variables are found to have significant impact on reducing the crime against children, and not the economic growth. The coefficients from the non-linear models revealed an inverse relationship between the squared term of social sector spending and crime against children. The specific PFM tools like child budgeting (c-PFM) per se instantaneously did not reduce the crime against children. However, the year of inception of c-PFM and crime against children are inversely related in the models, indicating that the long-term c-PFM is efficacious in reducing crime against children, which has policy implications in the sense that the budgetary allocation on child protection within the c-PFM needs to be strengthened.

KEYWORDS: Public Financial Management; Child Budgeting; Social Spending; Child Protection

JEL CLASSIFICATIONS: C33; H00; H5; J13

I. INTRODUCTION

As per the 2011 census, India is home to 444 million children between the ages of 0–18 years, constituting more than a third of India's total population. According to the most recent data from India's National Crime Record Bureau (NCRB), every four minutes a new crime is recorded that targets children. When children are exposed to crime and violence it may have long-lasting effects on their mental and physical health, as well as on their growth and development. More and more biomedical evidence points to a plausible link between childhood trauma and poor health. Studies have found changes in the nervous system, and immune system of children who were exposed to crime and violence (Repetti, Taylor, and Seeman 2002; Felitti et al. 1998; Teicher and Samson 2016; Kundakovic and Champagne 2015). The effects of crime against children are felt at every level of society, including in the home, neighborhood, and larger community. Children who are exposed to violence and criminality are more likely to become offenders as adults, and the intergenerational impacts may trap families in cycles of hardship, deprivation, and poor health (Hughes et al. 2017). Brown et al. (2009) indicate a 20-year decrease in life expectancy for children who faced six or more bad childhood experiences (mostly types of abuse and neglect) compared to those who had none. Teens who have been physically or sexually abused are two-to-eight times more likely to try to kill themselves or succeed than other teens (Evans, Hawton, and Rodham 2005; Fergusson, Boden, and Horwood 2008).

While India aspires to become a $5 trillion economy, it is necessary to make it a safer place for children to live. Crime incidence does not necessarily go down as the country's income increases. There are certain "capabilities" (like education and nutrition) that are positively correlated with per capita income and, without direct intervention, tend to increase with economic expansion. However, protection against crime is not an outcome of economic prosperity; in fact, there are egregious incidents of violence and crime growing against the backdrop of an increase in per capita income and other development metrics (Mavi 2014). Therefore, addressing crime in a society is inherently a question of public action. Against this backdrop, this paper tries to analyse the state's role in curbing the incidence of crimes against children and ascertain the impact of social sector spending—in particular public financial management (PFM) tools like child budgeting—on crime involving children.

II. THEORETICAL AND EMPIRICAL LITERATURE: A BRIEFING

The general literature has focused mostly on social, psychological, and economic variables explaining the dynamics of crime in different nations (e.g., Becker 1968; Fleisher 1966; Freeman 1996; Jacob and Lefgren 2003; Levitt 1998, 2004; Lochner and Moretti 2004; Levitt and Lochner 2001; Roman and Butts 2005; Merlo and Wolpin 2015; Jawadi et al. 2021). Using data from France for 1975Q1–2013Q4 and the United Kingdom for 1983Q1–2018Q2, Jawadi et al. (2021) show a significant direct relationship between unemployment shocks and crime rates in both countries. Pellegrina (2008) used data from Italy from 1999 to 2002 to show that the length of a trial has a positive effect on crime. In the case of Greece, Laspa (2015) looks into what causes people to commit crime.

Using data from Japan from 1964 to 2009, Halicioglu, Andres, and Yamamura (2012) look at factors that can explain both the total amount of crime and the different types of crime. In the context of India, Dutta and Husain (2009) study the determinants of crime rates by taking data on Indian states from 1999–2005. The study found the number of crimes registered under the Indian Penal Code (IPC) per 10,000 people to be inversely proportional to the number of policemen per 1,000 square kilometer, but directly proportional to conviction rate in the previous year and the number of IPC cases per civil policemen.

Tyagi (2016) considers panel data from 13 Indian states from 2003 to 2007. This study examines juvenile delinquency as a function of a variety of independent factors including number of convicted juveniles (under IPC) in the last year, number of adults arrested, strength of the police force, per capita income, unemployment among youth, and corruption. The study demonstrates that an increase in the police force has a negative impact, arrests of adults have a positive effect, and youth unemployment has a positive effect, but, per capita income at the state level has no influence on the crimes committed by juveniles. Dutta et al. (2020) incorporated a larger panel dataset by considering 17 Indian states from 2011–13. The study used incidence of juvenile property crime per capita as the dependent variable and net state domestic product (NSDP) per capita, police per capita, adult crime, and illiteracy rate as the explanatory variables. The study points out a nonlinear relationship exists between state per capita income and the incidence of juvenile property crime. The study demonstrates that the frequency of property crimes committed by adolescents increases as the NSDP grows, since a richer state or higher urbanization provide the opportunity for such conduct. When the per capita NSDP increases further, the positive effect of the NSDP on juvenile delinquency lessens. Thus, as NSDP per capita increases further, youth criminality is abated. The cause of criminality in children is a much-discussed topic but there is a dearth of literature that talks about the protection of children.

The existing literature has not empirically looked into the role of State and public policies in curbing crimes against children, and this study tries to fill in that gap prevalent in the literature by looking into the link between child budgeting and crime against children. Though such links have not yet been explored in the context of India, existing research has demonstrated a beneficial relationship between gender budgeting initiatives and gender outcomes. Stotsky, Chakraborty, and Gandhi (2019) analyze data from 1991–2015 for 29 Indian states in order to study the impact of fiscal transfers on gender equality. The study points out that unconditional budgetary transfers improve gender equality. Stotsky and Zaman (2016) investigate the effect of gender budgeting on gender equality outcomes and conclude that gender budgeting has a positive influence on gender equality in elementary and secondary education. Specifically, they find that states that work on gender budgeting have made more progress toward equal enrollment in primary schools than states that don't. The impact of gender budgeting on sectoral gender outcomes is examined by Chakraborty, Ingrams, and Singh (2017) for the Asia Pacific area. The researchers conclude that gender budgeting has a statistically significant influence on educational and health outcomes but no effect on labor force participation rates. They also highlight that public expenditure significantly improved gender equality. Given the literature suggesting fiscal management tools have a significant positive result on gender

outcomes, this paper studies the impact of the same on the welfare of child. This kind of research has not yet been conducted in the sphere of welfare of children. The paper aims to study the role of the state in the prevention of crime against children, special emphasis on child budgeting.

III. INTERPRETING THE DATA

The study takes into account a panel dataset containing observations for different India states as cross-section units across a time period of eight years from 2013 to 2020. This section gives an overview of the variables used in the study, their corresponding data sources, and descriptive statistics of the given variables. The rationale behind taking the time period from 2013–20 is the introduction of the country's child budget in 2013 by the state of Bihar. Except for the states of Telangana (which was not formed as of 2013) and Jammu and Kashmir (where data is scarce), all states are included. Both the dependent as well as independent variables incorporated in the study for conducting the panel regression analysis are summarized in the table 1, along with their data sources. Log of crime incidence has been used as the dependent variable while the explanatory factors are grouped into three broad categories: gross state domestic product (GSDP) variables, social spending variables, and child budget dummies (table 1).

Table 1: Data: Definition and Sources of Variables

S.no	Groups	Variable Symbol	Variable Definition	Source
1	Dependent variable	log_crime_incidence	Log of crime incidence: incidence of crime against children as reported by the state	National Crime Record Bureau
2		Population	Projected total population	National Commission on Population, Ministry of Health and Family Welfare
3	GSDP variables	gsdp_const_pc	GSDP per capita: GSDP (in Rs lakh)/population	NIPFP database
4		gsdp_const_g	GSDP growth rate: rate of growth of GSDP	NIPFP database
5	Social spending variables	ss_reveue_pc	Revenue social spending per capita: Revenue expenditure on social services (Rs lakh)/population	Budget documents and finance accounts
6		ss_capital_pc	Capital social spending per capita: capital expenditure on social services (Rs lakh)/population	Budget documents and finance accounts
7		total_ss_pc	Total social spending per capita=capital expenditure+revenue expenditure on social services (Rs lakh)/population	Budget documents and finance accounts
8	Child budget dummies	yo_dummy	Year of inception dummy: dummy that takes value 1 for the year of inception of child budget in the state, 0 otherwise for all remaining years	Child budgeting statements, Ministry of Finance, and UNICEF
9		cb_dummy	Child budgeting dummy: dummy that takes value 1 for the years that a state has child budget, 0 otherwise for all remaining years	Child budgeting statements, Ministry of Finance, and UNICEF

The data on crime incidence is sourced from the National Crime Records Bureau (NCRB), Ministry of Home Affairs, Government of India. The graphs below give clear evidence of a substantial surge in crime of all types committed against children during the time period under consideration. As per the available statistics, crime reports involving minors skyrocketed from 50,608 in 2013 to 135,131 in 2019, an increase of 167 percent, before levelling off at 117,864 in 2020 (figure 1). According to the most recent data from the NCRB, every four minutes a new crime is recorded that targets children in India. Figure 1 shows the trend in crime incidence. Out of all the states, Uttar Pradesh reported the highest incidence of crime against children over the years, followed by Madhya Pradesh. Further, figure 2 gives the statewise total incidence of crime during the period 2013–20. As observed, crime incidence has been highest in Uttar Pradesh followed by Madhya Pradesh and Maharashtra, while Nagaland and three northeastern states (Arunachal Pradesh, Manipur, and Sikkim) of India reported the lowest crime against children.

**Figure 1: Crime Incidence for Various Years**
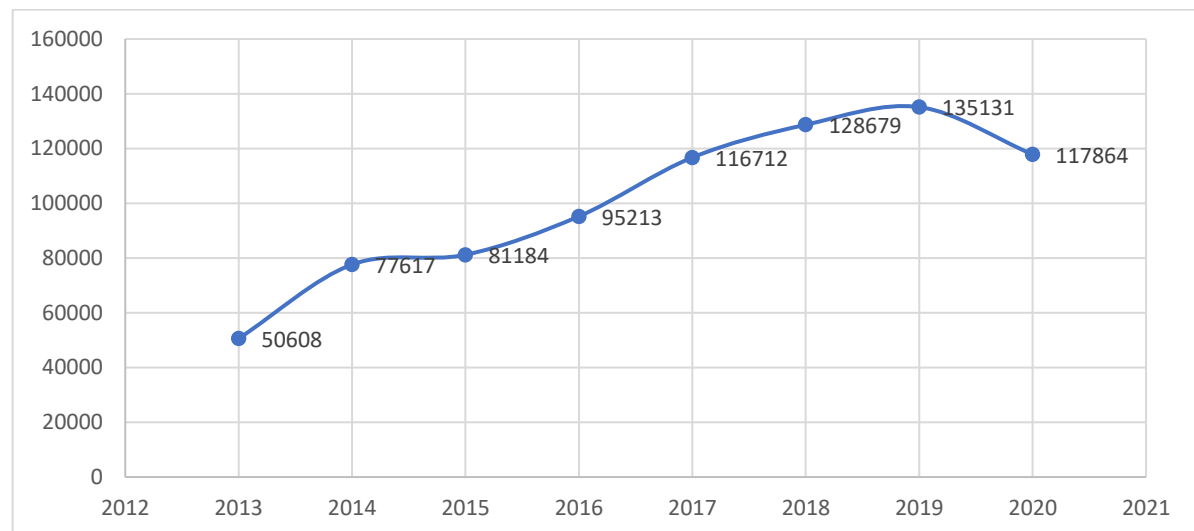
Source: NCRB (various years)

Data on the GSDP has been taken from the National Institute of Public Finance and Policy (NIPFP) databank, based on MOSPI data. Statewise trends in GSDP are illustrated in figure 3, as per which Maharashtra had the highest GSDP over the years, followed by Tamil Nadu. On comparing figure 2 and figure 3, it can be seen that states with a higher GSDP, i.e., Maharashtra, Tamil Nadu, and Uttar Pradesh, also had a higher crime incidence, thus indicating the likelihood of a positive correlation between GSDP and crime incidence. Another explanatory variable is the amount of social spending that a state allocates. The data is compiled from budget documents and finance accounts of the various states. As seen in figure 4, among all states, Maharashtra and Uttar Pradesh devote the highest amount of expenditure to social sectors. Observations from figure 2 and figure 4 combined suggest that states on the higher end of social spending are the states that have a higher crime incidence. Consequently, the data reveals that states with a higher GSDP

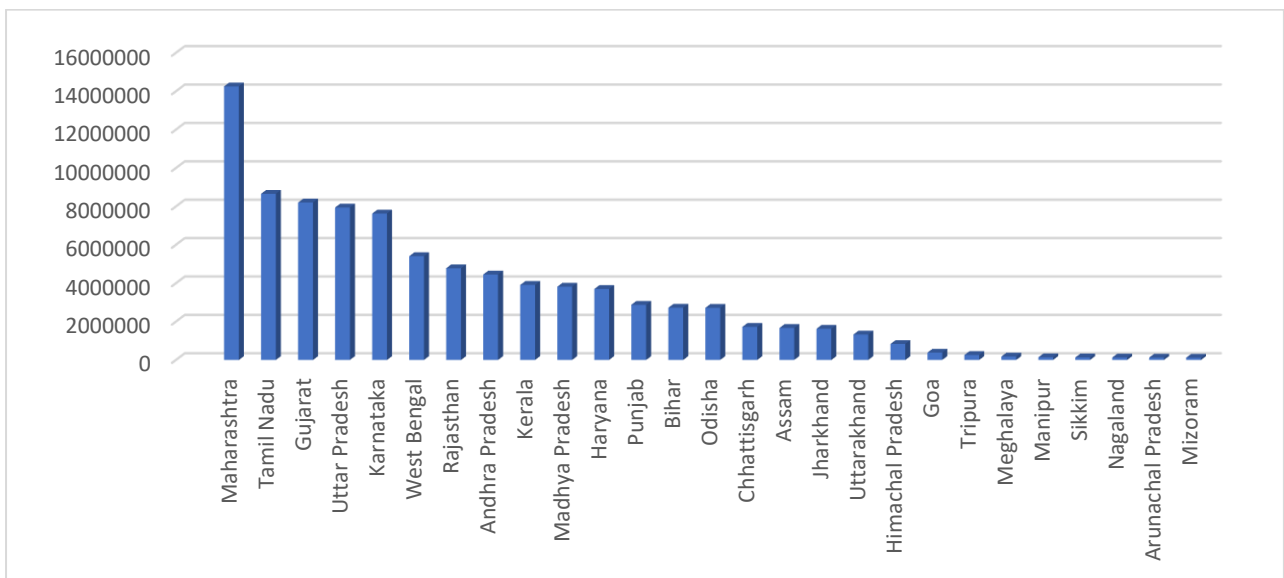and more social expenditure may have a higher crime rate, at least in the preliminary stage.

Figure 2: The Total Incidence of Crime against Children, 2013–20
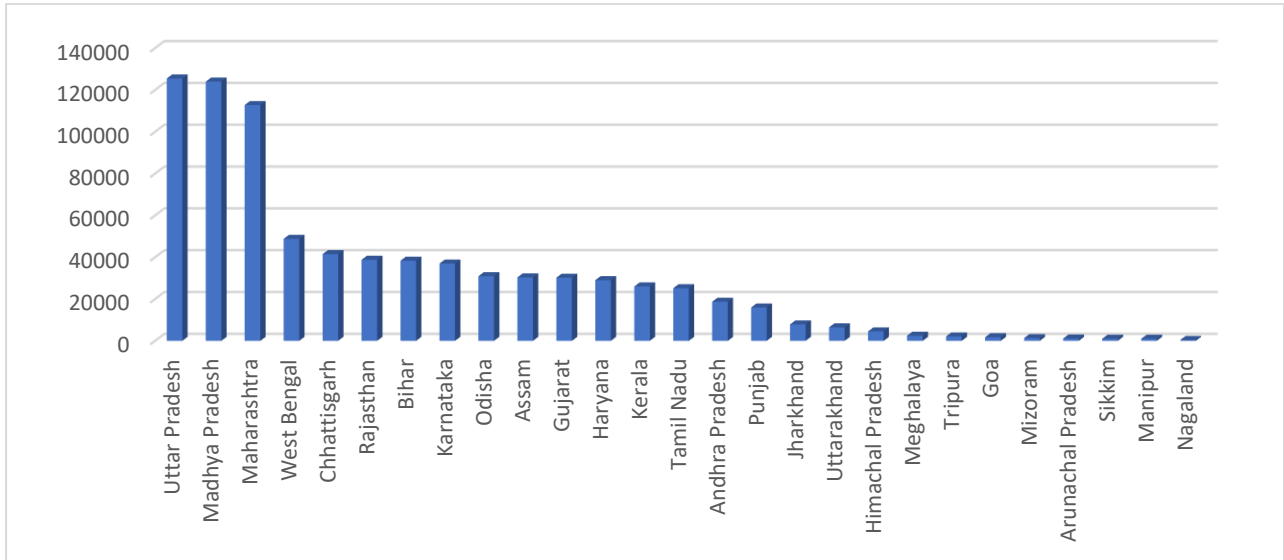
Note: States with child budgeting are Maharashtra, Chhattisgarh, Bihar, Karnataka, Odisha, Assam and Kerala
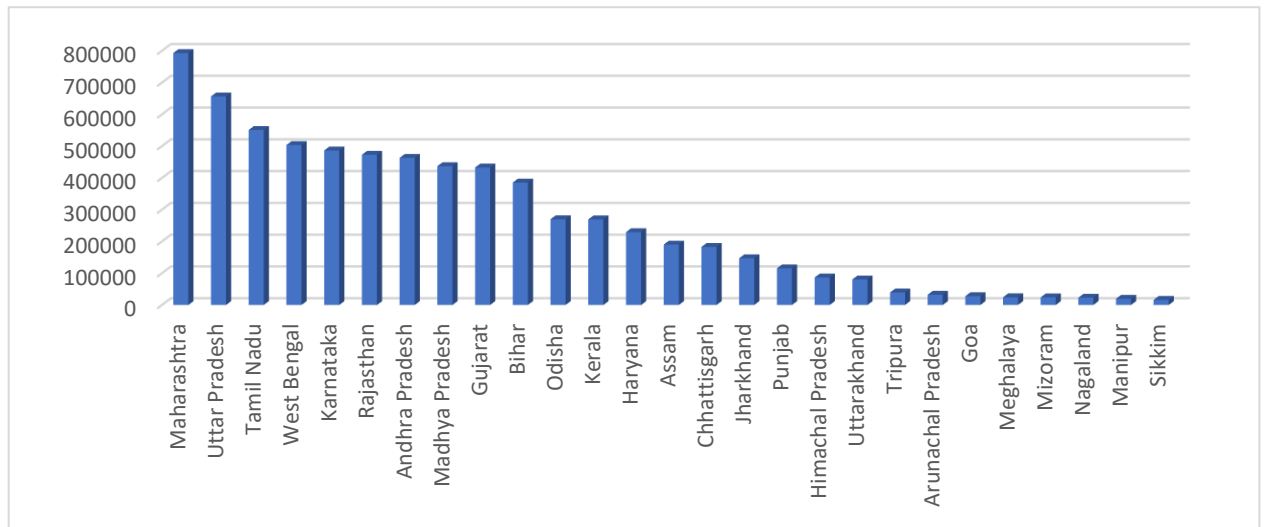**Source:** NCRB (various years)

Figure 3: GSDP by State, 2013–20

**Source:** NIPFP databank (various years)

Figure 4: Total Social Spending by State, 2013–20


Source: Finance accounts (various years)

It is generally well understood that states where social spending and GSDP are high shall tend to report a lower crime incidence, contrary to the positive correlation between GSDP and crime incidence and simultaneously between the level of social spending and crime incidence reflected in figures above. However, taking the state population into consideration mitigates this atypical pattern of behaviour.

Figure 5: Scatterplots of Crime Incidence and GSDP Variables for years 2013-2020
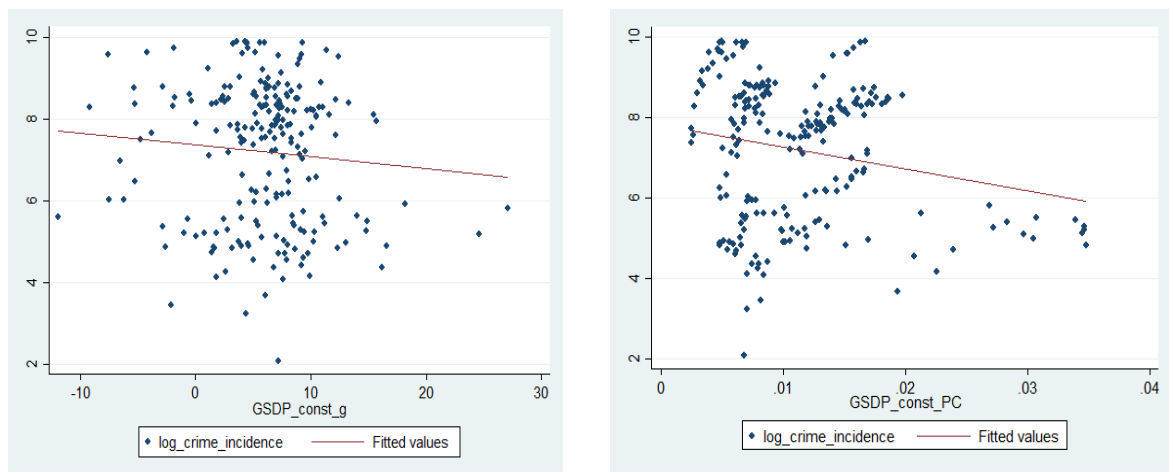
Source: NCRB (various years)

Figure 6: Scatterplots of Crime Incidence and Social Spending Variables for years 2013-2020
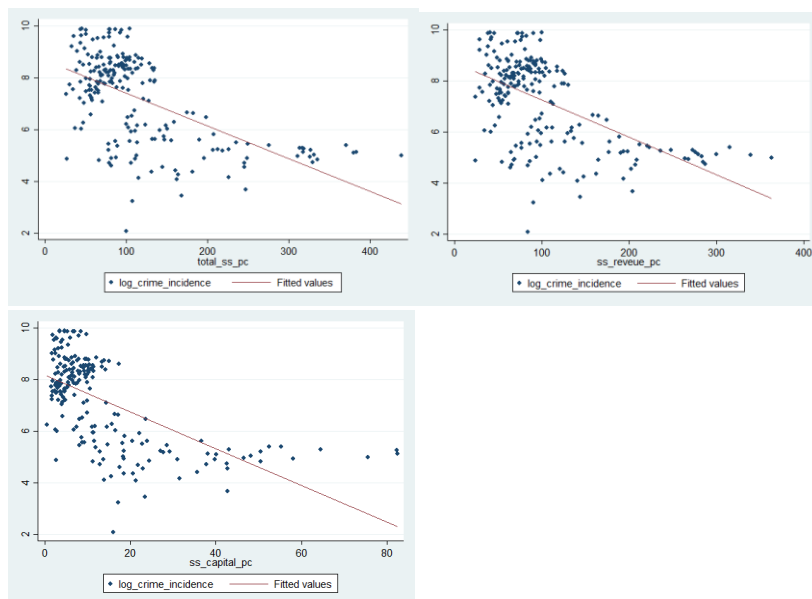
Source: NCRB (various years)

Figure 5 and figure 6 display a compilation of scatterplots for the dependent variable with each independent variable. There is an inverse correlation between crime rates and per capita GSDP, as depicted in figure 5. Also, states with higher levels of social sector spending per capita are associated with lower crime incidences, as depicted in figure 6.

IV. ECONOMETRIC MODEL AND RESULTS

With the help of Fixed effects estimates, this paper tries to answer the following questions:

1) Do social expenditures have any impact on lowering the rate of crimes against children?
2) Does the length of time child budgeting has been in effect aid in the reduction of child-related crime?
3) Does a distinction exist between states with child budgeting and those without child budgeting?

In order to answer these questions, this study employs the following structural form:

$$
\begin{aligned}
\log\_childcrime\_incidence_{it} \\
= \beta_o + \beta_1(per\ capita\ GSDP\ )_{it} + \beta_2(per\ capita\ social\ spending\ )_{it} \\
+ \beta_3(year\ of\ child\ budget\ /inception\ dummy)_{it} \\
+ \beta_4(child\ budget\ State\ dummy)_{it} + u_{it}
\end{aligned}
$$

log_crime_incidence$_{it}$ represents the log of child_crime incidence for state i in the year t. Per capita GSDP variables$_{it}$ measure the impact of GSDP variables on the incidence of crime. There are two GSDP variables that this study uses. The first is GSDP growth rate and the second is GSDP per capita. Per capita social spending variables$_{it}$ measures the impact of social sector expenditure on the incidence of crime. There are three subvariables this study incorporates, namely total social spending per capita, revenue social spending per capita, and capital social spending per capita. Year of inception is the dummy that indicates the year from which child budgeting was initiated in state i. The child budget dummy takes a value of 1 if child budgeting exists in state i in year t. u$_{it}$ is the error term.

β_2 assesses the effect of social spending on crime against children. β_3 measures the effect of introducing child budgeting on the incidence of crime against children; it also helps gauge the time factor of introducing child budgeting, i.e., the long-term benefits (if any) to instituting a child budget. β_4 analyzes the disparity between the number of crimes committed against children by a state that has implemented child budgeting and a state that has not. The fixed effects estimates are presented in table 2.

Table 2: Determinants of Addressing Crime against Children: Fixed Effect Estimates

Category	Variables	Crime Incidence (log)	Crime Incidence (log)	Crime Incidence (log)	Crime Incidence (log)	Crime Incidence (log)	Crime Incidence (log)
GSDP variables	GSDP growth rate	0.0134 (0.0056) **	0.0136 (0.0055) **	0.0031 (0.0069)			
	GSDP per capita				0.3137 (0.2243)	0.3676 (0.2186)*	1.0636 (0.1924)***
Social spending variables	Total social spending per capita	23.2257 (2.2042)***			20.2494 (2.6650)***		
	(Total social spending per capita) ^{2}	-36.3648 (4.3965) ***			-34.0468 (4.5594)** *		
	Revenue Social spending per capita		26.5998 (2.4747)***			23.1446 (2.8918)** *	
	(Revenue social pending per capita) ^{2}		-49.2073 (5.9725)** *			-46.8894 (6.0874)** *	
	Capital social spending per capita			38.5110 (12.3926)** *			6.3824 (12.6692)
	(Capital social spending per capita) ^{2}			-294.9004 (134.1885) **			-84.5500 (128.5487)
Dummies	Year of inception dummy	-0.2768 (0.1869)	-0.2583 (0.1850)	-0.4385 (0.2355)*	-0.2760 (0.1890)	-0.2601 (0.1867)	-0.3907 (0.2178)*
	Child budgeting dummy	0.3846 (0.1705)**	0.3812 (0.1685)**	0.7960 (0.2090)***	0.3133 (0.1699)**	0.3057 (0.1675)*	0.6392 (0.1906)***
	Constant	5.1166 (0.1872) ***	5.0966 (0.1841)** *	6.7258 (0.1358) ***	5.1500 (0.2015)** *	5.0907 (0.2022)** *	5.9023 (0.1898)***
	Observations	210	210	210	210	210	210
	R-squared (within)	0.4714	0.483	0.1557	0.4599	0.4736	0.2786
***p < 0.01, **p < 0.05, *p < 0.1							

Source: Authors' estimations.

A positive relationship exists between the child-related crime and economic growth. So, if the goal is to reduce crime against children, it is not just enough to stop at economic growth. Instead, a public policy that focuses on social spending has the potential to provide better outcomes. Based on the estimated coefficients, a rise in social spending has a bigger effect than a similar rise in GSDP per capita. The existence of a positive link between social expenditure and incidence of crime is at first counterintuitive, but a closer examination reveals a nonlinear relationship between crime incidence and social spending factors. There is a statistically significant result when the square of social expenditure is included in the same model. This indicates a concave relationship between social spending and crime incidence against children. As social spending goes up, the crime incidence against children increases but the rate of increase is dampened.

This "time factor" is also evident when one looks at the interpretation of the year of inception dummy of child budgeting in a State. The year of child budgeting inception dummy comes out to be significant as well, indicating that the longer that the child budgeting has been in place in a State, the greater the likelihood that crime against children would decrease. Therefore, there seems to be a negative correlation between the time period of child budgeting and the occurrence of crime against children.

The child budgeting dummy per se came out to be positively related with crime incidence. The introduction of child budgeting per se will not reduce crime against children. Kaur, Chakraborty and Yadav (2022) in their analysis on child budgeting revealed that within child budgeting, a significant chunk is focused on education spending, and the spending related to child protection schemes are found less than one per cent of the entire child budgeting. The empirical evidence from our models also emphasise the significance of designing more child protection – related schemes and budgetary allocation, within the child budgeting. It may also be noted that the states with a higher crime incidence against children are the states that have introduced child budgeting (figure 2). The states that have introduced child budgeting before the year 2021 are Maharashtra, Chhattisgarh, Bihar, Karnataka, Odisha, Assam and Kerala. As can be seen from Figure 2, the aforementioned states are on the higher end of the number of cases reported. However, as seen in the inverse relationship between the year of inception of child budgeting and crime against children, the occurrence of crime against children decreases as the time period of PFM tool like child budgeting increases.

V. CONCLUSION

Using a panel data analysis, we inferred that it is not the economic growth, but the social sector spending is efficacious in tackling crime against children. However, Public Finance Management tool like child budgeting (c-PFM) per se do not instantaneously translate into reducing crime against children. This has public policy implications in the sense that within child budgeting, budgetary allocation related to child protection needs to be strengthened. It is also revealed from the models that the year of inception of child budgeting in a state and incidence of crime against children are inversely related, indicating the relevance of c-PFM in reducing crimes against children in the long term.

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