**Social Capital and the Effectiveness of Land Use Policies: Evidence from Rural China**

**Data Directory**

## Survey design and implementation

We collected data by including a special module in the 17 Provinces Rural Land Survey administrated by Renmin University of China. This survey is a joint research project between Renmin University of China and the Rural Development Institute (RDI) in the US conducted since 1999. A total of seven rounds of surveys have been conducted since then, and we obtained our data from the latest round completed in 2016. A combination of multi-stage random sampling and convenience sampling was used in the survey.

Given that the survey involves sensitive topics (e.g. trust in local cadres), courtesy or social desirability bias may become a concern. Accordingly, we designed and conducted the interviews with these issues in mind. Firstly, interviewers were recruited amongst full-time students in Renmin University of China who came from the 17 provinces included in the survey. These interviewers received training from the Renmin University of China during the term time and performed the survey during their summer holidays when they returned to their hometowns. Therefore, all interviewers spoke the same local dialect as the respondents, which helped the respondents relax and engage in the interviews comfortably.

Secondly, the interviewers received special training and instructions to ensure that the respondents were not distracted or stressed during the interviews. For example, no interviews should be conducted in the presence of local village cadres. They were also instructed to show their university identification card first and assure the respondents that the information they will share will be used in strict confidentiality and for research purposes only. No personal identification information will be recorded throughout the survey. Given that Renmin University of China is one of the most reputable universities in China and given that rural residents value education greatly, the respondents were friendly towards our interviewers who were the children of local rural farmers who made their way to a top university in China. Accordingly, these respondents spoke openly and honestly about their views.

Thirdly, each interviewer was equipped with a portable digital survey instrument with GPS positioning enabled. The respondents were informed about the purpose of the survey and the use of the data at the beginning of each interview, and their consent was obtained before the interview started. The entire interview was also recorded (with the consent of the respondents) and sent to the survey administrators directly in real time. All answers to the interview questions were also inputted into an online survey system in real time. Independent survey administrators were recruited to cross-check the audio recordings and the manual inputs by the interviewers for quality control. Questionnaires with discrepancies were either corrected or discarded based on the checks. For example, if the audio recording showed that the interviewer pressed a hesitating respondent to answer some sensitive questions or the respondent changed their answers back and forth several times, the questionnaire was classified as invalid and was discarded accordingly.

This design and implementation of the survey ensured the representativeness of the sample and minimised potential response biases as much as possible. A total of 1,809 valid observations were collected during the last round of the survey. The distribution of sample points is shown in Figure 2. The cartogram was constructed based on each province’s share of the national rural population in 2022. Figure 2 shows that the 17 provinces covered a significant proportion of the rural population in China. On average, about 100 observations were obtained in each of the 17 provinces covered.

### Figure 2 Distribution of sample points

A map of the country

Description automatically generated

*Note: The size of each province is proportional to its share of the national rural population in 2022. The number of sample points in each province is highlighted in boldface.*

Table 1 shows the representativeness of our sample. Specifically, the 17 provinces included in the survey covered 77% of the rural population and 72% of the arable farmland in China. Sufficient variations were also observed amongst these provinces in terms of their natural endowment, economic development and human capital (i.e. education). Therefore, the survey data was considered reliable for investigating the relationship between social capital and the effectiveness of land use polices in rural China.

### Table 1: Sample representativeness

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Province** | **Land area in km2** | | **Population in 10,000 (2019)** | | **GDP in billion RMB (2020)** | **Number of students in higher education in 10,000 (2019)** |
| **Arable farming land (2016)** | **Urban land**  **(2017)** | **Rural** | **Urban** |
| **Included in the survey** |  |  |  |  |  |  |
| 1. Heilongjiang | 158,501 | 2,528 | 1,467 | 2,284 | 1,370 | 78 |
| 1. Henan | 81,110 | 5,364 | 4,511 | 5,129 | 5,500 | 232 |
| 1. Shandong | 76,069 | 23,206 | 3,876 | 6,194 | 7,313 | 218 |
| 1. Jilin | 69,934 | 6,483 | 1,123 | 1,568 | 1,231 | 70 |
| 1. Sichuan | 67,329 | 8,610 | 3,870 | 4,505 | 4,860 | 166 |
| 1. Hebei | 65,205 | 6,309 | 3,218 | 4,374 | 3,621 | 147 |
| 1. Yunnan | 62,078 | 3,204 | 2,482 | 2,376 | 2,452 | 86 |
| 1. Anhui | 58,675 | 6,355 | 2,813 | 3,553 | 3,868 | 124 |
| 1. Hubei | 52,453 | 8,186 | 2,312 | 3,615 | 4,344 | 150 |
| 1. Jiangsu | 45,711 | 15,536 | 2,372 | 5,698 | 10,272 | 187 |
| 1. Guizhou | 45,302 | 3,651 | 1,847 | 1,776 | 1,783 | 77 |
| 1. Guangxi | 43,951 | 5,814 | 2,426 | 2,534 | 2,216 | 108 |
| 1. Hunan | 41,487 | 5,103 | 2,959 | 3,959 | 4,178 | 141 |
| 1. Shaanxi | 39,895 | 2,431 | 1,572 | 2,304 | 2,618 | 112 |
| 1. Jiangxi | 30,822 | 2,941 | 1,987 | 2,679 | 2,569 | 113 |
| 1. Zhejiang | 19,747 | 12,422 | 1,755 | 4,095 | 6,461 | 107 |
| 1. Fujian | 13,363 | 4,138 | 1,331 | 2,642 | 4,390 | 86 |
| ***Subtotal (% of national*** | 971,633 | 122,282 | 41,921 | 59,285 | 69,046 | 2,204 |
| ***total in parentheses)*** | (72%) | (61%) | (77%) | (69%) | (68%) | (73%) |
| **Not included in the survey** |  |  |  |  |  |  |
| 1. Inner Mongolia | 92,579 | 5,082 | 931 | 1,609 | 1,736 | 47 |
| 1. Gansu | 53,724 | 1,978 | 1,363 | 1,284 | 902 | 53 |
| 1. Xinjiang | 52,165 | 2,281 | 1,214 | 1,309 | 1,380 | 43 |
| 1. Liaoning | 49,745 | 12,895 | 1,388 | 2,964 | 2,512 | 104 |
| 1. Shanxi | 40,568 | 3,164 | 1,508 | 2,221 | 1,765 | 80 |
| 1. Guangdong | 26,076 | 16,079 | 3,295 | 8,226 | 11,076 | 205 |
| 1. Chongqing | 23,825 | 7,660 | 1,037 | 2,087 | 2,500 | 83 |
| 1. Ningxia | 12,888 | 952 | 279 | 416 | 392 | 14 |
| 1. Hainan | 7,227 | 1,479 | 385 | 560 | 553 | 21 |
| 1. Qinghai | 5,894 | 696 | 271 | 337 | 301 | 7 |
| 1. Tibet | 4,446 | 632 | 240 | 111 | 190 | 4 |
| 1. Tianjin | 4,369 | 2,640 | 258 | 1,304 | 1,408 | 54 |
| 1. Beijing | 2,163 | 16,410 | 289 | 1,865 | 3,610 | 60 |
| 1. Shanghai | 1,907 | 6,341 | 284 | 2,144 | 3,870 | 53 |
| **Subtotal** | **377,577** | **78,288** | **12,742** | **26,437** | **32,195** | **828** |

## Measurement of Policy Outcomes

We then focused our survey questions on a specific land use policy to isolate the effect of social capital. If multiple policies are involved in the survey, then many of the questions listed in Table 3 will need to be repeated for each policy. For example, the respondents will be asked to comment on the implementation of each policy and state their satisfaction with such policy. Therefore, when multiple policies are involved, the lengthy questionnaires may exhaust and confuse the respondents, which may lead to measurement errors and biased coefficient estimates in our models. To address these concerns, we only focused on one specific and important rural land policy, namely, the reform to confirm, register and certify rural land rights (hereinafter referred to as ‘CRC policy’).

In China, rural land is jointly owned by collectives, and farmers have the right to use and profit from their contracted land from their collectives. Whilst cities have been expanding both in size and in density since China’s economic reform in the 1980s, a significant number of rural residents migrated to cities to look for jobs and other opportunities that are not available in their hometowns. This supply of low-cost and mobile labour force is one of the most important drivers of China’s impressive economic development over the past decades. Nevertheless, whilst farmers worked and lived in cities, their contracted land was often neglected, thereby resulting many underutilised, underinvested or even abandoned farmland across the country. The central government viewed this challenge as an opportunity to encourage the consolidation of segmented land parcels, a problem that is particularly pronounced in villages with a high population density and small contracted land parcels. For example, if migrant farmers can lease out their unused or underused contracted land to either individuals or companies, then an economy of scale can be achieved by consolidating scattered land into larger plots and by subsequently adopting modern agriculture machineries.

The CRC reform can be essentially viewed as a land titling policy that aims to enhance land tenure security. This policy was rolled out between 2013 and 2018 in 5 phases and primarily targeted contracted farming land. Our survey covers 17 out of the 22 provinces included in the first three stages of the survey (i.e. between 2013 and 2016). We assessed the effectiveness of this land use policy in both subjective and objective aspects.

For the subjective measurements, we elicited the rural residents’ general satisfaction with the scheme. To improve the validity of our questions, we used different wordings, such as ‘satisfaction’ and ‘dissatisfaction’, in multiple questions. Specifically, we had some questions asking the respondents how satisfied they are in general with the scheme (*sat*) and several questions asking whether they are unhappy about any of the important aspects of the scheme, such as whether the farmers’ inputs were sought and valued. A list of these questions can be found in the first panel of Table 3. We then performed factor analysis to group the answers to these questions into two categories, namely, dissatisfaction about the communication (*dissat1*) or procedures (*dissat2*) of the scheme. The factor loadings of these two variables can be found in Table 2.

Although public sectors and sociologists use satisfaction routinely in evaluating public services and policies, this subjective measurement may not reflect the actual performance of public services or policies, and the difficulty in conceptualisation of problems can complicate the use of subjective assessments in the evaluation. By contrast, objective measurements reflect established facts and help in isolating the net effect of social capital on policy effectiveness. To overcome the limitations of subjective measurements, we supplemented these measurements with three sets of objective measurements as described below.

We firstly focused on villagers’ investment in their contracted land. In the face of long lags and irreversibility of investments in land, rural households need secure property rights to protect their investments (Tu et al., 2011). Theory and practice suggest that villagers would invest in farming and land capability when their perceived land tenure security has been improved. Given that the land policy under study is designed to improve land tenure security, one of the tangible outcomes of this policy should be an increase in rural land investment. Therefore, our first objective measurement of policy outcomes is the farmers’ level of investment in their contracted land. One of our multiple-choice questions asked the farmers whether they have made investments in their contracted land in seven areas, such as irrigation system or machineries. We then performed factor analysis to group the answers into two categories, namely, traditional (*Inv\_land1*) and risky (*Inv\_land2*) land investment, which helps determine whether social capital plays different roles in conservative (i.e., traditional) and risky (i.e., risky) investments.

We then focused on rural residents’ rural subsidiary farming businesses (e.g. greenhouse and poultry). We created seven sub-categories for rural subsidiary businesses as shown in Table 2. The farmers were asked if they have made investments in any of these seven sub-categories over the last three years. We then applied factor analysis to classify their answers into two groups, namely, fixtures (e.g. trellis or plastic-covered tunnels) and cash crops/livestock (e.g. fruit trees and poultry). Similar to our classification of land investment, this approach helps us determine the roles of trust in conservative (i.e. fixtures) and risky (i.e. cash crops/livestock) investments. We labelled these two variables *Inv\_sub1* and *Inv\_sub2*, respectively.

We used the decisions of farmers to invest in their contracted land (i.e. *Inv\_land1* and *Inv\_land2*) and subsidiary farming business (i.e. *Inv\_sub1* and *Inv\_sub2*) to measure long-term policy outcomes in our empirical investigations. Although these decisions could be ‘one-off’ actions recorded at the time of the survey, such investments involve large capital spending and can continuously generate income in many years to come. We believe that farmers will only make such long-term investments when they have tenure security, which is an intended long-term outcome of the CRC policy. Consequently, we use investment in rural land and other agricultural businesses as a measurement of the long-term policy effect.

Our last objective measurement deals with disputes about the decisions made by local village cadres. If the local government implemented the policy effectively and efficiently, then this policy should be able to address the villagers’ concerns sufficiently, and the incidence of disputes should be minimised. To quantify this policy outcome, we asked the respondents whether they disputed the preliminary and final decisions regarding the determination and certification of their contracted land rights (*disp1*) and whether any other member of their villages had the same problem (*disp2*).

In sum, we used nine dependent variables in our analysis, of which six were derived from multiple survey questions through factor analysis. This combination of subjective and objective dependent variables allows us to capture the multiple dimensions of policy outcomes effectively and reliably. The descriptive statistics of these variables are given in Table 3.

### Table 2: Variables generated by factor analysis

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Dissatisfaction with land use policies** | | **Communication (*Dis\_comm*)** | **Procedure**  **(*Dis\_proc*)** |
| *What are the complaints about?* |  |  |  |
| The reasons to implement the policies are not clear | | **0.646** | -0.408 |
| Farmers’ opinions were not heard | | **0.588** | 0.267 |
| Lack of transparency | | **0.752** | 0.194 |
| The process is not fair | | **0.594** | 0.448 |
| The work was not professionally done | | 0.140 | **0.739** |
| Disputes were not handled properly | | 0.074 | **0.721** |
| **Investment in land** |  | **Traditional**  **(*Inv\_land1*)** | **Risky**  **(*Inv\_land2*)** |
| *Have you made any investments in any of the following over the last three years?* | | | |
| Irrigation and drainage systems | | **0.653** | 0.347 |
| Land levelling | | **0.683** | 0.326 |
| Farming machineries | | **0.762** | 0.269 |
| Imported or composite fertilisers | | **0.801** | 0.023 |
| Imported seeds | | **0.614** | 0.172 |
| Farmyard manure | | **0.807** | 0.247 |
| Organic farming | | 0.222 | **0.839** |
| Implementation of new production standards (technology innovations) | | 0.126 | **0.887** |
| **Investment in subsidiary farming** |  | **Fixtures**  **(*Inv\_sub1*)** | **Cash crops/livestock**  **(*Inv\_sub2*)** |
| *Have you made any investments in any of the following over the last three years?* | | | |
| Greenhouses | | **0.329** | 0.297 |
| Plastic-covered tunnels | | **0.842** | 0.002 |
| Trellis for grapes and similar corps | | **0.804** | -0.011 |
| Fishery | | -0.078 | **0.707** |
| Cash crops (e.g. fruits, tea trees and flowers) | | -0.009 | **0.483** |
| Livestock (e.g. poultry) | | 0.083 | **0.65** |
|  | **Particularised trust (*T\_particularised*)** | **Political trust (*T\_political*)** | **Generalised trust**  **(*T\_generalised*)** |
| **Social trust** |  |  |  |
| Trust in relatives | **0.725** | 0.092 | -0.042 |
| Trust in neighbouring villagers | **0.824** | 0.169 | 0.071 |
| Trust in non-neighbouring villagers | **0.823** | 0.104 | 0.286 |
| Trust in villagers of the same surnames | **0.833** | 0.136 | 0.234 |
| Trust in villagers of different surnames | **0.774** | 0.152 | 0.356 |
| Trust in strangers | 0.143 | -0.006 | **0.948** |
| Trust in village cadres in general | 0.246 | **0.809** | 0.119 |
| Respect for village cadres | 0.114 | **0.87** | 0.033 |

Note: Varimax rotation was applied for the orthogonal factor rotation.

### Table 3: Variable definitions and descriptive statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Description** | **Mean** | **Std. Dev.** | **Min** | **Max** |
| *Dependent variables* | | | | | |
| ***Satisfaction*** | |  |  |  |  |
| *sat* | Are the villagers satisfied with the recent registration of rights? Strongly agree=5, Strongly disagree=1 | 3.648 | 0.935 | 1 | 5 |
| *dissat1\** | Complaints about the communication with farmers during the reform | 0 | 1 | -1.156 | 9.384 |
| *dissat2\** | Complaints about the procedures of the reform | 0 | 1 | -4.56 | 7.513 |
|  |  |  |  |  |  |
| ***Dispute*** |  |  |  |  |  |
| *disp1* | Has your family confirmed the results of the survey on their rights to contracted land? Denied=1, otherwise=0 | 0.016 | 0.125 | 0 | 1 |
| *disp2* | Did any of the villagers disagree with the results of the land ownership confirmation survey? None=1, a few=2, many=3 | 1.242 | 0.600 | 1 | 3 |
| ***Investment*** | | | | | |
| *inv\_land1\** | Investment in land – conventional | 0 | 1 | -2.229 | 5.591 |
| *inv\_land2\** | Investment in land – risky | 0 | 1 | -1.390 | 9.267 |
| *inv\_sub1\** | Subsidiary investment – conventional | 0 | 1 | -1.044 | 10.022 |
| *inv\_sub2\** | Subsidiary investment – risky | 0 | 1 | -0.778 | 9.506 |
| *Social capital variables* | | | | | |
| ***Trust*** |  |  |  |  |  |
| *trust\_p\** | Particularised trust | 0 | 1 | -3.661 | 2.791 |
| *trust\_vc\** | Political trust | 0 | 1 | -2.271 | 2.044 |
| *trust\_g* | Generalised trust | 0 | 1 | -1.447 | 3.845 |
| ***Social Network*** | | | | | |
| *network* | Did you borrow from friends, relatives or private lenders to finance any of your investments in either land or subsidiary? (Counts of choices from two multiple choice questions) | 0.098 | 0.490 | 0 | 4 |
| ***Social Norm*** | | | | | |
| *norm\_sub* | The ratio of people who have subsidiary investments in the same city | 0.156 | 0.176 | 0 | 1 |
| *norm \_land* | The ratio of people who have land investments in the same city | 0.142 | 0.172 | 0 | 1 |
| *Control variables* | | | | | |
| **Policy implementation indicators** | |  |  |  |  |
| *Prioritisation* | Do people in your village know that the state is now running the registration and issuance of rural land rights? Most=3, some=2, few=1 | 2.409 | 0.899 | 1 | 3 |
| *Communication* | When the land registration is confirmed, did the village organise a publicity meeting? Twice=3, once=2, no=1 | 1.912 | 0.884 | 1 | 3 |
| *Procedure* | How were the land area and location measured when the rights were confirmed? Aerial photography=3, survey=2, no measure=1 | 2.203 | 0.691 | 1 | 3 |
| **Demographic factors** | |  |  |  |  |
| *female* | Female=1, otherwise=0 | 0.228 | 0.420 | 0 | 1 |
| *age* | Age in years | 53.734 | 12.285 | 5 | 88 |
| *edu* | Education attainment in years | 7.048 | 3.468 | 0 | 25 |
| *hhn* | Household size | 4.105 | 1.692 | 0 | 9 |
| **Economic factors** | |  |  |  |  |
| *lgar* | Area of arable land in mu, 1 mu = 667 m2 (natural log transformed) | 1.667 | 0.808 | 0 | 8.987 |
| *lginc* | Household income in thousands RMB (natural log transformed) | 9.537 | 2.385 | 0 | 15.607 |
| *hhinf* | Proportion of farming income in household income | 2.386 | 1.693 | 1 | 5 |
| *jobf1* | Blue collar workers | 0.357 | 0.479 | 0 | 1 |
| *jobf2* | Village cadres/managers | 0.050 | 0.219 | 0 | 1 |
| *jobf3* | Teachers/doctors/veterinarians | 0.020 | 0.141 | 0 | 1 |
| *jobf4* | White collar workers | 0.016 | 0.126 | 0 | 1 |
| **Regional factors** | |  |  |  |  |
| *sub* | Suburban village (closer to cities)=1, otherwise=0 | 0.088 | 0.283 | 0 | 1 |
| *province dummies* | Dummy variables for the 17 provinces covered in the survey | NA | NA | 0 | 1 |
| *Instrumental variables* | | | | | |
| *avg\_ttp* | IV for *trust\_p*, the mean of the other respondents’ particularised trust scores in the same city | 0.0004 | 0.466 | -1.08 | 1.523 |
| *avg\_ttvc* | IV for *trust\_vc*, the mean of the other respondents’ political trust scores in the same city | 0.0002 | 0.422 | -1.391 | 1.134 |
| *avg\_ttg* | IV for *trust\_g*, the mean of the other respondents’ generalised trust scores in the same city | 0.0001 | 0.455 | -1.230 | 1.720 |

\*: Variables generated by factor analysis based on multiple responses.

## Measurement of Social Capital

We included the three dimensions of social capital, namely, social network, social norms and social trusts, in our analytical framework. Previous studies adopted a wide range of measurements for social norms and social network. For example, Gao et al. (2019) measured social norms by asking the very general question, ‘What the social atmosphere is like in your villages?’, whereas Wang et al. (2021) asked specific questions, such as ‘Would you be willing to help people in the village if they are in trouble?’ Similarly, the questions about social network can be as specific as the affiliation with a producer organisation in Tschopp et al. (2020) and as comprehensive as a group of questions measuring relationships with relatives and friends in Wang et al. (2021). Our choice of social norm and social network measurements is on the more specific end of this wide spectrum because we aim to inform land use policymaking. A more policy-specific approach will provide clearer pointers about where and how to improve the effectiveness of land use policies. For example, the conclusion ‘Better social atmosphere will improve land use policy effectiveness’ might leave policymakers with nowhere to start, whereas ‘Being informed about the proportion of other villagers enrolling in the new scheme will enhance a farmer’s chance to participate’ can offer highly practical advice to local governments.

To measure social network, we asked the respondents whether they borrowed money from their personal networks (i.e. relatives, friends or other informal lenders) to finance their investments in land or subsidiary businesses. This approach is similar to that used by (Gao et al., 2019). In rural China, these informal borrowings are positively related to the size and quality of personal network (Lin et al., 2019; Sun et al., 2018) and hence offers a good measurement of social networks. Although this approach restricted our sample size (i.e. only 17% of the respondents had invested in land or subsidiary businesses), this measure could indicate the ‘revealed’ strength of a social network instead of its ‘stated’ strength as commonly used in the literature. Therefore, informal borrowing is a reliable measurement of social network.

For social norm, we followed Yoder and Chowdhury (2018) by focusing on the effect of ‘peer pressure’ or the influence of the behaviours or views of other members of the community. We calculated the proportion of farmers who invested in either their contracted land or subsidiary farming businesses in the same municipal area. We used these variables as proxies of social norm in terms of farming practice. Similar to our approach for measuring social network, this measurement only focused on the subsample with land or subsidiary farming businesses. However, such relatively objective and quantitative information can reduce measurement errors. This variable also has the benefit of being specific to the type of policy outcomes under study (i.e. investments in contract land and subsidiary businesses), thereby reliably isolating the net effect of social norm.

We developed multiple questions to measure social trust by following the framework in Huhe et al. (2015). We asked each respondent, ‘Generally speaking, do you have full trust in people falling under these categories: relatives, neighbouring villagers, non-neighbouring villagers, villagers of the same surnames, villagers of different surnames, strangers and village cadres’. We used the ‘strangers’ subgroup to gauge generalised trust, the ‘village cadres’ group to measure political trust and the other groups to measure particularised trust. Given the important role of political trust in our analysis and the sensitivity of our question, we also included an alternative, indirect measurement of political trust, namely, ‘How much respect do you have towards the cadres in your village?’ We then performed factor analysis to generate three variables for generalised, particularised and political trust.

Table 4 reports the descriptive statistics of our trust measurements. Overall, rural residents are more likely to trust their acquaintances than strangers. The level of generalised trust is considerably low as indicated by the average score of 1.70 for trust in strangers. These implications derived from the distribution of the level of social trust in rural China echo those in Huhe et al. (2015). Meanwhile, we observed considerable variations in all three dimensions of social capital across the 17 provinces as shown in Figure 3. For example, Guizhou province has a very high level of generalised trust and a very low particularised trust level, while the opposite is true for Shandong province. Therefore, it is critical to understand how social capital influences the effectiveness of land use policies.

### Table 4: Trust in rural China: Descriptive statistics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Questions** | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | Mean score | Standard deviation |
|  | (=1) | (=2) | (=3) | (=4) | (=5) |  |  |
| 1.Trust in relatives | 16 | 89 | 398 | 674 | 692 | 3.80 | 1.15 |
| 2.Trust in neighbouring villagers | 23 | 150 | 626 | 717 | 353 | 3.32 | 1.14 |
| 3.Trust in non-neighbouring villagers | 48 | 274 | 940 | 496 | 111 | 2.73 | 1.06 |
| 4.Trust in villagers of the same surnames | 43 | 203 | 903 | 549 | 171 | 2.90 | 1.09 |
| 5.Trust in villagers of different surnames | 71 | 321 | 948 | 415 | 114 | 2.62 | 1.10 |
| 6.Trust in strangers | 766 | 759 | 267 | 66 | 11 | 1.03 | 1.06 |
| 7.Trust in village cadres in general | 231 | 368 | 563 | 465 | 242 | 2.58 | 1.51 |
| 8.Respect for village cadres | 259 | 285 | 511 | 543 | 271 | 2.69 | 1.56 |
|  | | | | | | | |

### Figure 3 Regional variations of trust

A map of china with blue and red colors

Description automatically generated

## Control variables

To isolate the net effects of social capital on the scheme’s performance, we incorporated four sets of control variables to reduce omitted variable biases. The first set includes policy implementation indicators that quantify how well the scheme was administrated. When policy outcomes are well-defined, such as the availability of a master planning plan in Błasik et al. (2022), researchers can measure the implementation of policies by directly comparing attributes of properties with the specific outcomes stated in planning documents. In our study, the planning policy is a land use reform to confirm, register and certify rural land rights. As a top-down policy, it was implemented through local cadres through the survey of farmland, the establishment of records, and the issuing of land right certificates to farmers. Therefore, our questionnaire included three questions to measure whether the land use policy has been effectively implemented in the study area.

The first question checks whether the respondent knows that the scheme is a national policy, which is always treated as a priority by both villagers and local governments. The second question measures the number of public meetings that were held to provide villagers with information about the scheme. The last question focuses on an important technical aspect of the scheme, namely, how the size and location of the contracted land parcels were determined (via aerial photographs, survey or without field verification). Generally speaking, field verification with modern technologies, such as aerial photography, is considered fair and reliable by villagers and thereby could significantly reduce the possibility of disputes. The answers to these questions inform us about whether local governments emphasise the importance of the policy, provided sufficient information about the scheme and adopted reliable methods to implement the policy, all of which could enhance the effectiveness of the policy. We derived three variables, namely, *prioritisation*, *communication* and *procedure*, based on these three questions, respectively.

The second set of control variables includes demographic factors, namely, gender (*female*), age in years (*age*), education attainment in years (*edu*) and household size (*hhn*). We also considered socio-economic factors that can potentially affect policy outcomes, such as the size of the contracted farmland in each household (*lgar*), annual household income (*lginc*), the proportion of household income coming from the main farming business (*hhinf*) and the nature of any part-time off-farm occupations, including blue-collar jobs (*jobf1*), village cadre/manager (*jobf2*), teacher/doctor/veterinarian (*jobf3*) or white-collar jobs (*jobf4*).

We also included control variables to account for regional variations amongst the large number of provinces considered in our study. Specifically, we included a dummy variable *sub* that equals 1 if the village is located within 5 km of the town or city centre. We also added province dummies to control for the unobserved regional variations amongst the provinces. The definition and descriptive statistics of these control variables can be found under the ‘Control variable’ panel of Table 3.