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Decentralisation in School Management and Student Achievement: Evidence from India

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ABSTRACT *This paper examines the link between decentralisation in school management and student achievement levels in secondary schools in India. It employs observational data from two school surveys conducted as part of the Young Lives project in the southern Indian states of Telangana and Andhra Pradesh to create a measure of decentralisation as a latent construct. The relationship between decentralisation and students' abilities in mathematics and English is measured using linear mixed effects models. Contrary to the expectations in much literature, we find a negative association between decentralisation and students' scores on Maths and English assessments, even when controlling for a variety of individual and school characteristics. The results from the analysis therefore problematises decentralisation initiatives such as school-based management to improve student achievement.*

KEYWORDS: Decentralisation; autonomy; Indian education system; student achievement; learning; privatisation

1. Introduction

Decentralisation has become a pervading force in governance and management over the past few decades. It has permeated various organisations including public services, private enterprises, public-private partnerships, cooperatives or non-government bodies and also state machinery (Smoke, 2015). It has also been advocated by various international organisations such as World Bank (2011), WTO, IMF (Rana, 2014) and UN (Ullrich, Essenberg, Ratteree, Hoffmann, & Hammouya, 2001) and adopted by national and state governments as a policy remedy to improve governance and productivity and thereby enhance development outcomes.

In addition to core arguments about increased performance and efficiency, decentralisation is also employed to relax hierarchical tensions or resolve power dynamics in decision-making that could hamper organisational functioning. It is also seen as a measure to facilitate inclusion of various actors or sections of population or workers, tackle exclusion and alienation, and to deepen democratic ethos in society or an organisation. As part of this trend, decentralisation

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has emerged as a popular idea among advocates of school reforms globally, with a perception that greater autonomy, inclusion and involvement of various actors in decision making processes at each level will lead to better school performance and increased student achievement (Gamage, 2005).

However, empirical evidence on decentralisation in education shows mixed (positive as per a number of studies, negative or no effect in other works) results in terms of both fidelity of the process and its effect on educational outcomes (see Bouillon & Tejerina, 2007; Faguet & SáNchez, 2008; Fullan & Watson, 2000; Galiani, Gertler, & Schargrotsky, 2008; Gaziel, 1998; Gershberg, González, & Meade, 2012; Geo-Jaja, 2004; Glewwe & Muralidharan, 2016; Gunnarsson, Orazem, Sanchez, & Verdisco, 2004; Hanson & Ulrich, 1994; Kameshwara, Sandoval-Hernandez, Shields, & Dhanda, 2020; Leer, 2016; Lucia & Cristian, 2010; Maslowski, Scheerens, & Luyten, 2007; Newmann, King, & Rigdon, 1997; Reinikka & Svensson, 2004; Snilstveit et al., 2015; Yi, 2015). Furthermore, the concept of decentralisation itself is difficult to define and measure (Bray, 1994; Cohen & Peterson, 1996; Schneider, 2003). It is often operationalised through interventions (e.g., school based management) or domains of operation (fiscal, political etc.) that may not capture decentralisation of decision-making process in both design and implementation (Bahl, 2008; Whitford, 2007).

Therefore, in this paper we build decentralisation as a continuous latent construct capturing the decision-making process of various actors and different tasks embedded in an education system. We begin with a conceptual overview of decentralisation by reviewing relevant documents and link it to the systems in education. We study the role of decentralisation in shaping student achievement levels in the context of India. We do this by employing data from Young Lives school survey. After presenting a descriptive analysis and model estimations that examine the association between decentralisation and learning outcomes, we also discuss the potential reasons that could plausibly help in interpreting the results from the model.

2. Conceptualising decentralisation

Scholars ascertain that there is no universal definition or conceptualisation of decentralisation (Ostrom, Schroeder, & Wynne, 1993). Furthermore, it also lacks uniform quantifiable indicators (UNCDF, 1999) to identify and operationalise the construct in different settings. The manifestation of decentralisation is highly context specific and varies with changing socio-economic conditions, political climate and existing administrative structures. Decentralisation is thus largely used as an umbrella term for multiple contextual conditions rather than an operative. It cannot easily be isolated from organisational contexts or the political conditions in which it is implemented (Zajda & Gamage, 2009).

Nevertheless, it is possible to identify key facets that are common across multiple contexts. They include devolution of powers from central/national to regional/local and improving participation levels and voice of local contextual actors. Rondinelli, Nellis, & Cheema (1983) provide an authoritative articulation on the core connotations of decentralisation as

- De-concentration – Shift of responsibilities from one department to another within a central authority
- Devolution – Empowering local and autonomous units of governance
- Delegation – Transfer of power and responsibility from a central authority to provincial or local authorities
- Divestment (privatisation) – Transfer of responsibility from centralised authority to private bodies.

When decentralisation is discussed in the realm of education or school management, conceptual ambiguity leads to diverse policies that generally seek various kinds and levels of autonomy

for schools from national and sub-national governments (Sharma, 2006). For instance, Giles, Johnson, Brooks, and Jacobson (2005) looks at decentralisation as through the school improvement programmes that shifted responsibility for hiring, firing and instructional support to lower administrative levels (e.g., the district rather than national or state level). Barrera-Osorio, Patrinos, Fasih, & Santibáñez (2009) understood decentralisation in school reforms through a community-based perspective. They articulate it as a system that recognises and values the stakeholdership of local culture and values which in turn leads to improvement in outcomes.

Likewise, in most analyses of international large-scale assessments (PISA, TIMSS, PIRLS, World Management Survey, ICILS, TALIS), decentralisation is operationalised and measured using indicators such as:

- Direct control over the resources; and decisions with respect to resource allocation – whether the control is public (including various levels of administrative authorities), private (including individual, private management organisations, civil societies and trusts), or community (e.g. directly by community or controlled boards or indirectly by their representatives in local public bodies).
- Responsibility over curriculum design and instructional decisions; formulation of curriculum frameworks including textbooks, learning benchmarks and assessment standards; pedagogical strategies for teaching and learning including guidelines for accessibility and inclusivity; assessment and evaluation of the learning outcomes.
- Authority over employment and management of staff, including recruitment and termination of staff; oversight of conduct and sanctions for misconduct; establishing mechanisms of accountability and incentive structures. This authority may be shared with a wide variety of stakeholders including governments ranging from the local to central level, head-teachers and community representatives.
- Participation of parents in decision making; teacher-parent alliances in the administration of the school; feedback from students and procedural mechanisms for translating students voice into policy decisions.

Analysing the content across various relevant policy documents and other key texts, we conceive a working definition of decentralisation in a general sense as the process or degree of distribution of authority and responsibility at various levels, from higher (centre) to lower (periphery), in any horizontal or vertical, institutional structures. The structures can be conceived to be anything ranging from the state machinery, governments to institutions of health (hospitals, clinics), cultural groups or trust bodies, private firms, religion, family or other institutions. In the context of education and in this study, the operational definition of decentralisation flows from this conceptualisation of a (re)distribution of powers and responsibilities pertaining to tasks, such as hiring or firing teachers, determination of teacher salaries, curricular control, budgetary responsibility, assessment procedures, and development of pedagogical practices, from the central authority of state to the local government or to school-level actors.

3. Effects and context

There have been a plethora of theoretical formulations and empirical studies about the effects and implications of decentralisation reforms, not merely on outcomes but also on other processes, undertaken in various countries and subnational contexts and in different sectors. Despite numerable works on decentralisation, there are gaps from an empirical point of view that demand a more in depth understanding of how things work and to detect further patterns of implications especially in the developing contexts such as India.

Reviewing various works on decentralisation shows that an unambiguous or a standardised positive or negative effect of decentralisation cannot be established. Furthermore, this interaction between the practices and contextual factors is not static from the time of introduction of decentralisation reforms. Its impact varies with change in time, actors, market dynamics and socio-political environment. Moreover, there are multiple mediating factors (such as agency, stress levels, accountability measures, incentives) between decentralisation and outcomes that various studies which focus on a direct relationship ignore (Sharma, 2006).

Depending upon levels of economic development, the impact of decentralised school management is found to vary. Hanushek, Link, and Woessmann (2013) show that decentralisation yields higher learning outcomes for students in developed contexts but show unfavourable effects on student achievement in developing countries. This variance in effects can be observed within a country as well. For instance, in the context of India, decentralisation in states of Kerala and West Bengal are found to be more effective than in other states (Bardhan, 2002).

Decentralisation in India was espoused in the Gandhian tenet of local self-determination which found its validation in the Panchayati Raj amendments to the Indian constitution. The decentralisation movement in India (as an ideal rather than an empirically tested measure of administrative efficiency) is closely linked to the 73rd and 74th constitutional amendments providing local government institutions in villages and cities with greater power over governance. This shift called for reforms in the administrative structure in various domains.

In the domain of education in India, the National Education Policy, 1986 brought forth a mandate of decentralised planning and management as well as greater community participation. This also led to several democratic movements in various regions, for instance in Kerala in 1996 advocating for greater power to districts in the decentralised planning process (Mukundan & Bray, 2004). The central government also launched a District Primary Education Program (DPEP) in 1993 to improve the planning process in earmarked districts. The next New Education Policy, in the 1990's, emphasised the DPEP program as a district efficiency benchmark program to improve coordination and administration to meet the primary enrolment goals.

As part of the reforms in education, decentralisation was also implemented to improve the functioning of the system. In 2009, School Management Committees were established as part of Right to Education Act (2009) that guaranteed free and quality elementary education to all the Indian citizens between 6 and 14 years of age. These committees were seen as means to improve community sense of ownership by involving local and school actors to address local needs and challenges. It comprised of teachers, head teacher, parents, and local authorities, also following inclusion principles, to have proportionate representation of marginalised communities, oppressed castes and women.

Decentralisation in the Indian contexts has long been used as an attachment word for only private organisational frameworks. Therefore, a lot of studies have focused on public versus private systems in the context of school effectiveness but did not examine de/centralised public systems versus de/centralised private institutions. This is critical as there is a complex intersection of organisational structures that operate today, for instance decentralisation process can no longer be viewed as a proxy for market/private players as we observe a prevalence of highly centralised private organisations and also decentralised public systems.

There have been very few empirical studies in the context of India, even less in number in the education contexts, which looked at the role of decentralisation. Mukundan and Bray (2004) examined the bottlenecks to the decentralisation of the educational system in the Kerala province of India. They also raise a poignant concern, that if decentralisation was such a panacea for all administrative hurdles, why has it not been implemented in most educational systems, and desired from within. They borrow from Bjork's (2004) analysis of decentralisation in Indonesia and draw a parallel to the state of Kerala's challenges to decentralisation.

The bureaucracy of teachers/staff and their resistance to change, lack of incentives and support for moving to more innovative approaches to curriculum, lesson planning, and the centre-state relations were pointed out as the main hurdles to adoption decentralisation reforms.

Kerala was one of the states which was the first to receive 100 percent literacy rate in India. It also had a thriving public movement for decentralised planning in administrative bodies. However, in reality, the local panchayats managed the soft needs of the people, the everyday dispute resolution without exercising real voice in the political decision-making and resource allocation. Also, the guidelines for making the shift towards decentralised planning were highly academic and removed from the reality on the ground, which only led to them being co-opted in the pre-existing administrative structure.

Mahal and Rajaraman (2010) investigate the case of diversity in 'decentralised' public spending in the two key areas of health and education. They undertook this study given the diverse cultural formations and linguistic-cultural differences in the foundation of India's federal structure; and that preference for local needs and political accountability are the cornerstones of any democratic-governance framework. They begin their analysis with an assertion that there will be convergence across the sub-national groups with respect to the nature of public spending in an area if there is uniformity of interests among its populations.

Their study tests for convergence in these two areas of education and health, which in-turn will reflect the level of diversity of needs of the population and whether decentralised governance brings that out. Their analysis points out that there is no convergence among these two areas, which are the public spending on education and public health. They vary as a proportion of the income to GDP of the states. In the education sector, a convergence among the states with respect to their public funding has been observed. This study indicates that while one of the main intents of decentralisation is to bring about adherence to local needs in resource allocation, even in a country as diverse as India, the needs end up converging as the authority de-facto remains with the central government while administrative responsibility and fiscal spending is shared.

Decentralisation as characterised in education research, policy and practice is tightly linked to the embedded contexts and the socio-political factors. Decentralisation can be seen as a process which has many facets to it. Depending upon the context, decentralised decision-making may impact the administrative coherence among various stakeholders, affect instructional delivery system and thereby shape learning outcomes in schools. These results will vary depending upon their compatibility with the internal system and external socio-economic and political climate. It can, therefore, range from extremely beneficial to detrimental.

Decentralisation reforms have the potential to enhance efficiency and bring forth transparency, participation and democratic ethos to the functioning of systems. Or it could also spiral out various unintended consequences and render an irreparable damage. Amidst the complex social structures, persisting inequalities, asymmetry of information, capacity of the local actors, prevailing prejudices; it only calls for a more rigorous and continuous empirical engagement with the link between decentralisation and outcomes of interest, before advocating it as scalable policy reform.

There is no evidence of any sort that would enable one to infer about the nature of decentralisation in the states of Andhra Pradesh and Telangana with respect to education management practices and its outcomes. In this study, we intend to throw some light on this issue by gathering some empirical evidence.

4. Data and methods

This analysis examines the link between multi-stakeholder levels of participation in decision-making and student achievement levels (delimited to math and language scores) in two states (Andhra Pradesh & Telangana) in India to infer the role of decentralisation in improving student achievement and thus education systems. To test the significance and magnitude of decentralisation effects, datasets from the Young Lives study (Moore, Azubuike, Reddy, Rolleston, &

Singh, 2017) are used. Young Lives study (a team of researchers primarily housed at Oxford University) have designed and conducted the Secondary School Survey comprising around 205 schools and approximately 9000 subjects (comprising of students, teachers and principals) within the schools in 2016–17. The survey captured data on various school level characteristics such as decision-making pertaining to various school related tasks, student background, teacher’s academic capacities and characteristics, and importantly student learning levels.

The schools in the Survey have been selected using stratified random sampling to include different school types, state government schools (85), Private Aided schools (29), Private Unaided (55) and the Tribal and Social Welfare schools (36). From each stratum, the schools have been selected using random sampling. All students of grade 9 (aged between 13 and 16 years) were tested on their performance of grade level skills in mathematics and language (English). These scores are considered as proxy for development of cognitive skills and student achievement for the purposes of this study and any conclusions drawn are subject to this limitation.

The assessment tests, for mathematics and English, comprised of forty and fifty items respectively. The scores of all respondents are scaled using a Rasch model to account for differences in item difficulty. Both mathematics and English abilities are measured at two timepoints separated by nine months. We include the initial score as a control variable in our analysis so that learning scores can be better attributed to school management (instead to prior learning levels) rather than if we relied upon a purely cross-sectional approach.

The consideration of English language learning entails more detailed analysis, as an important consideration is whether or not the student is enrolled at an English medium school. Furthermore, the effect of English medium may not be constant across all school types, but rather it is likely to vary considerably, particularly between private un-aided and public schools. Thus, our model of English language learning outcomes includes an additional school-level dummy variable for English medium schools and an interaction term between the school type and use of the English medium. These are omitted from our results below, but available on request.

In addition to decentralisation and learning outcomes, we include several important control variables in our analysis. These include type of school the child attends, students’ self-reported gender, caste, parental education (the highest of both parents, on an ordinal six-point scale) and a home asset register. The asset register is taken from a series of dichotomous questions on home possessions (for instance, a bike, a table, a fan, an air conditioner) and scaled using logistic principal component analysis. School type is a particularly important school-level control variable: because decentralisation varies across school types (see [Figure 1](#) below), it would be possible to incorrectly attribute the effects of school type to decentralisation if the school type were not included in the analysis.

We analyse the relationship between these variables using linear mixed effects models or also known as hierarchical linear models. It would address the data nesting/clustering and gives us more reliable estimates of the associations (Goldstein, 2011; Hox, Moerbeek, & van de Schoot, 2017). These models are widely applied in the school effectiveness research due to their ability to disaggregate school-level and individual level variables. The hierarchical setup is equivalent to OLS estimation with school fixed effects and standard errors (robust to heteroskedasticity and) clustered at school level. Hence, the following two level hierarchal models, with students at level 1 and schools at level 2, is constructed to examine the association between student or school-level characteristics and maths or language scores.

$$\begin{aligned}
 \text{Scores (Math|English)}_{ij} = & \beta_0 + \beta_1(\text{Decentralisation})_j + \beta_2(\text{Initial Score})_{(t-1)ij} \\
 & + \beta_3(\text{School Mean Score})_j + \beta_4(\text{School Type})_j \\
 & + \beta_5(\text{Caste})_{ij} + \beta_6(\text{Female})_{ij} + \beta_7(\text{Parental Edu})_{ij} \\
 & + \beta_8(\text{Home Assets})_{ij} + \beta_9(\text{Food Poverty})_{ij} + (e_{ij} + u_j)
 \end{aligned} \tag{1}$$

$$e_{ij} \sim N(0, \sigma_e^2); u_j \sim N(0, \sigma_u^2)$$

In the model above, β_0 is the overall mean across schools where u_j is the effect of a school j on students score and e_{ij} being the residual at student level. This would yield into random intercepts model whose slope is fixed but the effect can be estimated for each school with u_j shift in the intercepts. The main parameter of interest is β_1 , the average change in scores associated with a one standard deviation change in school decentralisation. The estimation strategy only allows us to estimate value added models. There would be many unobservable characteristics that are correlated with the error term (e_{ij}) which would not absolve β_1 from potential biases (such as omitted variable bias or selection issues). Therefore, the results only speak to the prior work in the domain of school effectiveness research and hence cannot be interpreted to be causal.

4.1. Measuring latent construct of decentralisation

Following the understanding of decentralisation defined in the previous sections as the phenomenon of transfer of authority and responsibility from central actors to local actors. This particular context of educational practices and the current survey presents us with an opportunity to evaluate the magnitude of the effects arising from actor's (central and local) participation in decision making process with regard to the concerned tasks. The relevant tasks pertaining to the functioning of the schools are categorised into two types, (1) *Resource allocation tasks* and (2) *Curriculum and Assessment tasks*.

Resource allocation tasks pertain to school level decisions like hiring and firing school staff, determining their salaries and increments, terms of employment and school's budgeting. Curriculum and Assessment tasks include classroom level decisions related to content of the course to be included or exempted, use of textbooks or other teaching tools, assessments and evaluation of student progress.

Various actors recognised in this structure. The government is directly responsible for running the schools in some cases while only providing aid or financial support for the schools in other cases. They provide a broad regulatory framework and rules for functioning for all schools in the country which can include the broad vision, purpose and goals for future. It is not uncommon to find private schools emulating and adopting rules and mechanisms deployed by the government authorities. The district education officer (DEO/MEO) oversees administration of public schools at the province level. In the case of a group of private schools, there is a School Chain Management which supervises the operations at school level and decides the scale of authority and responsibility for its constituent schools. The level of interference and distribution of responsibilities varies from one school to another. The tasks involved in both the categories, the actors involved in the system were tabulated as part of the survey as follows (Tables 1 and 2).

This table lists various tasks and their distribution among different actors. There is diversity in the school management practices observed in the Indian contexts. Different schools have different scopes of influence and authority for various actors with regard to different tasks listed above. This variation is assessed on the basis of actors participation and responsibility with regard to each task in each school. Even with a uniform policy for school administration, the practice at a micro level, on the ground, could be varied across different school settings. There are a variety of combinations of dynamics plausible at the actor and the institutional level to include or limit the active participation and autonomy. This survey instrument (which included many other focus variables) has been administered to the head teachers of all the schools in the sample.

The operationalisation of decentralisation as a single dimensional construct in this study involves two key considerations: the decentralisation of actors and the decentralisation of

Table 1. Resource allocation tasks

	Head teacher	Teachers	School management committee	School chain management	MEO/DEO	State education dept	National education dept
1. Selecting teachers for hire							
2. Firing teachers							
3. Establishing teachers' starting salaries							
4. Determining teachers' salary increases							
5. Creating the school budget							
6. Deciding where the budget is spent within the school							

Table 2. Curriculum & assessment tasks

	Head teacher	Teachers	School management committee	School chain management	MEO/DEO	State education dept	National education dept
7. Establishing student assessment procedures							
8. Choosing which textbooks are used							
9. Determining course content							
10. Deciding which courses are offered							

Source: Young lives secondary school survey 2016–17.

activities. The first of these considerations refers to the extent to which different actors constitute a decentralised approach to school management; it entails situating various actors involved in school management (Headteachers, school management committees, local government) on a scale from 'decentral' (positive) to 'central' (negative). The second consideration refers to the extent to which the range of activities involved in school management (staffing, curriculum, budget) are either decentralised or centralised. Based on the actors involved in a given activity and their corresponding centralities, the activity can also be measured on a scale of centralised to decentralised.

The analysis is undertaken through singular-value decomposition of both actors and activities in a two-step process. In the first step, logistic principal component analysis of the actors involved in school management is undertaken across all activities. The component loadings (in Table 3) indicate key distinctions in the decentralisation of school management. Importantly, the strongest distinction lies between Headteachers and school management committees, as decentralised actors, and the district education officers (DEO) as a centralised actor. Because of

Table 3. Actors loading matrix

Actors	Loadings
Head teacher	0.567
Teacher	0.163
School management committee	0.340
School chain management	0.160
DEO/MEO	-0.692
State government	-0.176
Central government	-0.025

Table 4. Activities/tasks loading matrix

Activities/Tasks	Loadings
1. Selecting teachers for hire	0.463
2. Firing teachers	0.449
3. Establishing teachers' starting salaries	0.312
4. Determining teachers' salary increases	0.288
5. Creating the school budget	0.194
6. Deciding where the budget is spent within the school	0.135
7. Establishing student assessment procedures	0.270
8. Choosing which textbooks are used	0.320
9. Determining course content	0.293
10. Deciding which courses are offered	0.294

their relative distance, both bureaucratically and geographically, the contrast with state and national governments is somewhat lower, although they are also identified as centralised actors (Table 4).

The second step involves measuring decentralisation of each activity/task by applying the component loadings to the actors involved by each activity. Thus, if a respondent identified headteachers and the school management committee as responsible for a given activity (e.g., hiring teachers), a value of 0.907 would be assigned to the variable of hiring at the respondent's school. Once decentralisation of each activity is calculated for all respondents, it is possible to apply standard techniques of principal component analysis to measure decentralisation of the school. After the construction of latent construct of decentralisation, the data is fitted for the model specified above.

5. Findings

The descriptive statistics involving the school type and the decentralisation levels in school management is shown in the following figure. Figure 1 shows that private unaided schools in general are more decentralised than public schools (including Tribal and Social welfare schools) where the management is relatively centralised. However the Private aided schools (which are funded by the state but managed by the private individuals) have a wider spread where students are subject to a diverse forms of school management practices. The density plots, in Figure 2, showcase the wide spread in management practices for Private aided schools. The Tribal and Social welfare schools are relatively more uniform in school management with highest centralisation levels.

The following Table 5 demonstrate findings from the mixed effects models proposed in the previous section. The first table demonstrates the models with standardised mathematics scores as the dependent variable and the second table/model has standardised English language scores

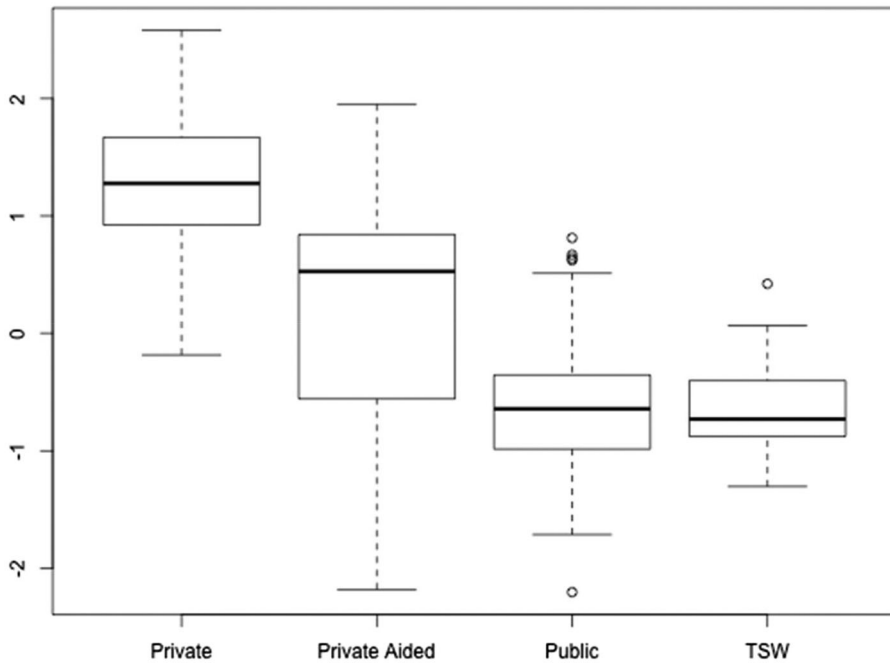


Figure 1. Decentralisation levels by school type.

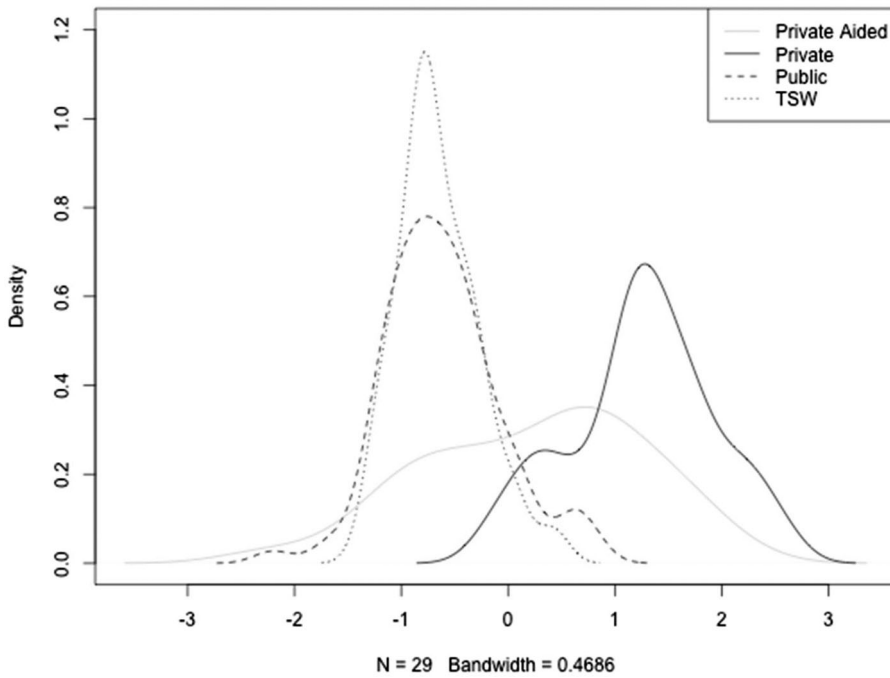


Figure 2. Density plots for decentralisation by school type.

Table 5. Linear mixed effects models

	Dependent variable:			
	Math		English	
	(1)	(2)	(3)	(4)
Decentralisation	-0.11** (0.04)	-0.10** (0.04)	-0.07* (0.03)	-0.07* (0.03)
Initial score	-	0.54*** (0.01)	-	0.53*** (0.01)
School mean score	0.71*** (0.05)	0.18*** (0.05)	0.65*** (0.04)	0.16*** (0.04)
School = Private aided	-0.29*** (0.10)	-0.34*** (0.09)	-0.36*** (0.12)	-0.39*** (0.11)
School = Public	-0.27*** (0.10)	-0.34*** (0.09)	-0.39*** (0.11)	-0.44*** (0.11)
School = Tribal & social welfare	-0.25* (0.12)	-0.36*** (0.12)	-0.34* (0.13)	-0.37*** (0.13)
Caste = Scheduled tribe	0.15* (0.06)	0.14* (0.05)	0.10* (0.05)	0.01 (0.05)
Caste = Other backward class	0.17*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.04 (0.02)
Caste = General/Forward	0.22*** (0.04)	0.12*** (0.03)	0.20*** (0.03)	0.11*** (0.03)
Female	-0.01 (0.02)	0.04* (0.02)	0.09*** (0.02)	0.07*** (0.01)
Parental education	0.06*** (0.01)	0.04*** (0.01)	0.07*** (0.01)	0.03*** (0.01)
Home assets	0.01*** (0.002)	0.002 (0.002)	0.01*** (0.002)	0.002 (0.002)
Food poverty	-0.46*** (0.11)	-0.34*** (0.09)	-0.45*** (0.09)	-0.42*** (0.08)
Intercept	-0.17* (0.08)	-0.03 (0.08)	-0.15 (0.09)	0.06 (0.09)
Groups/schools	200	200	201	201
Std. dev (group)	0.225	0.238	0.171	0.184
Observations	6,807	6,791	6,756	6,752

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$.

Notes: Reference category for school type is 'private unaided school' and for caste is 'scheduled caste'. Models 1 and 3 do not control for the initial score of the respective student. Models 2 and 4 are the value-added models. Models 3 and 4 also include if the student has enrolled in an English.

as its outcome variable. This study controls for factors which influence student achievement levels thereby distilling the effects that are driven by school management practices.

Decentralisation, in the contexts of these two states, does not appear to contribute positively to student achievement. One standard deviation (SD) increase in decentralisation in decision making is associated with a drop of 0.10 SD in mathematics scores and 0.07 SD in English language achievement. The consequences of bringing about any decentralisation reforms in the given education context may be suggestive of not having any real benefit in terms of student achievement. While results show a statistically significant relationship between decentralisation and lower learning outcomes, there is some concern that these results could be caused by highly influential cases (i.e. outliers). The multilevel structure of the data increases this concern: with 6750 students it is unlikely that any one case could drive the effects, but with a smaller sample of around 200 schools, there is greater risk that a small number of schools influence findings. To address these concerns, we evaluated the robustness of our models by identifying the

groups/clusters (schools) that exerted high levels of influence on Mathematics and English. The models were estimated without these schools and the results showed little substantive change, particularly with respect to the magnitude and statistical significance of decentralisation.

Private unaided schools, on an average, are found to outperform all other types of schools (Private aided, Public and TSW schools) by a significantly big margin, of not less than 0.34 SD, in both outcome variables. A wide disparity can be observed in terms of performance of schools between private schools and the rest in both mathematics and English even after controlling for a set of covariates. This could potentially be due to the selection of students into the type of schools. Caste is found to be profoundly important, with students from general/forward castes outperforming the students from scheduled caste backgrounds by 0.12 SD, on an average, in mathematics scores and by 0.11 SD in the case of language scores. The dynamics of caste act as significant predictor of student achievement levels, after controlling for other proximate and school factors. Girls on average were found to perform better than boys but gender seem to command lesser explanatory power than the privileged caste category or attending a private school.

In line with conventional wisdom, parental education has a significant positive association with the outcomes. One of the important characteristics that continue to shape student's learning and achievement is food poverty. It is a measure of the quantity of meals a child gets each day and acts as a proxy for persisting hunger levels and can be potentially linked to undernourishment. This finding could be seen to reiterate the importance of mid-day meal schemes as means to contribute to alleviating hunger that is highly associated with improving achievement levels. However, we do acknowledge that the magnitude of the effect is likely an overestimate as it could have picked up the effect of socio-economic status in a more concrete way than home assets might have.

6. Discussing decentralisation

Negative associations between decentralisation and student outcomes may exist in this context as often, decentralisation does not operate in the manner, nor for the reasons, claimed. Decentralisation is not merely the transfer of authority but also the transfer of the burden of responsibility to carry out the functions. It is often resorted to as a means of abdicating the responsibility and obligations of the state or any central authority, rather than the need to increase the agency of the local authorities. Under the reforms of decentralisation, and in order to make up for the lack of funds or cuts in budgets, liberalisation or privatisation and deregulation are employed to tackle the basic commitments. Community-based financing, performance financing and public-private partnerships are sometimes used to cover the underlying logic of de-financing rather than financial delegation.

In the contemporary neoliberal paradigm, the decentralisation over decision-making does not pan out in actuality as the policy was formulated (e.g. in the case of Chicago School Reform Amendatory Act 1995). Often, authority is channelled into only in few hands, either people or organisations whereas the responsibility to deliver services (in this context, delivering quality education or improving learning levels) is pushed into the hands of a different set of actors. Coordination among different agents of the system proves to be a vital ingredient and a challenge in the process of decentralisation in the context of education. Laudams's (2013) insights on decentralisation highlight the importance of coordination as perceived by majority of teachers. The majority of teachers who supported school autonomy also emphasised the role of coordination with main administration. If not, teacher responsibilities and workload are increased without giving them any real stakes in decision making, negatively affecting their quality of teaching and thus student outcomes.

An unintended consequence of decentralisation reforms that may be hindering student outcomes is that decentralisation puts various levels of administration in a struggle over authoritative claims over each other. This may not only make them less effective organisationally but also hamper coherence in terms of instructional delivery and learning. Bardhan (2002) conveys how

the attractive concept of decentralisation has yielded impacts contrary to optimistic expectations. He illustrates that decentralisation may be far from a boon, and perhaps a bane, in developing countries. In developing contexts, decentralisation faces a challenge in the form of a lack of technical and administrative capacity (Bardhan, 2002; Leer, 2016) at local level or school level in addressing the needs and challenges to improve outcomes. The competence levels of the workforce to execute everyday tasks (such as teaching or evaluating) might not be efficient at dealing with other responsibilities or additional burdens (such as planning the budget, curriculum planning, and experimenting with innovative pedagogical practices). The central/state authority can attract better talents, specialists with an expertise only in a few of the key tasks whereas local authorities and communities might not have the requisite resources or administrative competence to fill the roles required by decentralisation of authority, instead requiring more work from existing actors. This would make sense in understanding why decentralisation is negatively correlated with outcomes especially given the workload of teachers across schools.

Student outcomes may be negatively affected in this context due to decentralisation impeding effective resource allocation across all localities. Due to information asymmetry or lack of central authority or coordination, it could potentially lead to an ineffective use of limited resources that could be avoided through a system-level allocation. In the context of education, if the local policy for each district or sub-province looks at recruiting a minimum number of teachers to each school, there could be a scenario where this could disturb the equilibrium with other districts or sub provinces and impact recruitment and thus teach-pupil ration in adjoining localities. This could hinder a more effective resource allocation mechanism at different localities. A central authority might be able to better accommodate for any spill over or lopsided impacts on other localities due to the practices adopted by one subunit that might alter the equilibrium. Centralisation then could potentially compensate for such losses and be of more pronounced importance in the case of developing societies.

In terms of planning or establishing institutions, the central authority would have a more panoramic viewpoint which incorporates the ideas of long term expansion, sustainability and prescriptive measures regarding the ideals and vision of the institutions. However, the local authority has an information advantage and would be efficient in tailoring the services to local needs and addressing local demands and resolving local tensions to facilitate a productive everyday functioning of the institutions.

The positive consequences of decentralisation may not be realised as decentralisation itself is not being fully realised. Numerous studies and policy documents characterise decentralisation as a mere shift in power/authority by increasing the number of actors. However, it might not be an actual sharing of authority. It has come to be associated with the new conception of 'decentralised centralisation', wherein, the actual control is retained by the central authority through conditions of the reforms and the responsibility of some tasks is dispersed by involving many other actors. Delegation of responsibility might be necessary but not a sufficient condition for decentralisation.

In addition, effective decentralisation has to take into account the interplay of power structures and authorities among the central and local levels. It must carve a procedure to implement a reform by carefully understanding aspects of the administrative structure that maintain order and efficiency and those that might be used to create fissures for effective local autonomy. Local socio-cultural realities and power cliques cannot be ignored. For instance, realities like corruption and social inequalities in access to education might shape the reforms to undermine few social groups and favour others (Syafi'i & Welch, 2008). It is thus important to focus on the effective agency of the actors, and their roles and abilities to carry them out while considering decentralisation procedures (Mukundan & Bray, 2004).

One of the other key points this study intends to highlight is questioning if privatisation could be continued to be viewed as a characteristic of decentralisation. Although decentralisation is usually perceived as a practice of transfer of responsibilities to private entities. At the

level of school-based management, authority seems to be negotiated differently. There is also the case of private school chains and highly centralised control with their central management exercising tight command over the smallest of decisions on pedagogy and discipline. When one speaks of decentralisation, one cannot assume that all public systems have crippled autonomy and are highly central and all private institutions have high levels of autonomy by the fact of being private and free from government regulation. Decentralisation cannot be viewed as privatisation any longer or at least in the context of developing nations. The context of Indonesian education could act as good illustration where the public schools underwent decentralisation and not private schools.

In post neo-liberal times, the difference between the private and public is not very distinct as the market logic has been adopted in several public spheres. The administrative structures overlap and function on shared principles of management, whether it is public or private institutions. Conceptions of decentralisation as well as the need to maintain administrative coherence are needs of every organisation, whether it is public schools run by central or provincial governments, non-profit schools in elite or deprived areas, or private school networks managed by global corporations. Therefore, in such a system, defining decentralisation from a standpoint of privatisation or divestment might not yield the most accurate picture. In fact, the authority and relationships of agency among the different actors might be a better metric, which might yield a more nuanced web of influences of decentralisation on outcomes as well as its affordances and follies.

7. Conclusion

Several studies have only reinforced the complexity and ambiguity in implementing decentralisation in education systems. Acknowledging that decentralisation is highly context specific and its effects vary, this study has attempted to contribute to the understanding of the effects of decentralisation in Indian school-education contexts. For the empirical investigation, secondary data from Young Lives Secondary School Survey 2016–17 has been analysed. The survey was designed and administered to collect data on, amidst others, the decision-making authority in schools with regard to various resource allocation and curriculum and assessment tasks. The survey also includes testing students on language and mathematics skills.

Random intercept models have been constructed to examine the effects of decentralisation on student achievement, and also the effects of other proximate contextual factors. The findings suggest that decentralisation has a significant negative association with student learning scores (especially in mathematics). Even after controlling for various proximate factors (including school type – private aided, private unaided or government schools), students in decentralised schools, on an average, tend to perform more poorly than those in schools where decision-making is centralised. The contextual reasons behind this phenomenon remain to be explored in detail and would require a more in-depth qualitative study to throw light on the processes at work that give rise to this pattern.

The link between decentralisation and student achievement can be argued to be relatively weak in magnitude when compared with other covariates such as type of school, caste, gender and the food poverty of the individual. Food poverty is found to be much more of a discriminatory category with significantly high explanatory power of student achievement. Students from General/Forward caste score significantly higher than those from the deprived castes. Results highlight that food poverty and caste continue to remain relevant barriers for student achievement even in the second decade of the 21st century.

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Data availability statement

The data and code are available on OSF using the following link: <https://osf.io/hgv7d>.

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