**The effects of local-level economic inequality on social capital: Evidence from Andhra Pradesh, India**

**Abstract**

How do changing levels of local economic inequality affect households’ social capital? This article contributes to answering this question by examining the impact of village-level economic inequality in Andhra Pradesh on household levels of bridging and bonding social-network capital, using Two-Stage Least-Squares regressions of data from household surveys conducted between 2002 and 2014 by the Young Lives programme. The results of the study suggest that as local economic inequality rises, households’ bridging social capital, measured through participation in efforts to resolve broader communal issues, declines whilst their bonding social capital, measured through membership in relatively demographically and socio-economically homogeneous voluntary associations, increases. Existing research suggests that the consequently growing fragmentation of communities along demographic and socio-economic division lines is likely to contribute to social conflicts.

**Keywords**

Social capital, economic inequality, social-network capital, group membership, communal participation, India, Andhra Pradesh

**Introduction**

The sky-rocketing wealth of a handful of individuals across the world has drawn increasingly more attention to the rapidly deepening inequality in many countries, including India. According to the *2018 World Inequality Report*, South Asia experienced the fastest rise in inequality of all world regions between 1980 and 2016, with 55 per cent of incomes and 63 per cent of wealth in the hands of the richest 10 per cent in 2012 (WIR, 2018). The economic inequality deepened further during the Covid-19 pandemic, with 74 per cent of Indian wealth held by the richest 10 per cent in 2020 (Ghatak, 2021). The current income inequality in India is estimated to be higher than at any previous time since the implementation of the Indian income tax in 1922 (Chancel and Piketty, 2017).

 Economic inequality and its rise are suspected of detrimental effects on desirable development outcomes and one of the key factors believed to mediate in this regard is ‘social capital’. Generally understood as social links amongst people and the norms and values accompanying such links, existing research has connected social capital with improvements in health, education, and nutrition and also shown it to be negatively affected by inequality (Woolcock, 1998: 187). Although the most visible manifestation of the deepening inequality in India, as is true also globally, may be the growing wealth of Indian billionaires, it is at the local level where inequality has the strongest social influence as it is within communities that people are best positioned and most prone to comparing their economic position with others’ (Brown, 2017). Using household survey data collected in Andhra Pradesh[[1]](#endnote-1) between 2002 and 2014, this article examines in closer detail than previous works how changing levels of local inequality affect households’ social capital.

 Focusing on social-network capital, the study finds that whilst higher intra-communal inequality reduces people’s communal participation, such as in efforts to jointly address community problems, it raises people’s participation in voluntary groups, such as farmers’ associations or savings groups. Since the groups are formed predominantly by people of similar demographic characteristics, as indicated by results of an assortative-matching analysis, rising inequality in India apparently amplifies the degree of communities’ fragmentation and thus heightens the likelihood of social conflicts.

 This article proceeds in the following manner. The next section briefly summarises the existing literature examining what social capital is and how it can be classified, what effects it has on desirable development outcomes, and how it is influenced by inequality. Next, the article contextualises the issues of inequality and social capital to Andhra Pradesh, India. Following sections introduce the data used and their descriptive statistics and explain the empirical methods employed. The last sections display the results of the analysis and discuss their significance and implications.

**Social capital, its effects on development outcomes, and its relationship with inequality**

*What is social capital and is it good for development?*

 The first use of the term ‘social capital’ is attributed to Hanifan (1916), who understood it as neighbourhood associations, but the concept gained popularity in social science more recently largely thanks to research by Putnam, Bourdieu, and Coleman. Each of the three scholars, along with many others utilising the term, understood social capital somewhat differently but some consensus has emerged around the basic OECD (2001: 103) definition of social capital as ‘networks together with shared norms, values, and understandings that facilitate co-operation within or amongst groups’.

 There are two key divisions within this understanding of social capital, however. The first one, implied clearly by the OECD definition, relates to whether social capital in a given context denotes the afore-mentioned ‘networks’ amongst people or rather the ‘norms, values, and understandings’ associated with the networks. Accordingly, social capital has been classified into ‘social-network social capital’ (e.g. Chantarat and Barrett, 2012; also called ‘structural’ by Galab et al., 2006) and ‘relational social capital’ (Wasko and Faraj, 2005; referred to as ‘cognitive’ by Galab et al., 2006). Where social-network capital encapsulates the connections amongst people and their associative activities, relational social capital measures people’s feelings about others, including trust, sense of belonging, and reciprocity (Krishna, 2007). The direction of the relationship between the two types of social capital remains contested, however. Some researchers posit that the mental aspects of social capital predispose people towards network aggregation (e.g. Krishna, 2007: 945) whilst others believe that it is the networks that can help generate feelings of trust and reciprocity (e.g. Molinas, 1998: 424). Due to the nature of the data analysed, this study focuses solely on social-network capital.

 The second key division within the general understanding of social capital relates to whether the relationships amongst people, along with the associated values and norms, captured by the concept are more inward-facing, aka ‘bonding social capital’ (Adler and Kwon, 2002; also called ‘individual’ or ‘bad’ social capital – Portes, 2000; Levien, 2015), or outward-facing, aka ‘bridging social capital’ (also referred to as ‘collective’ or ‘good’ social capital by Levien, 2015). Bridging social capital encapsulates open, outward-looking networks forged by people from different backgrounds whilst bonding capital consists of ‘inward-looking networks that … reinforce exclusive identities and homogenous groups’ (Putnam, 1993: 22). Bourdieu (1986: 22) understands social capital mostly as the bonding kind, arguing about its continual reproduction through the structure of class relations to ensure material profits, and sees its occurrence mostly within families or largely homogeneous groups. Conversely, when extolling the virtues of social capital, Putnam refers primarily to the bridging kind, emphasising the importance of ‘connect[ing] with people unlike ourselves’ (Putnam, 1993: 411)[[2]](#endnote-2).

 The effects of social capital on desirable development outcomes discovered have largely varied in line with the definition of social capital used, particularly whether a more bridging or bonding conceptualisation was employed. Bridging social capital has been linked with a range of positive development outcomes. In *Making Democracy Work*, Putnam (1993) famously posited that northern Italian regions performed economically better than southern ones thanks to greater associational activity, which built generalised trust (aka, bridging relational social capital) amongst people. Knack and Keefer (1997), using data from 29 predominantly high-income countries, found bridging social capital to have bolstered countries’ economic growth. Similarly, Hickey (2010) concluded that bridging social capital contributed to poverty reduction in countries ranging from Argentina through Bangladesh and South Africa to Tanzania. Other positive effects of social capital, mostly of the bridging kind, detected have included better public health (Kawachi et al., 1997), lower violent crime rates (Kennedy et al., 1998), higher inclusion in social programmes (Petrikova, 2020), and better nutrition (Petrikova and Chadha, 2013) and mental-health (Tuan et al., 2005) outcomes amongst children.

 In contrast, depictions of the effects of bonding social capital have been significantly less positive. Beugelsdijk and Smulders (2004) found bonding social capital to be negatively related to regional economic output in European countries whilst Andrist (2008) discovered a positive association between bonding social capital and restrictions on women’s autonomy in patriarchal societies. Cleaver (2005) argued that local social associations and institutions in Tanzania structurally reproduced the social exclusion of the poorest households. Focusing specifically on India, Levien (2015) showed how upper-class farmers in Rajasthan harnessed their links to influential community members in brokering land deals and consequently undermined generalised trust and collective action in their communities.

*The effects of inequality on social capital – theoretical deliberation and empirical findings*

 Because theoretical models of economic inequality and social capital are scarce, in deliberations vis-à-vis the effects of inequality on social capital this study draws on theories of economic inequality and political engagement – namely resource-mobilisation, relative-power, and conflict theories (Solt, 2008). The first two theories see inequality reducing political participation, especially amongst the poor, because with deepening economic gaps the poor have relatively fewer economic resources to devote to participation as well as relatively less power to exert in the political space (e.g. Verba et al., 1995; Goodin and Dryzek, 1980). In contrast, conflict theory argues that rising economic divides boost political engagement as people’s political preferences grow, along with their incomes, further apart (e.g. Meltzer and Richard, 1981).

 Whilst the debate about which of the theories best describes the effects of inequality on political participation remains unresolved, both the negative and positive conjectures about the effects of inequality can theoretically hold vis-à-vis social capital, depending on whether the bridging or bonding conceptualisation is applied. In line with relative-power theory, growing social gaps within communities driven by higher inequality can be plausibly expected to reduce people’s desire to associate in community-wide activities that bring together people from different social strata, aka bridging social capital (as speculated also by e.g. Bowles and Gintis, 2002; Dorling, 2011; Wilkinson and Pickett, 2009). However, consistent with conflict theory, greater social fragmentation in more economically unequal societies is likely to simultaneously translate into greater participation of people in more inward-looking associations, aka bonding social capital (as shown by e.g. Huber and Suryanarayan, 2016). Finally, because higher inequality implies that the poor have relatively fewer resources to devote to non-essential activities, in line with both relative-power and resource-mobilisation theory higher inequality may be associated with lower levels of both social-capital types amongst poorer households. The three hypotheses assessed in this study are hence the following:

*H1: Higher economic inequality leads to a decline in bridging social capital*

*H2: Higher economic inequality leads to an increase in bonding social capital*

*H3: Higher economic inequality is associated with lower levels of both types of social capital amongst lower social classes*

 Several studies have provided empirical evidence for the first hypothesis on the global level, showing how growing inequality between countries weakened people’s generalised trust (Freitag and Bühlmann, 2009; Uslaner and Brown, 2005), although the relationship did not appear significant when tested purely in the US context (Fairbrother and Martin, 2013). Studies examining the relationship between inequality and social-network capital have been rarer, with Kawachi et al. (1997) one of the few to have tested the effects of inequality on membership in civic networks. The authors discovered the impact to be negative but their conceptualisation of social capital did not differentiate between more outward and inward-oriented networks. Moreover, most studies analysing the relationship between inequality and social capital focused on country- or state-level measures of inequality, even though it is at the community level where the social effects of inequality may be most notable (Brown, 2017; Elbers et al., 2004). Local-level inequality has been shown to, for example, spur crime (Demombynes and Özler, 2005), encourage armed mobilisation (Macours, 2010), and negatively affect inhabitants’ mental health (Vilhjalmsdottir et al., 2016) but analyses of its effects on social capital specifically are missing. The present study thus contributes to existing literature in several important ways – by analysing the effects of inequality on social-network capital as opposed to the more frequently examined relational social capital, by comparing the effects of inequality on bridging versus on bonding social capital, and by focusing on local-level as opposed to country- or state-level economic inequality.

**Contextualising inequality and social capital to India, with a focus on Andhra Pradesh**

*Inequality*

 As mentioned earlier, the steady economic growth in India over the past quarter century has been accompanied by rapid growth in economic inequality, particularly notable in the urban areas[[3]](#endnote-3). Wealth inequality in India, already high throughout the 20th century, has continued to deepen. In 2012-2013, the poorest 60 per cent of Indian families owned 13 per cent of assets in the rural areas and 7 per cent in urban areas, whereas the richest 5 per cent owned 43 and 51 per cent respectively (Sarma et al., 2017). In comparison, in 1991-92 the top 5 per cent of Indians owned ‘only’ 37 per cent of rural and 45 per cent of urban assets. The top 1 per cent of Indians owned 11.9 per cent of Indian wealth in 1961, 30.7 per cent in 2012, and 42.5% in 2020. Inequality in consumption, whilst less pronounced than in asset ownership, has also increased over time, from a Gini index of 0.30 in the early 1990s to 0.36 in 2012 (Oxfam, 2018). Income inequality rose commensurately from 0.45 on the Gini index in 1990 to 0.51 in 2013 (Jain-Chandra et al., 2016; also see Chancel and Piketty, 2017). Much of the inequality has been driven along class and caste lines, with the indigenous scheduled tribes and originally ‘untouchable’ scheduled castes most adversely affected[[4]](#endnote-4).

 From a strictly economic viewpoint, Andhra Pradesh has been one of India’s better performing states - ranked 8th out of 23 for economic growth – but has lagged somewhat on human development indicators, coming only in the 12th place when adjusted for inequality (Gandhi et al., 2011; Suryanarayana et al., 2016). Consumption inequality in Andhra Pradesh increased, however, less remarkably than in India overall, from 0.26 on the Gini index in 2003 to 0.27 in 2013 (Chakravorty et al., 2016). Income inequality in that period even slightly decreased but at 0.60 on the Gini index remained significantly higher than the national average (ibid).

*Social capital*

Social capital in India has been portrayed by some researchers as a resource to be capitalised upon by development agencies and community leaders (Krishna, 2007). Explicit comparisons between India and other countries regarding social capital do not exist; however, within India, Serra (1999) called attention to the differences amongst states in civic norms associated with both relational and social-network social capital. She identified linguistically homogeneous and historically established states such as West Bengal and Gujarat as more abundant in ‘civic-ness’ than linguistically heterogeneous and historically divided states like Rajasthan.

Andhra Pradesh has been linguistically a relatively homogeneous state but it has not been a historical one, formed only in 1958 (Reddy and Bantilan, 2013)[[5]](#endnote-5). Regardless, social networks, particularly women’s associations, have played an important political role in the state (Niranjana, 2002). Several empirical studies have also found positive links between social capital and desirable development outcomes in Andhra Pradesh (Galab et al., 2006; Moestue et al., 2007; Petrikova and Chadha, 2013). Investigating how changing levels of community-level inequality in the state affect households’ social capital is thus policy-relevant beyond its theoretical contribution.

**Data and descriptive statistics**

 This article analyses data from the Young Lives study in India, an international longitudinal analysis of child wellbeing. The data were gathered in four waves – 2002, 2006, 2010 and 2014 – from 2000 children (and their households) that were between 6 and 18 months old in 2002 and 1000 children (and their households) that were then between 7 and 8 years old[[6]](#endnote-6). Mostly data from the third and fourth waves are utilised here, due to considering the effects of inequality from previous rounds of data collection on social capital in the following rounds, clarified below, and due to missing economic data from the first round. However, some relevant variables were recorded only in the first collection wave (e.g., mothers’ education, household caste) and those are used throughout the analysis as time-invariant. Households to be surveyed were chosen at random, from the pre-specified pool, in 100 communities around 20 sentinel sites. The selection of the sites was semi-purposive, with a slight oversampling of poorer sites – however, by 2014 the Young Lives households had slightly better access to services than the state average (Young Lives, 2014).

 Thus, whilst not directly representative of the Andhra state, the Young Lives data constitute an appropriate instrument for analysing causal relations related to child-welfare dynamics in Andhra Pradesh specifically and in India more generally over time (ibid, p. 3). The data were not collected purposely for analysing household welfare but there is no reason to expect that the effects of inequality on social capital of households with children of the specified ages in 2002 would differ systematically from those of households with younger or older children at the time. They could possibly differ from those of childless households but only 2.5 per cent Indian households are childless (Ganguly and Unisa, 2010), which significantly reduces the possibility that the results discovered in this study are not representative of household trends in Andhra Pradesh more generally.

*Social capital*

 As noted earlier, this article examines the effects of economic inequality on social-network capital only, as questions relevant to relational social capital were asked in too few Young-Lives-data rounds. The article does attempt to, however, distinguish between measures of bridging and bonding social-network capital. With a view to existing literature, studies of social capital using Young Lives data (e.g. Harpham et al., 2006; Galab et al., 2006), and the Young-Lives-data documentation, bridging social-network capital is estimated from the following four variables: *1. talking* and *2.* *joining with other people to address communal problems* and *3.* *actively participating in awareness-raising campaigns* and *4. in demonstrations*. Meanwhile, bonding social capital is approximated through households’ membership in voluntary associations.

Bonding social capital

 Both theoretical consideration and existing research suggest that households’ group membership measures more bonding than bridging social-network capital. Membership in voluntary associations is likely to be mediated by households’ social connections and neighbourhoods where households reside – both factors that tend to cluster along shared demographic and socio-economic characteristics. Several social-capital researchers confirmed this view, opining that ‘people join groups that are homogeneous, not heterogeneous’ (Theiss-Morse and Hibbing, 2005: 227; also Bowles and Gintis, 2001; Puri, 2004).

 However, in order to ascertain whether voluntary associations in the Young Lives-surveyed communities are indeed more homogeneous than heterogeneous in terms of their members’ demographic and socio-economic traits and thus an appropriate measure of bonding social-network capital, I conducted assortative matching of the communities’ group membership. This test assesses which factors drive households to join different associations, including the extent to which they are motivated in their decisions by the traits of other group members. The characteristics examined have included mother’s age and education, household size, wealth, religion, caste, and social class and community’s accessibility by paved roads and level of affliction with violence[[7]](#endnote-7). The specific method utilised is one of assortative matching combined with simple group-membership estimation, adapted from Arcand and Fafchamps (2012), which can be mathematically expressed through the following equation:

*Pr(GMij = 1) = Pr (θ|wi - wj| + η(wi + wj) + υij > 0)*

where *GMi*j stands for the probability that a household *i* and household *j* belong to the same group, the sum of households’ different characteristics *(wi + wj)* captures the factors that make households more likely to join any group at all, and the absolute difference between households’ different characteristics - *|wi – wj|* - identifies negative and positive assortative matching.

 A negative sign on the absolute difference means that members of the same group are more similar to each other than to the rest of the population – referred to as homophily (Bowles and Gintis, 2002). A positive sign signifies that members of the same group are more different from each other than from the rest of the population and hence implies negative assorting at play. The model can best be estimated using a panel Probit regression with community fixed effects (Arcand and Fafchamps, 2012).

Results in Table A.1 in the Appendix demonstrate that most household characteristics examined exhibit a sign of homophily – positive assortative matching, thus largely validating the usage of group membership as a measure of bonding social-network capital. In the Andhra communities examined, voluntary associations tend to be indeed formed by people sharing similar demographic and socio-economic characteristics, including age, education, wealth, family connections as well as religion. Interestingly, the groups do not tend to form strictly along caste lines. Whilst on its own this finding does not invalidate the conceptualisation of bonding social capital through group membership, it may be a sign that the importance of caste background in the communities observed has weakened.

Bridging social capital

 Turning to the measure of bridging social-network capital, I used structural equation modelling (specifically, confirmatory factor analysis [CFA]; following Bowen and Guo, 2011) to verify the existence of a latent variable, from now referred to as *communal participation*, inferable from the above-mentioned directly observed variables: *1. talking* and *2.* *joining with other people to address communal problems* and *3.* *actively participating in awareness-raising campaigns* and *4. in demonstrations.* The CFA confirmed the existence of covariant paths (i.e. correlated standard errors) between the first two and second two variables, which was suspected due to similarity of the questions from which the variables derived (see Figure 1). With the inclusion of the covariant paths, the model’s goodness-of-fit statistics all fall well within the acceptable range[[8]](#endnote-8). The communal-participation index was then calculated by summing the multiplied first two and second two components. As part of sensitivity analysis, communal participation was also estimated by rotating predicted first factors from exploratory factor analysis of the four constituent variables (see e.g. Torres-Reyna, 2010: 4).

[Figure 1 about here]

 Assortative matching cannot unfortunately be used to assess whether communal participation indeed brings together people from more varied backgrounds than voluntary associations, as the Young Lives data do not contain pertinent information. Nevertheless, it seems theoretically plausible that collective-action events and protests organised to address communal problems would bring together households from a wider range of social spectra than voluntary associations, a supposition validated also empirically by existing literature (e.g. Galab et al., 2006; Gittel and Widdal, 1998; Welzel et al., 2005).

 Looking at the summary statistics of the two social-capital measures utilised – communal participation and group membership, Table 1 shows that communal participation increased between 2010 and 2014, whether estimated via an index or a predicted factor. Group membership, conversely, slightly declined in that time frame, from 32 to 31 per cent.

[Table 1 about here]

*Inequality*

 Using Karagiannis and Kovacevic’s (2000) calculation for in-between, overlap-, and within-group inequality, I calculated a separate Gini index of economic inequality for each of the 100 villages surveyed, for the second and third rounds of data collection[[9]](#endnote-9). The primary measure of economic inequality is based on household wealth indices, which were constructed using principal component analysis of data on housing quality, ownership of consumer durables, and access to services[[10]](#endnote-10). As in any Gini index, 0 signifies perfectly equal distribution of household wealth whereas 1 perfect inequality. Table 1 demonstrates that the average village-level asset inequality in Andhra Pradesh was relatively low in 2006, 0.175 – and slightly declined to 0.144 in 2010. A significant change in inequality between 2006 and 2010 occurred in 33 sampled villages.

 Per-capita consumption Gini index, employed as an alternative measure of economic inequality, in contrast slightly increased between the second and third wave of data collection - from 0.258 to 0.262. Changes over time were statistically significant in 49 communities. Viewed jointly, however, the communities under study experienced neither a dramatic rise nor a dramatic decline in economic inequality over time, which is consistent with data for Andhra Pradesh overall cited earlier.

 The wealth index is utilised as the primary measure of economic inequality in view of literature that persuasively argues that the inequality of asset possession is the most suitable proxy for inequalities in living standards in developing countries (e.g. Huber and Suryanarayan, 2016; McKenzie, 2005). The wealth index may be slightly preferable to consumption Gini index also due to lower seasonal variation and greater data reliability[[11]](#endnote-11).

 The average sample size per village in this study is not large – 30 households; nevertheless, research by e.g. Stoker and Bowers (2002) suggests that sampling relatively few households in relatively many communities, as is the case here, yields more valid results than doing the opposite (i.e. many households, few communities). To ascertain robustness of the results attained, however, I estimate the effect of wealth inequality on social capital also on a dataset with five multiple imputations of the Gini index[[12]](#endnote-12).

*Control variables*

 Decision vis-à-vis the inclusion of other determinants of social capital in the models (aka, control variables) was made with a view to existing socio-psychological and structural theories of social participation (e.g. Aslanidis, 2016) and a meta-analysis of social-capital determinants from more than 400 studies (Huang et al., 2009). The control variables include all key individual/household-level (demographic and socio-economic) and community-level (environmental and regional) factors that affect households’ decisions whether to participate in social networks and collective action. As indicated in Table 2, some of the control variables that do not vary over time come from the first wave of data collection (2002).

[Table 2 about here]

 Relevant demographic determinants of social capital include the household mother’s age and education (number of schooling years completed), household size, whether the household is female-headed, Muslim (as opposed to Hindu or Christian), and whether it is of scheduled-caste or scheduled-tribe origin - which, as mentioned previously, are the most socially disadvantaged groups in India. Table 2 shows that mothers in the households surveyed in 2014 were on average 34 years old and had completed slightly under three years of schooling. The mean household size was 5.5, 8 per cent of households were female-headed, 7 per cent Muslim, and 32 per cent of scheduled-caste or scheduled-tribe background. Existing research is not unified on whether demographically disadvantaged groups are more or less prone to social-network participation than more advantaged groups (Huang et al., 2009) and thus the direction of the factors’ relationship with social capital is a matter of empirical investigation.

 Three relevant socio-economic indicators were employed – self-perceived household social class, wealth index[[13]](#endnote-13), and ownership of farm animals. All three variables exhibited a slight upward trend over time. The average self-classification into a social class between 1 and 4 slightly rose, from 2.4 in 2010 to 2.7 in 2014. The wealth index analogously increased from 0.52 to 0.58 whilst the percentage of animal-owning households grew from 43 to 45 per cent. These findings suggest a slight improvement in the average economic well-being across the Andhra communities under study between 2010 and 2014. Research indicates that economically better-off households are more likely to engage in social networks (e.g. Cleaver, 2005).

 The environmental and regional variables included control for village accessibility by paved roads (increased from 29 per cent in 2010 to 32 per cent in 2014), village affliction with communal violence (0-1 scale, declined over time), communal caste composition (‘other backward castes’ predominant), and region where village is located (Coastal Andhra, Rayalaseema or Telangana – with approximately one third in each). Existing research suggests that more advantaged communities may have lower levels of social-network capital given the existence of a substitution effect between social networks and good-quality public services (Petrikova, 2020). Finally, on average 17 per cent of the population between 2002 and 2006 and 7 per cent between 2006 and 2010 were affected by natural disasters (drought or flood) - a variable which, as I explain in the next section, is utilised as an instrument for inequality.

**Empirical model, endogeneity, and estimation techniques**

 The basic model examined in this article is the following:

$SC\_{j, t}^{i}= α+β\_{1}In\_{j, t}^{ }+ β\_{2}D\_{j, t}^{i}+ β\_{3}Ec\_{j, t}^{i}+ β\_{4}En\_{j, t}^{ }+δR\_{t}^{ }+ ϑ^{i}+ ε\_{t}^{i}$ (1)

Where $SC\_{j, t}^{i}$ is the outcome of interest – social capital of household *i* in a village *j* at time *t*, and village-level inequality, $In\_{j, t}^{ }$, is the main independent variable. Control variables - demographic, socio-economic, and environmental factors, along with regional dummies - are represented by the following abbreviations: $D\_{j, t}^{i}$, $Ec\_{j, t}^{i}$, $En\_{j, t}^{ }$, and $R\_{t}^{ }$. Lastly, $ϑ^{j}$ is the time-invariant component of the error, whilst $ε\_{t}^{j}$ is the time-variant part. When assessing H3, the basic model is expanded by including an interaction term between inequality and respondents’ self-perceived social class.

The possible sources of bias within this study have inspired the choice of empirical estimators. First, there is a potentially simultaneous relationship between inequality and social capital – where not only inequality affects social capital but social capital may affect inequality. Two techniques are used to overcome this bias. First, inequality measure from the previous wave is examined in its impact on social capital in the subsequent wave, to ensure correct temporal order of cause and effect. Second, Two-Stage Least-Squares (2SLS) estimators are employed[[14]](#endnote-14). The proportion of population in each village that was in the previous four years affected by a natural disaster serves as an instrument[[15]](#endnote-15). The variable accounts for approximately 44 per cent of variation in wealth inequality (54 per cent for variation in consumption inequality) and is theoretically linked with social capital only through its effect on community-level inequality. F-statistics of joint tests, reported in Table 3, show that all excluded instruments are significantly different from zero, confirming that they are not weak and hence do not unduly bias results (e.g. Schmidheiny, 2016: 8).

Another source of bias may lie in the potential correlation between unobserved fixed household and community characteristics on one side and social capital on the other. Since the data are hierarchical i.e. individual and household-level data nested within different communities and time periods, a standard analytical approach would be to use multilevel hierarchical models. Nevertheless, in the statistical software used (STATA), it is not possible to estimate 2SLS multilevel models. Because controlling for the simultaneous endogeneity between inequality and social capital is paramount, the possible correlation between unobserved fixed household and community characteristics and social capital is managed through two different estimators: a) 2SLS panel models with fixed effects, which eliminate bias from time-invariant unobservable variables (e.g. Carter and Maluccio, 2003) and b) 2SLS panel models with household- and community-clustered standard errors, controlling for time[[16]](#endnote-16). The latter, when compared in simulations to multilevel models, have been shown to perform similarly when the number of clusters is large (Cheah, 2009), as is the case here with 100 communities.

**Effects of inequality on social capital**

 Table 3 displays the results of regressions estimating the effects of communal economic inequality and other control variables on households’ social capital. The results provide robust support for the first two hypotheses whilst partially refuting the third one.

[Table 3 about here]

 In line with relative-power theory, I expected higher levels of economic inequality to bring about a general decline in bridging social-network capital (H1) – with the idea that widening social divides within communities reduce people’s appetites for joining in community-wide activities that bring together people from across different social strata. Results in models 1 through 7 corroborate this hypothesis; the coefficients on inequality measures in all models, irrespective of specifications, are negative and in six out of seven cases statistically significant. Thus, people tend to reduce their communal participation in Andhra communities with higher economic inequality and increase communal participation in communities with lower economic inequality.

 Consistent with conflict theory, I further anticipated that greater economic inequality would bolster bonding social-network capital (H2), deliberating that the greater social fragmentation as a result of higher economic inequality would animate inhabitants to engage socially more with people of similar demographic and socio-economic characteristics – i.e. by joining more homogeneous voluntary groups. Results displayed in models 8 through 13 again verify this hypothesis, with inequality measures appearing positive and significant in all six regressions. Accordingly, in communities with higher economic inequality membership in voluntary associations tends to rise, and vice versa.

 Last, I hypothesised that higher inequality would be generally associated with lower social capital amongst the relatively poorer communal strata (H3). This is because, as both relative-power and resource-mobilisation theories contend, higher inequality translates into relatively fewer economic resources and power for the poor to devote to social associations. Looking at the results, although it is true that wealthier people in the sample engaged more in both types of social-network-capital measures – communal participation and voluntary associations – inequality-driven decline in bridging social capital was significantly greater amongst higher social classes than the lower ones, as the hypothesis would have suggested. In contrast, and more in line with H3, inequality-driven rise in bonding social capital occurred to a greater extent amongst the upper than the lower social classes.

 Overall, the study’s results thus uphold the applicability of both conflict and resource-mobilisation theories to describing the effects of inequality on bonding social capital. In contrast, the results offer only qualified support to the validity of relative-power theory and none to the validity of resource-mobilisation theory in explaining the relationship between economic inequality and bridging social capital.

 Before discussing implications of the findings for India’s development, let us look briefly at the other determinants of social capital in the Andhra communities analysed. Households’ wealth index and owning animals boost both types of social-network capital examined most consistently, followed by communities’ communal violence and, somewhat contrary to my expectations, road accessibility. Households with older, more educated mothers, female-headed and Muslim are less likely to have members that belong to voluntary associations. In contrast, households with more educated mothers and of scheduled caste/tribe background exhibit on average higher levels of communal participation. The results as a whole thus demonstrate that socially disadvantaged groups do not exhibit uniform trends vis-à-vis either bonding or bridging social-network capital.

**Discussion and concluding remarks**

The broader topic to which this article has aimed to contribute is the question of how economic inequality and its changing levels in India have affected people’s ‘social capital’, that intangible and hard-to-define concept that has nonetheless been linked with a plethora of important development outcomes. Looking at the effects of village-level inequality in India’s Andhra state on households’ social-network capital, based on theoretical considerations and existing research I hypothesised that higher local inequality would reduce households’ stock of bridging (outward-looking) and increase their stock of bonding (inward-looking) social networks. I further anticipated upper social classes in the sample to be relatively less affected by any inequality-driven decline in social capital.

 The results of my empirical analysis have corroborated most of these hypotheses. Even though the local levels of inequality in the dataset did not change dramatically over the time observed, Andhra communities where inequality increased experienced a decline in households’ communal participation, a measure of bridging social-network capital, and an increase in households’ membership in voluntary associations, a measure of bonding social-network capital. Conversely, in communities where inequality declined over time, the rates of communal participation rose and the rates of group membership fell. Thus, as the economic divides in some Andhra communities widened, households became more reluctant to engage in community-wide collective action and readier to join more voluntary groups, which, as the assortative matching bore out, frequently form along homogeneous demographic and socio-economic lines. However, whilst the inequality-driven increase in group-membership was indeed more notable amongst upper social classes, who were also generally more likely to engage in both bridging and bonding social networks, the inequality-induced decline in communal participation was, contrary to the initial expectations (H3), stronger amongst the upper social classes as well.

 What are the implications of these findings for India’s development? Overall, they do not seem positive, with this article adding another voice to the rising concerns about India’s steeply growing inequality (e.g. Ghatak, 2021; Ghosh, 2015; Weisskopf, 2011). Primarily bridging social capital has been linked in existing research with positive development outcomes but this form of social capital, as this study shows, declines as local-level economic inequality grows. One caveat in this finding is that most research on bridging social capital has focused on generalised trust amongst people, a measure of relational bridging social capital, rather than on social-network bridging capital analysed here. Nevertheless, and despite the still-disputed nature of the relationship between relational and social-network social capital, it is very likely that with the inequality-driven reduction in households’ participation in community-wide collective action, generalised trust within communities also declines. One consequence of reduced trust within Indian communities observed has been a higher likelihood of social conflicts, particularly between Hindu and Muslim groups (Varshney, 2002). There is one possibly ameliorating finding from my study in this regard, that rising inequality reduces communal participation less amongst lower than upper social classes, but to elucidate its underlying rationale and consequences requires more research.

 The present study further demonstrated that increasing local-level inequality tends to encourage household participation in demographically and socio-economically relatively homogeneous voluntary associations, conceptualised as a measure of bonding social-network capital. Research has connected this form of social capital with notably more negative development outcomes than those associated with bridging social capital, including increasing social tensions and conflict (e.g. Andrist, 2008; Bourdieu, 1986). Looking to the role of voluntary associations specifically in the Young Lives communities, the picture is not so black-and-white. Children living in households belonging to voluntary associations in Andhra Pradesh have been more likely to have a healthy body mass index and be enrolled in school (Young Lives, 2016: 51)[[17]](#endnote-17). These findings chime with research showing that membership in voluntary groups may help households access better public services (Bertorelli, 2017; Petrikova, 2020). However, in qualitative interviews the Young Lives households acknowledged that the groups tend to exclude the poorest and most marginalised community members and thus, as Levien (2015) also showed in his case study of Rajasthan farmers[[18]](#endnote-18), further contribute to the rising inequality – by benefitting the already-advantaged members of Andhra communities. The relatively demographically and socio-economically homogeneous associations also encourage ‘ethnification’ (Huber and Suryanarayan, 2016), through fragmenting communities and increasing households’ ingroup-outgroup identification. The Young Lives qualitative interviews corroborated these findings, with parents in more unequal communities commenting on the declining social cohesion and children on having an increasingly difficult time ‘fitting in’ (Woodhead, 2014: 19; Young Lives, 2016: 7). That the Covid-19 pandemic significantly deepened economic inequality in India (Ghatak, 2021) hence does not bode well for social stability in India going forward.

 To conclude, this study has demonstrated that as economic inequality within communities in Andhra Pradesh increases, people reduce the frequency with which they participate in efforts to resolve broader community issues through participation in communal activities and instead increase their membership in more demographically and socio-economically homogeneous neighbourhood associations. Further research is needed to establish why upper social classes decrease their communal participation more in response to higher inequality than lower social classes as well as into the relationship between social-network and relational social capital. Nevertheless, even without further refinement, the study’s findings raise concerns for India’s future development. Whilst the increase in local-level inequality affected only about half of the Andhra communities observed in this study, with the rest experiencing the reverse trend, in most Indian states both across- and within-state economic inequality is rising and at a particularly high pace since the beginning of the pandemic (Chancel and Piketty, 2017; Ghatak, 2021). In view of this article’s findings, the fragmentation of Indian communities along demographic and socio-economic lines, stoked currently also by the nationalist Hindu rhetoric and neo-liberal economic policies of the ruling BJP party (Ibrahim, 2020), is hence likely to increase in the future and translate into further intensification of social conflict. Whilst derived from unique Indian context, these conclusions may be relevant also beyond India as within-country inequality has increased across the world in the past few decades, with the most intense growth driven by the pandemic (OXFAM, 2021). Moreover, many countries including the United Kingdom and the United States have recently experienced not only steeply rising economic inequality but also surges in inter-communal hostility and the two trends, as this article suggests, may be linked by the inequality-driven rise in bonding social capital.

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1. A new state - Telangana - was carved out from Andhra Pradesh in 2014. Analysis in this study relates to the yet-undivided Andhra Pradesh. [↑](#endnote-ref-1)
2. The third, less frequently mentioned, kind of social capital according to the type of social structures is ‘linking capital’, which embodies vertical rather than horizontal connections between people. [↑](#endnote-ref-2)
3. Consequently, the economic growth in India has failed to translate into commensurate improvements in human development (e.g. Drèze and Sen, 2013; Ghatak, 2021). [↑](#endnote-ref-3)
4. In the Indian context, households’ ‘caste’ partially captures ethnicity/race and partially economic class (Kothari, 1988). The traditionally most marginalised groups have been the ‘scheduled castes and tribes’; i.e. people originally – and in some communities even today - considered literally untouchable due to their low social position and India’s indigenous tribes. [↑](#endnote-ref-4)
5. And in 2014 Andhra Pradesh split into two parts - Andhra Pradesh and Telangana – drawing on historical boundaries. [↑](#endnote-ref-5)
6. By the time of revising the article (August 2021), the fifth wave of Young Lives data had been released. The data set could not be expanded to include this last wave, however, due to missing questions on social capital as operationalised here. [↑](#endnote-ref-6)
7. These variables are discussed in greater detail in the Control Variables section [↑](#endnote-ref-7)
8. The fit of the model to the data is tested with CFI (Comparative Fit Index), RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square Residual), and Chi-square. In general, models with CFI ≥0.90 and RMSEA≤ 0.08 and SRMR ≤0.03 are considered adequate. Chi-square should be non-significant (see e.g. Heath, 2014). [↑](#endnote-ref-8)
9. As mentioned already but discussed in more detail later, inequality data from time waves prior to when data on social capital were collected are used as part of the strategy to address the model’s potential simultaneous endogeneity. [↑](#endnote-ref-9)
10. For a description of how the wealth index was estimated, see Briones (2017). [↑](#endnote-ref-10)
11. Data on household consumption rely on respondents’ recall. [↑](#endnote-ref-11)
12. In order to do so, I first estimate wealth Gini indices with 90 per-cent confidence intervals, which are utilised to impute five different Gini values for each village, employing an interval-regression imputation method. The imputed dataset is then analysed with regression commands designed specifically for analysing imputed datasets. [↑](#endnote-ref-12)
13. The wealth index was calculated by Young Lives based on households’ housing quality, access to services, and ownership of consumer durables. [↑](#endnote-ref-13)
14. Wooldridge’s (1995) robust score test’s p-values, reported for regressions in Table 3, are significant, rejecting the null hypothesis of exogenous variables and supporting the decision to use 2SLS estimators. [↑](#endnote-ref-14)
15. In regressions with interactions, the interaction between inequality and social class is instrumented by an interaction between the proportion of population affected by disaster and social class (following Wooldridge, 2006).

The proportion of population affected by disaster was chosen as an instrument for communal economic inequality because when larger numbers of households in a community are affected by disasters, inequality is likely to be higher given the ability of more affluent households to better cushion the disasters’ negative economic impact – on both consumption and wealth - with existing assets. Empirical support for the relationship can be found in studies such as Petrikova and Chadha (2013) and Howell and Elliott (2018).

The instrumental variable is based on an estimate of the proportion of households within a community affected by natural disaster in the four years prior to the survey, made by 3-4 community representatives in each village and averaged. As the estimates are not made by the households surveyed themselves, they are more representative of the whole communities and less likely to be influenced by surveyed households’ individual economic situations, which consequently enhances the variable’s theoretical exogeneity from households’ social-capital levels. [↑](#endnote-ref-15)
16. 2SLS panel regressions with random effects with household- and community-clustered standard errors are used in addition to the fixed-effects models in order to obtain estimates on the effects of time-invariant variables and also because it has been noted that fixed-effects regressions may exacerbate measurement error bias (Wooldridge, 2006). [↑](#endnote-ref-16)
17. As well as more likely to be enrolled in private schools, which arguably also fuel further inequality (Woodhead, 2014). [↑](#endnote-ref-17)
18. And Cleaver (2005) in his case study of Tanzanian communities [↑](#endnote-ref-18)