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# Exposure to Socially Influential Peer Parents: Cadres and Randomization Evidence in China\*

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## Abstract

Parents are a crucial input into the education production function, both for their children and children's friends. This paper studies the effect of socially influential peer parents on students. Utilizing random classroom assignments in China middle schools, we probe the effect of parents who are cadres (government officials) on the educational outcome of their children's classmates. Because cadres in China have broad local influences in resource allocation, their presence elicits responses by surrounding students, parents, and teachers. We find that increased exposure to peer parents who are cadres raises a student's test score. We identify changes in parental behaviors and increased parent-teacher interaction as plausible channels. Cadre spillover is stronger in rural areas and schools with more government support, consistent with the variation in the local influence of cadres. The spillover concentrates on students who have good relationships with parents, echoing the role of parents in driving the spillover.

*Keywords:* Cadres, peer effect, parental investment, peer parent, early-life development  
*JEL Classification:* D91, I25, J62, O53, P36

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# 1 Introduction

The parental background of peers affects the academic achievement of a student. A common explanation is the quality of peers that affects the student’s behaviors and decisions through daily interaction. Alternatively, which are under-explored mechanisms in the peer effect literature, parents of peers may affect the behaviors of teachers and other parents that in turn influences the students.

This paper builds on the insight in recent peer effect studies to probe the influence of socially influential parents on children in their networks. Parents of peers are found to generate distinct social influences on students (Fruehwirth and Gagete-Miranda, 2019; Eble and Hu, 2019; Olivetti et al., 2020; Chung, 2020; Chung and Zou, 2020). More than a proxy for peer ability, parental background of peers conveys meaningful information on how peer parents generate social effects to other economic agents through interaction or information spillover.<sup>1</sup>

We focus on the influence of cadre parents in China who are different from the average citizens. Cadres (*ganbu*) in China are government officials who possess significant political power and authority (Barnett and Vogel, 1967; Lee, 1991). They are capable of securing political, economic, and social resources for themselves and close others (Li et al., 2012; Zhang et al., 2012; Jin et al., 2014; Tan et al., 2017; Yu et al., 2019). The prestige of cadre parents is distinct from less-visible parental attributes such as education and income in China (Chiu, 1999; Bian et al., 2005). This presents a unique context to examine the extent to which other economic agents, such as teachers and other parents, adapt to the presence of influential parents in their networks.

To obtain a causal interpretation about the influence of peer parents who are cadres on students, the main challenge is non-random sorting. At the macro level, heterogeneous

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<sup>1</sup>Manski (1993) defines the spillover effect generated by parental attributes as the ‘contextual effect’. Studies that use parental background of peers to proxy for peer quality include McEwan (2003), Ammermueller and Pischke (2009), Carrell and Hoekstra (2010), Bifulco et al. (2011), Bifulco et al. (2014), and Fletcher et al. (2020).

preferences of parents affect neighborhood and school choices (Bayer et al., 2007). At the micro level, individual traits and tastes determine the formation of social networks (Jackson, 2010). In this paper, we exploit the unique setting in the China education system that random classroom assignment is employed in the majority of middle schools. We analyze a nationally representative sample of middle school students in China who are randomly assigned to classrooms contained in the China Educational Panel Survey (CEPS 2013-2014).<sup>2</sup> With the randomization background and the rich information in the dataset linking students and parents, we effectively isolate the causal impact of peer parental background from endogenous peer group formation, which is the major challenge in empirical peer effect studies.

Utilizing the unique randomized social networks, we evaluate whether increasing exposure to peer parents who are cadres affects the educational outcomes of a student. In the empirical analysis, conditional on school-by-grade fixed effects, we leverage idiosyncratic within-grade variation in the proportion of classmates from a cadre family and estimate its effects on students. We find that cadre parents have positive effects on the academic performance of their children’s classmates (cadre spillover thereafter). Adding one more classmate from a cadre family increases a student’s standardized test score by 3%. The effect size is similar to the magnitude of peer effect identified by studies that analyze the same data.<sup>3</sup>

We then look into several possible channels through which the spillover operates. Peer ability - the typical explanation of peer parental spillover - does not fully explain the cadre spillover. We find that in the full specification, cadre spillover remains salient after we exhaust possible peer effect channels generated by various classmate characteristics (Gong et al., 2019; Zou, 2019; Xu et al., 2020; Chung and Zou, 2020). We also show that the influence of own cadre parents on a student’s test score is both economically and statistically insignificant. To the extent that typical peer effect channels do not exhaust cadre spillover

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<sup>2</sup>We utilize a number of questions about school administration in the survey to ensure student assignments are random. We also cross-check the random nature by running balancing tests. We explain the details in Section 3.3.

<sup>3</sup>Gong et al. (2019) find that adding one female students raises a student’s test score by 2.5% of a standard deviation (using a class size of 45). Xu et al. (2020) find that adding one repeater to the class reduces a student test score by 4.2% of a standard deviation.

and cadres' own children do not perform better in educational outcomes, peer quality is less a viable contender to explain the influence of cadre parents on other children.

We instead observe significant changes in parental response. When there are more cadre parents around, we find that parents have higher expectations of their children, increase time and money investments in their children, and interact more with teachers. We also find teachers praise more and criticize less. In a nutshell, parents respond to the political background of other parents, changing expectations and investments in their children. This explanation speaks to the growing consensus that parenting is an endogenous input of the skill formation of a child (Doepke and Zilibotti, 2017; Agostinelli, 2018; Agostinelli et al., 2020; Chung and Zou, 2020). Parents react to surrounding environments and the corresponding changes eventually affect their children. In our context, possible reasons for parental changes include cultivating social connections (*guanxi*) or status seeking, which are commonly found in the Chinese society (Bian, 1994; Kipnis, 2002; Zhang and Li, 2003; Brown et al., 2011; Carlsson and Qin, 2010; Liu and Apple, 2016).

Several heterogeneous patterns are consistent with our finding that cadres generate external influence. We find that cadre spillover is more manifest in rural areas, where cadre status is more prestigious than that in urban areas.<sup>4</sup> We also observe stronger spillover in schools receiving more government funding. Both suggest that spillover intensity varies with general influences of cadres in the community. Besides, only students with a good family relationship experience significant cadre spillover, speaking to the mechanism that parents adapt to cadre influence.

This paper relates to the broad literature about peer effect generated by peer parental background with two important distinctions. In terms of methodology, a common strategy that analyzes national representative surveys, such as the National Longitudinal Study of Adolescent to Adult Health (AddHealth) in the US, is exploiting cohort variation in grade-mate composition (Bifulco et al., 2011, 2014; Olivetti et al., 2020; Fletcher et al., 2020).

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<sup>4</sup>In this paper, rural areas include traditional rural areas and rural-urban fringe zone of the city/town, in which people hold a more positive view toward cadres. We discuss them more in sections 2 and 7

Our randomization background controls for selection into class and allows us to leverage random variation at a finer level. Using classmates, instead of grade-mates, to identify peer effects also better justifies social interaction (e.g. norm and information spillover) as the underlying force that generates peer parental spillover. In addition to documenting a causal interpretation, we show that parental background of peers has a far richer interpretation than a proxy of peer ability. The cadre background measures the social influence of peer parents themselves. Parents and teachers adapt to the influence of cadre parents, and the changes in parenting and parent-teacher interaction affect the students accordingly. We confirm recent findings that peer parents are distinct agents who also generate social influence. (Fruehwirth and Gagete-Miranda, 2019; Eble and Hu, 2019; Olivetti et al., 2020; Chung, 2020; Chung and Zou, 2020).

This study also contributes to the understanding about the economic significance of political ties. The political background of individuals/organizations affects a wide spectrum of economic activities in developed and developing countries (Fisman, 2001; Liu, 2003; Faccio et al., 2006; Li et al., 2008; Goldman et al., 2009; Braggion and Moore, 2013; Markussen and Tarp, 2014). Particularly in China, cadre members generate benefits for themselves and close others, including the labor market and health outcomes (Li et al., 2012; Jia et al., 2021; Tan et al., 2017). This paper contributes to the discussion about economic significance of political influences in two ways. First, we document a novel fact that children of cadres do not perform better in educational outcomes. This provides further evidence that informal network is the major channel through which benefits of political privilege operate (Jin et al., 2014; Yu et al., 2019). Second, going beyond the traditional focus of within-household transmission, we show that political status can have far-reaching influences on the surrounding economic agents.

Lastly, our study speaks to the economic literature about early-life development. One active strand of economic analyses focuses on within-household transmission, such as the correlation of income/education between parents and own children (Behrman and Rosen-

zweig, 2002; Black et al., 2005; Lam and Schoeni, 1993; Plug, 2004; Shea, 2000).<sup>5</sup> Another prominent area of economic literature emphasizes the influence of neighborhoods (Katz et al., 2001; Montgomery and Hewett, 2005; Ludwig et al., 2013; Fink et al., 2014; Chetty et al., 2016; Chetty and Hendren, 2018; Chyn, 2018). Our discussion duly connects the two important ideas by leveraging the perspective of social network. In generating the “exposure effect”, the interaction between parents and the surrounding environment affects human capital accumulation of own children that adds a novel dimension to understand early-life development. The external influence of parents on surrounding children, though received little attentions from economists, has direct policy implications such as the significance of better neighborhoods and schools on early-life outcomes (Borjas, 1992, 1995; Bisin and Verdier, 2000, 2001).

## 2 Significance of Cadre Status

Cadres are people in administrative positions in government and public institutions. This concept of cadre in China grew from “the leaders of masses” in revolutionary contexts to “the political elite and the functionaries staffing and the huge party-state apparatus” today (Lee, 1991, p. 4). Cadres are considered as the privileged class in China (Lin and Xie, 1988; Lu, ed, 2002), with their privilege primarily coming from the following two perspectives: cultural root in China and the cadres’ existing power.

Culturally speaking, the admiration for cadres permeates the mainstream values and social institutions in China. As the mainstream culture in ancient China, Confucianism encourages civilians to pursue officialdom. According to the Confucius saying, “officialdom is a natural outlet for good scholars, and a student should serve as a government official after completing his learning” (*Xue Er You Ze Shi* in Chinese, Analects,19:13). Becoming a

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<sup>5</sup>For a detailed discussion about the role of parental attributes, interested readers can refer to the review prepared by Black and Devereux (2010). Discussions for developing countries include income, asset, family size, and human capital (Gaiha and Deolalikar, 1993; Swantinathan, 1991; Binder and Woodruff, 2002; Emran and Shilpi, 2019; Fox et al., 2016).

government official was considered as the ultimate success in life. Officials, farmers, artisans, and merchants then formed an ordered social class from top to bottom.<sup>6</sup> Even today, general public uses the equivalent government official ranks to measure the power and prestige of jobs in any organization, using that information to determine how much attention and respect should be afforded to the job holders. This practice is called *Guan Ben Wei* in Chinese.<sup>7</sup> As such, government official ranks have been considered as the primary measure of social status, and *Guan Ben Wei* remains as an important feature of Chinese culture even today (Shi, 2014, p 101). This deeply ingrained consensus lays the foundation of the current cadre privilege.

In addition to the cultural roots, the privilege of cadres stems from their persistent power. Before the economic reform of the 1980s, the occupational hierarchy featured a cadre-worker dichotomy. On the one hand, cadres, accounting for a small share of the urban workforce, enjoyed above-average compensations and were entitled the opportunity to be trained and promoted to leadership positions in party and government offices (Walder, 1995; Zhou, 2001; Bian, 2002). People classified as workers had limited chances to be promoted to cadre positions, which reinforced the cadre privilege during the pre-reform period (Bian, 2002). On the other hand, in rural areas, cadres also exercised “political and managerial authority over ordinary peasants” (Bian, 2002, p. 94). Over the course of the state-led economic reform, cadres have been positioned to have greater opportunities to expropriate key resources (e.g. licenses, business information, restrictions on economic activities, among others). The growing market forces enabled, reinforced, or even amplified cadre influence on resource allocation in the market economy (Nee, 1991; Bian and Logan, 1996; Nee and Opper, 2010). Recent studies have documented significant economic gains associated with cadre status, which cannot be explained by cadres’ human capital accumulations (Jin et al., 2014). As such, for decades after the economic reform, cadres have been perceived as people

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<sup>6</sup>The four classes are *Shi*, *Nong*, *Gong*, and *Shang* in Chinese.

<sup>7</sup>The word *Guan Ben Wei* is borrowed from the word “gold standard” (*Jin Ben Wei* in Chinese) in Economics. Wang et al. (2014) described a special case of this phenomena in Chinese universities.

in highly prestigious occupations (Lin and Xie, 1988; Chiu, 1999; Bian, 2002). Since the 1990s, senior government positions have been seen as being more prestigious than university professors and scientists (Li, 2005).

The visibility and importance of cadre status are crucial for understanding the external influence of cadre parents. Different from other individual characteristics - such as educational level, China Communist Party (CCP) status, or income – cadre status could be more easily observed by the surrounding people. This is because of the prevailing Chinese culture of social networking (*Guanxi* in Chinese)(Gold et al., 2002; Bian, 2018). The *Guanxi* culture requires people to understand and use their networks to survive or get ahead in society (Farrer, 2002; DiTomaso and Bian, 2018). To leverage social connections for specific purposes, Chinese people look for and spread information about members of their network, for example, others' cadre status. At the same time, those close to cadres also like to reveal their connections to gain the respect of others (Wank, 2002). As such, the spread of knowledge concerning cadre status does not require direct interaction with the cadres. Rather, it can be diffused among the population through other channels like community gossip. As most of the students in our sample attend local junior high schools, their parents' cadre status is visible to other parents even if they do not directly know one another.

## **3 Data and Balancing Test**

### **3.1 Data**

This study uses data from the China Education Panel Survey (CEPS), a large-scale, nationally representative, school-based survey of junior high students. It applies a stratified, multistage sampling design with probability proportional to size, randomly selecting 438 classrooms of 112 junior high schools in 28 county-level units in mainland China. Students in these classes are all enrolled in the survey. This study uses the first wave of the survey covering approximately 20,000 Grade 7 and Grade 9 students in the 2013-2014 academic year. One

important feature of this data set is that it not only contains individual students' information, but also the information about their parents, teachers, and school administrators. This information enables us to construct a sample comprised of students randomly assigned to classrooms. Our identification strategy then relies on the idiosyncratic within school-grade variation in the share of peers' cadre parents. A similar identification strategy has been used in multiple China-based peer-effect studies (Hu, 2015, 2018; Gong et al., 2018, 2019; Eble and Hu, 2019, 2020; Chung and Zou, 2020).

### **3.2 Measurements**

The primary outcome variable in this study is students' academic performance, which is measured using students' mid-term test scores. The CEPS asks the school administration for students' mid-term scores in Chinese, math, and English, three compulsory courses in China's junior high schools. The CEPS standardizes these scores to a mean of 70 and a standard deviation of 10 at the school level. In this study, we calculate students' total midterm scores by adding these standardized scores in three subjects and standardize the total score at the school-grade level with a mean of 0 and a standard deviation of 1.

In China, students of the same class interact extensively as they take the same courses and participate in a variety of activities together. Throughout this paper, peers refer to homeroom classmates. The key variable of interests is the leave-me-out share of classmates who have a cadre parent. We classify a parent as a cadre in the CEPS if he/she is either a government official, a staff member of a public institutions or a civil servant. For each student, we calculate the number of his/her classmates that have at least one parent being cadre; then we divide this leave-me-out total by the class size minus 1.

### **3.3 Randomized Classroom Assignment and Balancing Tests**

Since peers are defined at the classroom level, the primary threat to identification is non-random classroom assignment, such as tracking or parental intervention. Our research is

endowed with a very unique setting where classroom randomization is employed in most of the China junior high schools. The 2006 Law of Compulsory Education stipulates that the schools shall not divide the classes into key and non-key classes (Article 22). Tracking was not allowed since then.

We follow the sample restrictions by recent CEPS-based studies to ensure the randomized nature. The criteria include: (1) The school principal reports that a randomization process is used for placing new students into classrooms. (2) The school principal confirms that students will not be reassigned to a different classroom in Grades 8 and 9. (3) None of the homeroom teachers of the same grade report that students are assigned by test scores. (4) We drop the entire grade with only one class. In Table A2, we test for the random assignment based on the sample constructed using these criteria. The balancing test shows that, conditional on the same school and grade, student characteristics are significantly correlated with the percent of peers who have a cadre parent. This may imply the influence of cadres in school administration.

Therefore, we apply an additional restriction to ensure that student assignments are free from parental intervention, given the prominent influence of cadre members. One survey question asks school principals whether parents have asked to place their children in specific classes or with specific teachers. Among 112 CEPS schools, 42 (37.5%) schools' principals report that no parents have ever asked to do so. We, therefore, further restrict our sample to these schools. Our final sample contains 3021 students from 82 classrooms in 28 schools. Table A1 describes details of our sample selection process. Table 1 reports the summary statistics of our final sample. 12.9% of students in our sample have a least one cadre parent.

Table 2 presents the balancing tests for the sample used in this study. In the first column, without school-by-grade fixed effects, student and parent characteristics are highly correlated with the share of cadre peers. This result speaks to systematic regional differences in classroom quality in China. In Column 2, we include fixed effects that confine the variation within the same grade in the same school, the level at which the randomization occurs; most of the

Table 1: Summary Statistics

|  | Mean/Proportion | S.D.  | Min    | Max   |
|--|-----------------|-------|--------|-------|
| <b>Outcome Variable</b>                  |                 |       |        |       |
| Raw total score                          | 211.8           | 25.20 | 77.97  | 293.2 |
| <b>Variable of interest</b>              |                 |       |        |       |
| Proportion of peers with a cadre parent  | 0.126           | 0.128 | 0      | 0.467 |
| <b>Individual/Family Characteristics</b> |                 |       |        |       |
| Standardized persistence score           | 0.0812          | 0.969 | -3.426 | 1.030 |
| Age                                      | 13.33           | 1.199 | 11     | 17    |
| Cadre parent                             | 13.0%           | –     | –      | –     |
| Female                                   | 52.8%           | –     | –      | –     |
| Ethnicity - Han                          | 94.9%           | –     | –      | –     |
| Only-child                               | 57.8%           | –     | –      | –     |
| Migrant                                  | 19.2%           | –     | –      | –     |
| Agricultural Hukou                       | 38.2%           | –     | –      | –     |
| Repeated grade in primary school         | 7.49%           | –     | –      | –     |
| Skipped grade in primary school          | 1.00%           | –     | –      | –     |
| Attended kindergarten                    | 85.5%           | –     | –      | –     |
| College father                           | 17.9%           | –     | –      | –     |
| College mother                           | 14.9%           | –     | –      | –     |
| Low-income family                        | 11.5%           | –     | –      | –     |
| High-income family                       | 7.96%           | –     | –      | –     |
| Observations                             | 2989            |       |        |       |

## Notes:

<sup>1</sup> The raw total score is the sum of the midterm scores of math, Chinese and English. The scores of each subject are standardized within school-grades with a mean of seventy and a standard deviation of ten by the survey staff. In our later analysis, we re-standardize the scores with a mean of zero and a standard deviation of one for easy interpretation.

<sup>2</sup> Proportions, instead of means, are reported for indicators from *cadre parents* to *high-income family*.

correlations become both economically small and statistically insignificant. For example, the correlation between the share of cadre peers and parental educational background drops by at least 10 times. The indicator of “ethnicity” is the only characteristics that is significantly related to the share of cadre parents at the 5% level. We argue that this correlation is less of a concern since the magnitude is small and drops by more than a half after including the fixed effects.

The supply side response from schools may also invalidate the randomization background. It is possible that schools assign better teachers to classes which include more cadres’ children. In Table A3 in the Appendix, we show that teacher characteristics are not systematically related to the share of cadre peers, both with or without the school-by-grade fixed effects. Another concern is that teachers or/and school leaders may work harder if they know some of the students are from cadre families. We test this possibility in Section 6.3.

Table 2: Balancing Test

|                                  | Proportion of peers with cadre parents |                         |
|----------------------------------|--|-------------------------|
|                                  | (1)                                    | (2)                     |
| Age                              | 0.00948<br>(0.00877)                   | -0.00106<br>(0.000675)  |
| Female                           | -0.00258<br>(0.00341)                  | 0.000559<br>(0.000863)  |
| Ethnicity - Han                  | -0.0352**<br>(0.0150)                  | -0.00636**<br>(0.00253) |
| Migrant                          | -0.0138*<br>(0.00820)                  | -0.000911<br>(0.00136)  |
| Agricultural Hukou               | -0.0791***<br>(0.0131)                 | -0.000796<br>(0.00110)  |
| Only-child                       | 0.0268***<br>(0.00691)                 | 2.05e-05<br>(0.00116)   |
| Repeated grade in primary school | -0.0279***<br>(0.00958)                | -0.00176<br>(0.00171)   |
| Skipped grade in primary school  | -0.0217<br>(0.0157)                    | 0.000601<br>(0.00254)   |
| Standardized persistence score   | 0.00560<br>(0.00357)                   | -4.35e-05<br>(0.000796) |
| Attended kindergarten            | 0.0212***<br>(0.00702)                 | -0.000192<br>(0.00134)  |
| College mother                   | 0.0442***<br>(0.0102)                  | 0.00257<br>(0.00293)    |
| College father                   | 0.0507***<br>(0.00981)                 | -0.00185<br>(0.00145)   |
| Low-income family                | -0.0142**<br>(0.00703)                 | 0.00253*<br>(0.00150)   |
| High-income family               | -0.0100<br>(0.00847)                   | 0.000145<br>(0.00172)   |
| Constant                         | 0.0220<br>(0.118)                      | 0.0549***<br>(0.0125)   |
| Observations                     | 2,989                                  | 2,989                   |
| R-squared                        | 0.306                                  | 0.927                   |
| School-grade fixed effects       |  | X                       |

Notes:

<sup>1</sup> Each column represents a separate regression which regresses the leave-me-out proportion of peers with cadre parents on the pre-determined characteristics of students.

<sup>2</sup> Standard errors are clustered at class level and reported in the parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 4 Empirical Model

To explore the spillover effects of peers' cadre parents, we adopt the following linear-in-mean model:

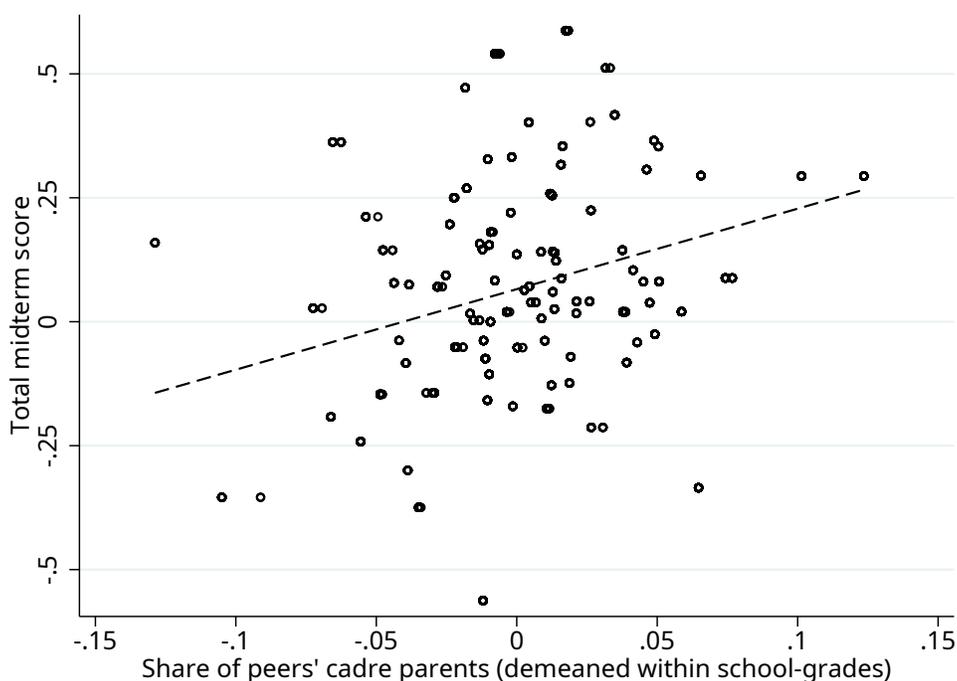
$$\begin{aligned}
 Y_{i,j,k} = & \beta_0 + \beta_1 PeerCadreParent_{-i,j,k} + \beta_2 CadreParent_{i,j,k} \\
 & + \mathbf{S}'_{i,j,k}\boldsymbol{\gamma} + \mathbf{F}'_{i,j,k}\boldsymbol{\tau} + \mathbf{T}'_{j,k}\boldsymbol{\phi} + \mathbf{P}'_{j,k}\boldsymbol{\lambda} + \delta_k + \epsilon_{i,j,k}
 \end{aligned} \tag{1}$$

where  $Y_{i,j,k}$  refers to the outcome of student  $i$  in class  $j$  in a school-grade  $k$ , including academic performance measured by the students' mid-term exams scores, parental response, and teacher's pedagogy.  $PeerCadreParent_{-i,j,k}$  stands for the *leave-me-out* share of peers with cadre parents for student  $i$  in class  $j$  in a school-grade  $k$ .  $CadreParent_{i,j,k}$  is an indicator for student  $i$ 's own parents' cadre status. It equals one if at least one of the student's parents is a cadre.  $\mathbf{S}_{i,j,k}$  is a vector of variables controlling for students' individual characteristics.  $\mathbf{F}_{i,j,k}$  is a vector of variables controlling for students' family backgrounds. The bottom section of Table 1 summarizes the two sets of control variables.  $\mathbf{T}_{j,k}$  is a vector of variables controlling for homeroom teachers' characteristics, including age, gender, teaching experience, professional title, subject taught, and dummy variables indicating college degree and graduation from pedagogical universities or majors.  $\mathbf{P}_{i,j,k}$  are variables controlling for peers' abilities and family background, including the leave-me-out within-class share (or mean) of gender, repeater in primary school, skipper in primary school, persistence, parental education, low-income family and high-income family.

In addition, we add school-grade fixed effect ( $\delta_k$ ), which enables us to examine the spillover effects of peers' cadre parents at the classroom level. Specifically, within the same school-grade level, we compare students' academic performance among classrooms with different shares of peers from cadre families. This design purges our estimates of bias from potential confounders due to self-selected regional or school sorting. We cluster standard errors at the class level to account for correlation in outcomes for students in the same class.

## 5 Results

The bin scatter plot in Figure 1 presents the raw relationship between a student’s academic performance and the share of his classmates with cadre parents. The x-axis represents within school-grade variation of the leave-me-out share of peers with a cadre parent. The y-axis represents the within school-grade variation of the standardized mid-term test scores. This score increases when more classmates’ parents are cadres, suggesting the existence of cadre spillover.



Note: “Share of peers’ cadres” refers to the leave-one-out proportion of peers with a cadre parent.

Figure 1: Raw Relationship between Mid-term Test Scores and Share of Peers with a Cadre Parent

Table 3 unfolds the main results with various specifications. Column 1 quantifies the results in Figure 1, showing a positive and significant bivariate relationship between the cadre status of classmates’ parents and a student’s test score (cadre spillover thereafter), conditional on school-by-grade fixed effects. By contrast, with a similar specification, Column 2 reveals

that a cadre parent does not exert any significant spillover on a child’s educational outcome. This insignificant influence of own cadre parents is a new fact we document since previous studies about intergenerational spillover of cadre members focused on labor market outcomes of cadre’s children (Li et al., 2012; Yu et al., 2019). At the same time, our result echoes the consensus that factors other than human capital spillover, such as referral networks (*guanxi*), are more important mechanisms benefiting a cadre’s offspring. The insignificant impact of own cadre parents on academic performance also speaks to the importance of alternative channels, which will be discussed in later sections, that drives cadre spillover beside peer quality.

In Columns 3 to 6, we gradually add control variables to track changes in the estimate of cadre spillover. An important note in Column 4 and Column 5 is that even when we control for important student, family, and teacher characteristics, the estimate of cadre spillover changes only slightly, giving credence about the randomization of our research design. The largest change in the estimate of cadre spillover is in Column 6 (full specification hereafter) when we additionally control for peer characteristics. This result echoes the importance of other peer effect channels found in previous studies (gender, repeater, income, and parental education of peers). More importantly, even though we take into account conventional peer effect mechanisms, the residual cadre spillover remains statistically significant at the 1% level. According to the saturated model in Column 6, increasing the proportion of peers from cadre families by one percentage point increases a student’s test score by 1.32% of a standard deviation (SD). Another way to interpret the result is that adding one more cadre classmate to a class of 45 (the average class size in our sample) increases a student’s test score by about 3% of a standard deviation.<sup>8</sup>

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<sup>8</sup>The average class size includes observations that have missing information. See details in Table A1 in the appendix.

Table 3: Spillover of Peers' Cadre Parents on Students' Academic Performance

|                           | Total midterm score |                    |                     |                     |                     |                     |
|---------------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
|                           | (1)                 | (2)                | (3)                 | (4)                 | (5)                 | (6)                 |
| Peers' cadre parents      | 1.605***<br>(0.450) |                    | 1.624***<br>(0.444) | 1.501***<br>(0.445) | 1.756***<br>(0.503) | 1.320***<br>(0.416) |
| Cadre parent              |                     | 0.0470<br>(0.0639) | 0.0543<br>(0.0623)  | -0.0221<br>(0.0558) | -0.0170<br>(0.0557) | -0.0278<br>(0.0549) |
| Observations              | 2,989               | 2,989              | 2,989               | 2,989               | 2,989               | 2,989               |
| R-squared                 | 0.010               | 0.006              | 0.010               | 0.092               | 0.096               | 0.112               |
| School-grade              | X                   | X                  | X                   | X                   | X                   | X                   |
| Student/Family controls   |                     |                    |                     | X                   | X                   | X                   |
| Teachers' characteristics |                     |                    |                     |                     | X                   | X                   |
| Peer characteristics      |                     |                    |                     |                     |                     | X                   |

Notes

<sup>1</sup> The dependent variables are midterm test scores standardized at the school-grade level with a mean of zero and a standard deviation of one. Peers' cadre parents refer to the leave-one-out proportion of peers with a cadre parent.

<sup>2</sup> All regressions include a school-grade fixed effect. Student/family controls refer to the variables shown in Table 1. Teachers' characteristics include a homeroom teacher's age, gender, teaching experience, professional title, subject taught and dummy variables indicating college degree, and graduation from a pedagogical university or major. Peer characteristics include leave-me-out within-class average or share of female, repeater in primary school, skipper in primary school, persistence, college parents, low-income family, and high-income family.

<sup>2</sup> Standard errors in the parentheses are clustered at the class level. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant levels, respectively.

## 6 Mechanisms

### 6.1 Peers' Quality

One frequently discussed channel through which peer parental characteristics influence a student is the quality of peers. As demonstrated in Column 6 of Table 3, the peer effect channels explained away about 20% of the cadre spillover. The joint hypothesis test of all peer effect channels is significant at the 1% level, with the F-statistic equals 15.23.

We believe peer quality is not the entire story. First, when we control for possible peer effect channels, the residual cadre spillover remains salient. Another important note is that the influence of cadre parents on the test scores of their own children is both statistically and economically small. Previous economic studies on cadre status also find that human capital does not explain the labor market outcomes of cadres' offspring (Jin et al., 2014; Yu et al., 2019). Therefore, the residual influence is unlikely to be driven by unmeasured human capital spillover among peers. We suggest that the cadre status of peer parents is beyond a measure of peer ability.

In short, peer quality is an important but not the only mechanism that mediates the cadre spillover on other children. We next leverage the rich survey detail to look into the responses of parents and teachers that could potentially explain the residual influence of peer cadre parents.

### 6.2 Parental Response

Parents react to surrounding environments, changing the way they parent, a situation that ultimately affects their children (Doepke and Zilibotti, 2017; Agostinelli, 2018; Chung and Zou, 2020; Agostinelli et al., 2020). Before assessing several aspects of parental adjustments, we first look at network-related variables. The possible existence of network among parents or the knowledge of their children's peers is a crucial link for why parents may react to the cadre status of other parents.

We utilize the survey questions asking parents whether they know their child’s friends and the parents of their child’s friends. We estimate ordered logit models (with the full specification) and present the coefficients in Table 4 for these two questions.<sup>9</sup> Column 1 shows that the parent’s knowledge of the child’s peers has a strong and positive relationship with the presence of other parents who are cadre members. Column 2 also shows that parents are more likely to know other parents when there are more cadre parents around.

Table 4: Whether Parents Know Their Child’s Friends or Friends’ Parents

|                      | Know their child’s friends | Know the friends’ parents |
|----------------------|----------------------------|---------------------------|
| Peers’ cadre parents | 2.826***<br>(0.972)        | 1.985*<br>(1.043)         |
| Cadre parent         | 0.0199<br>(0.163)          | -0.0354<br>(0.137)        |
| Observations         | 2887                       | 2590                      |
| Pseudo $R^2$         | 0.043                      | 0.051                     |

Notes

- <sup>1</sup> For each question, parents don’t know, know some of them or know all of them. We use the ordered logit model to analyze parents’ response.
- <sup>2</sup> We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent’s relationship to the child because the father, mother, and grandparents may have different opinions of the child’s friends.
- <sup>3</sup> Standard errors are clustered at class level and reported in the parenthesis. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

In Table 5, we further investigate what topics parents usually discuss with their children, and find that parents are more concerned about things happen at school and peer relationship as shown in Column 1 and 2. To the extent that parents know and are more concerned about social network of their child’s are consistent with the *guanxi* culture in China. Parents may know each other and we do not have direct evidence that they have frequent face-to-face interaction. Nonetheless, social influence of peer parents can operate in a subtle way through information spillover (Chung, 2020). The knowledge of the presence of cadre parents suffices to explain changes in parenting.

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<sup>9</sup>For each question, there are three answer options: 1. don’t know; 2. know some of them, or; 3. know all of them. We also control for the correspondent’s relationship with the student because the father, mother, and grandparents may have different opinions of the child’s friends.

Table 5: Effects on the Frequency of Parents' Discussion of Certain Topics with Their Child

|                      | Things<br>happened<br>at school | Relationship<br>btw. child and<br>friends | Relationship<br>btw. child and<br>teachers | Child's<br>feelings | Child's<br>worries and<br>troubles |
|----------------------|---------------------------------|---|--|---------------------|------------------------------------|
| Peers' cadre parents | 2.595***<br>(0.692)             | 1.416***<br>(0.467)                       | 1.434*<br>(0.859)                          | 0.159<br>(0.809)    | 0.140<br>(0.771)                   |
| Cadre parent         | 0.136<br>(0.162)                | 0.340**<br>(0.135)                        | 0.387***<br>(0.132)                        | 0.169<br>(0.132)    | 0.128<br>(0.110)                   |
| Observations         | 2943                            | 2933                                      | 2934                                       | 2932                | 2936                               |
| Pseudo $R^2$         | 0.100                           | 0.0726                                    | 0.0525                                     | 0.0780              | 0.0696                             |

Notes

<sup>1</sup> For each topic, parents choose their frequency among (1) Never, (2) Sometimes, and (3) Often. We use the ordered logit model to analyze parents' behaviors.

<sup>2</sup> We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent's relationship to the child because the father, mother, and grandparents may have different opinions of the discussion with the child.

<sup>3</sup> Standard errors are clustered at class level and reported in the parenthesis. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

We now assess if the exposure to more cadre parents elicit changes in parental beliefs. Column 1 of Table 6 shows that the exposure to more cadre parents leads to a higher college expectation from parents. Cadre parents also have a higher college expectation. By contrast, in Column 2, we find that neither the exposure to peers who have cadre parents nor the cadre status of own parents has significant impacts on student’s college expectation. This again speaks to the possibility that cadre spillover is less likely to affect students through the conventional peer quality channel. Instead, parents may exchange ideas or are influenced by the information/beliefs prevailing in the cadre networks.

Table 6: Effects on College Expectations

|                      | Parents                        | Student                      |
|----------------------|--------------------------------|------------------------------|
| Peers’ cadre parents | 2.715*<br>(1.549)<br>[0.311]   | 0.343<br>(1.344)<br>[0.0547] |
| Cadre parent         | 0.742**<br>(0.318)<br>[0.0850] | 0.231<br>(0.184)<br>[0.0367] |
| Observations         | 2950                           | 2969                         |
| Pseudo $R^2$         | 0.228                          | 0.153                        |

Notes:

<sup>1</sup> We use the logit model to analyze respondents’ various expectations. Average marginal effects are in the brackets. Standard errors are clustered at class level and reported in the parenthesis. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

<sup>2</sup> We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent’s relationship to the child in Column (1) because the father, mother and grandparents may have different answers for the question.

In another set of questions, parents evaluate whether or not several factors are important for their child’s academic success. This provides another angle to assess the changes in parental beliefs. With a 0/1 response for each factor, we run logit models and present the results in Table 7. With the exposure to more cadre parents, parents are less likely to regard ‘parents’ discipline’, ‘teachers’ teaching’, and ‘hard-working’ as a factor. At the same time, we observe some factors becoming more important with a marginally significant estimate. Parents are more likely to believe ‘class’ is important as shown in Column 3. ‘Class’ by

layman interpretation in Chinese often refers to the class environment affected by teachers and peers. With a separate category of teachers in the question, ‘class’ in the questionnaire more likely relates to peer environment. The shift from individual responsibility (parents, teachers, and students) to peer group is consistent with our findings that parents care more about their child’s peer network with more presence of cadre parents.

Parents also regard ‘cram school’ is important when they are exposed to more cadre parents. In addition to the perceived importance in Column 5 of Table 7, the actual expenditure on cram schools also increases significantly as shown in Column 2 of Table 8. To the extent that the estimates of own cadre status (the coefficients of “cadre parents”) are also significantly related to the perceived importance and actual expenditure, a plausible explanation for cadre spillover is that the beliefs and actions of cadre parents affected how other parents think about extra tutorials through direct interaction or word-of-mouth.

Table 7: Effects on Parents Evaluation of Factors Affecting Students’ Grades

|                         | Parents’<br>discipline | Teachers’<br>teaching | Class             | Friends            | Cram<br>school     | Hard-<br>working     | Talent            |
|-------------------------|------------------------|-----------------------|-------------------|--------------------|--------------------|----------------------|-------------------|
| Peers’ cadre<br>parents | -1.275**<br>(0.577)    | -2.024**<br>(0.872)   | 1.887*<br>(1.114) | -0.571<br>(0.871)  | 2.448*<br>(1.382)  | -4.629***<br>(1.201) | -0.194<br>(0.657) |
| Cadre parent            | 0.0751<br>(0.142)      | 0.0540<br>(0.158)     | 0.0319<br>(0.173) | 0.0216<br>(0.0952) | 0.414**<br>(0.180) | -0.0435<br>(0.233)   | 0.136<br>(0.151)  |
| Observations            | 2965                   | 2968                  | 2964              | 2968               | 2954               | 2961                 | 2970              |
| Pseudo $R^2$            | 0.0488                 | 0.0786                | 0.0511            | 0.0356             | 0.0602             | 0.0969               | 0.0503            |

Notes:

<sup>1</sup> The table utilizes the question in the parents’ survey: “Which of the following factors do you think have effects on students’ grade? (Please mark all that apply.) (1) Parents’ discipline, (2) Teachers’ teaching, (3) Class, (4) Friends, (5) Attendance of cram school, (6) Extent of hardworking, and (7) Talent and capability”

<sup>2</sup> We analyze these factors using the logit model. We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent’s relationship to the child because the father, mother, and grandparents may have different opinions of what affect the child’s grade.

<sup>3</sup> Standard errors in the parentheses are clustered at the class level. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

Table 8: Effects on Parents' Investment in Their Child's Off-school Education

|                      | (1)<br>Taking cram school or extra-<br>curricular | (2)<br>Cost of taking (RMB) |
|----------------------|---|-----------------------------|
| Peers' cadre parents | 1.166<br>(1.346)                                  | 5140.0**<br>(1975.9)        |
| Cadre parent         | 0.271<br>(0.206)                                  | 941.5**<br>(431.5)          |
| Observations         | 2922  | 1501                        |
| (Pseudo) $R^2$       | 0.302   | 0.131                       |
| Model                | Logit   | OLS                         |

Notes:

- <sup>1</sup> The table utilizes the following questions in the parents' survey: "Does this child take any cram school or extra-curricular course this semester?" and "What is the total cost of his/her cram school or extra-curricular courses this semester?". We restrict the students to those who took cram school or extra-curricular courses when we analyze the effects on the costs in Column (2).
- <sup>2</sup> We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent's relationship to the child because the father, mother and grandparents may have different answers for the questions.
- <sup>3</sup> Standard errors in the parentheses are clustered at the class level. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

We also find that parents adjust time investment in their children. In the CEPS, parents were asked to rate from 1 (never) to 6 (more than once a week) how often they participate their child in a number of activities. Table 9 presents the coefficients using an ordered logit model. In Column 1, we find that parents have dinner with their child more frequently when more of their child’s classmates come from cadre families. According to the child development literature, the frequency of family meal is positively correlated with academic performance (Eisenberg et al., 2004). In Column 6, we also observe a significant decline in time spent on entertainment (e.g. watching shows), which also potentially benefits test scores.

Altogether in this subsection, we suggest that parental adjustment helps explain why cadre spillover might exist. Since cadre members possess a unique social status, other parents who know their presence may put more weight on their beliefs or opinions. The guanxi culture may also lead parents to care more about their child’s social network for future benefits.

Table 9: Effects on the Frequency of Parents’ Joint Activities with Their Child

|                      | Having dinner       | Reading           | Watching TV        | Playing Sports     | Visiting museums, zoos, etc | Watching shows, sports, etc |
|----------------------|---------------------|-------------------|--------------------|--------------------|-----------------------------|-----------------------------|
| Peers’ cadre parents | 7.253***<br>(1.228) | 0.0817<br>(0.826) | 1.302<br>(0.941)   | -1.206*<br>(0.725) | -1.495<br>(0.990)           | -2.487***<br>(0.907)        |
| Cadre parent         | 0.0172<br>(0.221)   | 0.0826<br>(0.119) | -0.0225<br>(0.100) | 0.147<br>(0.0927)  | 0.135<br>(0.123)            | 0.249**<br>(0.0980)         |
| Observations         | 2934                | 2902              | 2907               | 2858               | 2906                        | 2917                        |
| Pseudo $R^2$         | 0.105               | 0.0412            | 0.0240             | 0.0431             | 0.0872                      | 0.0784                      |

Notes

- <sup>1</sup> The frequency of a specific activity that parents have with their child is (1) Never, (2) Once, (3) Two to four times or (4) Five times or more. Ordered logit model is applied for the analysis of the frequency.
- <sup>2</sup> We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent’s relationship to the child because the father, mother and grandparents may have different answers for the questions.
- <sup>3</sup> Standard errors are clustered at class level and reported in the parenthesis. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

### 6.3 Teacher Behaviors

We now investigate the extent to which teachers respond to the presence of cadre parents. Both teacher and student surveys contain valuable information about teacher-student interactions. We utilize a set of questions about how the students and parents feel about teacher practices, using a scale from 1 (strongly disagree) to 4 (strongly agree). Column 1 and 2 of Table 10 show that, from the student’s perception, the headroom teachers criticize less and praise more when more classmates come from a cadre family.

In Table 11, we look into the marginal effects for the pedagogy result. Panel A shows that the effect of peer cadre parents on whether the headroom teacher uses criticism is particularly strong in the “Strongly Disagree” category that students are less likely to answer the rest of the three categories. For whether the headroom teacher praises more in Panel B, students who have more peer cadre parents are less likely to answer “Strongly Disagree” or “Somewhat Disagree”, and more likely to answer “Strongly Agree” or “Somewhat Agree”.

The changes in teacher pedagogy are likely caused by parental intervention. When looking at the parents’ propensity to contact teachers in the parent survey, we find that a higher presence of peer cadre parents lead a student’s parent to talk more with the teacher about school work as shown in Column 1 of Table 12. We also find a similar positive effect on the topic of “Physical health”, but the estimate is marginally significant. There are two possible explanations behind the change in teacher’s behaviors. First, as indicated by the positive coefficient of “cadre parents”, cadre parents in general contact teachers more frequently than non-cadre parents, and therefore, the more cadre parents in the classroom the more parental pressure for teachers to change. The second is for other parents to adjust to the presence of cadre members in the network. This is consistent with the channel we identify earlier about parental adjustment that parents care more about their children’s schoolwork.

Table 10: Changes in Teachers' Practices

|                               | (1)<br>My headroom<br>teacher always<br>criticizes me | (2)<br>My headroom<br>teacher always<br>praises me | (3)<br>The teacher is<br>patient for your<br>child | (4)<br>The teacher is<br>responsible for<br>your child |
|-------------------------------|---|--|--|--|
| Peers' cadre<br>parents       | -3.571***<br>(1.342)                                  | 3.716***<br>(0.876)                                | 0.241<br>(1.272)                                   | -0.390<br>(0.982)                                      |
| Cadre parent                  | -0.102<br>(0.162)                                     | 0.162<br>(0.105)                                   | 0.0169<br>(0.130)                                  | -0.0222<br>(0.146)                                     |
| Observation<br>(Pseudo) $R^2$ | 2973<br>0.0326  | 2968<br>0.0418                                     | 2976<br>0.0559                                     | 2979<br>0.0640   |
| Respondents                   | Students  |  | Parents  |  |

Notes:

<sup>1</sup> "Peers' cadre parents" refers to the leave-one-out proportion of peers with a cadre parent.

<sup>2</sup> We analyze students' and parents' reports of teachers' pedagogical practices using the ordered choice model. We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent's relationship to the child in Column (3) and Column (4) because the father, mother and grandparents may have different answers for the questions .

<sup>3</sup> Standard errors in the parentheses are clustered at the class level. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

Table 11: Marginal Effects on Students' Perceived Changes in Teachers' Practices

| Panel A: My headroom teacher always criticize me |                   |                   |                |                |
|--|-------------------|-------------------|----------------|----------------|
|  | Strongly disagree | Somewhat disagree | Somewhat agree | Strongly agree |
| Peers' cadre parents                             | 0.832             | -0.451            | -0.260         | -0.120         |
| Panel B: My headroom teacher always praises me   |                   |                   |                |                |
|  | Strongly disagree | Somewhat disagree | Somewhat agree | Strongly agree |
| Peers' cadre parents                             | -0.446            | -0.406            | 0.572          | 0.280          |

Note:

<sup>1</sup> Panel A and Panel B reports the marginal effects of ordered choice models in Column (1) and Column (2) of Table 10 .

Table 12: Effects on Parents Communication with Teachers

|                      | Parents talk to the teacher this semester about |                               |                              |                               |                               |
|----------------------|---|-------------------------------|------------------------------|-------------------------------|-------------------------------|
|                      | Schoolwork                                      | Child's morals                | Mental health                | Physical health               | Friends                       |
| Peers' cadre parents | 2.739***<br>(0.967)<br>[0.518]                  | -0.783<br>(0.984)<br>[-0.162] | 0.129<br>(1.352)<br>[0.0237] | 2.198*<br>(1.280)<br>[0.215]  | 0.957<br>(1.377)<br>[0.118]   |
| Cadre parent         | 0.355**<br>(0.164)<br>[0.0672]                  | 0.0932<br>(0.120)<br>[0.0193] | 0.197<br>(0.129)<br>[0.0364] | 0.362*<br>(0.187)<br>[0.0354] | 0.289*<br>(0.162)<br>[0.0356] |
| Observations         | 2944  | 2947                          | 2946                         | 2911                          | 2927                          |
| Pseudo R square      | 0.0531  | 0.0465                        | 0.0617                       | 0.0619                        | 0.0663                        |

Notes

<sup>1</sup> The dependent variable equals to one if parents talked to their child's teachers this semester about the specific topic. We use the logit model, and the marginal effects are in the brackets.

<sup>2</sup> We control for student/family, headroom teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. We also control for the correspondent's relationship to the child because the father, mother and grandparents may have different opinions for the dependent variable.

<sup>3</sup> Standard errors are clustered at class level and reported in the parenthesis. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

## 7 Heterogeneity in Cadre Spillover

In this section, we gauge the sensitivity in measuring spillover intensity from three different dimensions. We exploit the variation in the public attitude towards cadres, in local government intervention, and in family relationship. The heterogeneous patterns along these dimensions are associated with the strength of social influence of cadre members and the role of parents in navigating the cadre spillover.

The first dimension utilizes the regional difference in public sentiments towards cadres to provide suggestive evidence that social influence drives the cadre spillover. Our thought experiment is that if a cadre status is prestigious and exerts social influence on others, we should observe a stronger cadre spillover on other children where people hold a more favorable opinion of cadres.

In China, although cadres generally are held in high prestige, how they are perceived by the general public differs between rural and urban areas. Such difference could be linked to the imbalance in the market development across these areas. Literature suggests that the functioning of market requires that the distribution of resources should be based on the relative contribution of production factors (McClosky and Zaller, 1984). Current China-based research suggests that in areas with a higher level of market development, the public tend to perceive it as fair if resources are distributed to reflect the scarcity and importance of goods and skills (Tian, 2020). This rule of distribution is in conflict with the *Guanxi* culture, which operates via the exchange of favor and tie-specific resource allocation (Yang, 1994; Bian, 2018). As such, people in areas with a higher level of market development are more likely to view *guanxi* as unfair (Tian, 2020), which in turn could impact their attitudes towards cadres. Using two national representative surveys of Chinese household, the Chinese General Social Survey (CGSS 2013) and the China Family Panel Studies (CFPS 2014), we contrast the public sentiments towards cadres in rural versus urban areas. The results from these two surveys are presented in Appendix B, which point to the same conclusion: the people in rural areas hold a more positive view of cadres than those in urban areas. We leverage

this rural-urban difference to test the existence of the external spillover of cadre parents. In particular, we group the center of the city, the outskirts of city and towns outside of the city into low-cadre-satisfaction areas to serve as a useful placebo context where cadre parents should have a weaker influence on classmates' academic performance given a lower positive public sentiment. Panel A in Table 13 illustrates the cadre spillover for rural and urban areas, respectively. The cadre spillover is significant in both areas, with the magnitude in rural areas much greater than that in urban areas. These findings suggests that cadre spillover is more prominent in areas where people hold a more positive view towards cadres.

The second dimension utilizes the recent finding of Jia et al. (2021) that cadre influence is stronger when government intervention is higher in the local economy. If cadre spillover is driven by the social influence of cadre members, we should observe stronger spillover in areas where the public sector plays a large role. We measure government intervention using government funding (RMB per student) for a school obtained from the school administration survey. Since the scale of this variable is continuous, instead of separating cadre spillover by category, we estimate both the base and interaction term. Panel B in Table 13 shows that students in a school with more government funding experience higher cadre spillover.

The third dimension exploits the mechanism that parent adjustments drive cadre spillover. We posit that the spillover intensity is higher if the family relationship is better. In the empirical analysis, we utilize four questions in the student survey to measure family relationship, including whether both parents live together with the student, whether the parents have a good relationship, and whether the student is close to his/her father or mother. Panels C, D, E and F in Table 13 present the cadre spillover for a specific category to contrast any difference in the estimates. Each panel represents a separate regression with the corresponding interaction terms. As shown in Panels C, E and F, cadre spillover is significant only when both parents live together and the student is close to his/her mother or father. The third column shows that the differences in estimates with their corresponding counterparts are statistically significant. In Panel D, we also find that cadre spillover occurs only for students

whose parents have good relationship, although the difference with its counterparts is not significant.

To sum up, the analysis in this section indicates that cadre spillover is much stronger in areas where people hold more favorable views towards cadre, in schools with higher local government intervention, and in families with better parent-child relationship. These findings lend support to our argument that the cadre spillover is primarily driven by the social influence, and the transmission of cadre spillover follows the path from peers' cadre parents to children's own parents, and in turn, to children.

Table 13: Heterogeneous Effects of Peers' Cadre Parents on Academic Performance

|  | Midterm test score |         |                                 |
|--|--------------------|---------|---------------------------------|
|  | Coefficient        | S.E.    | F stat. of difference (p-value) |
| <i>Panel A: schools in rural areas</i>                                   |                    |         |                                 |
| Peers' cadre parents x rural areas                                       | 3.915***           | (1.137) |                                 |
| Peers' cadre parents x urban areas                                       | 0.941**            | (0.447) | 5.911(0.017)                    |
| Observations   | 2,989              |         |                                 |
| R-squared  | 0.113              |         |                                 |
| <i>Panel B: government funding (1000 RMB per student)</i>                |                    |         |                                 |
| Peers' cadre parents x gov't funding                                     | 1.993***           | (0.543) | –                               |
| Observations   | 2,989              |         |                                 |
| R-squared  | 0.114              |         |                                 |
| <i>Panel C: parents both at home</i>                                     |                    |         |                                 |
| Peers' cadre parents x both home   | 1.415***           | (0.410) |                                 |
| Peers' cadre parents x not home  | 0.625              | (0.581) | 4.003(0.049)                    |
| Observations   | 2,989              |         |                                 |
| R-squared  | 0.114              |         |                                 |
| <i>Panel D: parents in a good relationship</i>                           |                    |         |                                 |
| Peers' cadre parents x good relation                                     | 1.422***           | (0.414) |                                 |
| Peers' cadre parents x bad relation                                      | 0.711              | (0.589) | 1.812(0.182)                    |
| Observations   | 2,950              |         |                                 |
| R-squared  | 0.112              |         |                                 |
| <i>Panel E: student having a very close relationship with the mother</i> |                    |         |                                 |
| Peers' cadre parents x close mother                                      | 1.512***           | (0.425) |                                 |
| Peers' cadre parents x not close mother                                  | 0.622              | (0.518) | 6.458(0.013)                    |
| Observations   | 2,986              |         |                                 |
| R-squared  | 0.115              |         |                                 |
| <i>Panel F: student having a very close relationship with the father</i> |                    |         |                                 |
| Peers' cadre parents x close father                                      | 1.613***           | (0.422) |                                 |
| Peers' cadre parents x not close father                                  | 0.729              | (0.489) | 9.462(0.003)                    |
| Observations   | 2,985              |         |                                 |
| R-squared  | 0.116              |         |                                 |

Notes:

<sup>1</sup> The dependent variables in Panels A–F are midterm test scores standardized at the school-grade level with a mean of 0 and a standard deviation of 1.

<sup>2</sup> In panel A, rural areas also include rural-urban fringe zone of the city/town.

<sup>3</sup> All regressions control for student/family, teacher, and peer characteristics, and a school-grade fixed effect as in Table 3. Regressions in Panel C to Panel F also control for the base term of the corresponding family relationship. The base terms for school location in Panel A and the government funding in Panel B are absorbed by school-grade fixed effects.

<sup>4</sup> Standard errors in the parentheses are clustered at class level. \*\*\*, \*\*, and \* represent 1%, 5%, and 10% significant level, respectively.

## 8 Conclusion

The ingrained *guanxi* culture and the historical path of economic reform provided cadre members unique social influences in Chinese society. We borrow the insight from peer effect literature and take a novel approach to probe the broader influences of cadres, namely the external influence on children in their network. We utilize classroom randomization in Chinese middle schools to address the concern of non-random sorting so that parents and children of others form exogenous social connections.

We find that exposure to a high proportion of peers from cadre families increases a student's test scores. Among possible mechanisms, we find significant parental adjustments. Parents take surrounding characteristics into account to determine the best investments in their children. In our case, the presence of cadre parents results in higher expectations of other parents and the corresponding changes in time/money investment. These changes benefit the educational outcomes of other children. We also find stronger cadre spillover in rural China where cadre status is more prestigious; in schools with strong government support; and, for students with a good family relationship. These heterogeneous patterns further strengthen the conclusion that parents adjust to cadre influences.

Our findings are related to two broader literature. First, we document that parents' cadre status has a minimal direct effect on their children's test outcomes. This finding implies that the well-documented cadre-parent premium in the labor market is more attributable to social connections associated with cadre status than the offspring's cognitive ability. We are among the first to identify the external effects of political status. We show that politically influential individuals can affect distinct others through non-market interactions, such as social norms. This finding broadens our understanding of the economic significance of political status and political ties, especially in developing countries.

Our results also apply to the economic literature of early-life development. Whereas economists agree on the importance of better neighborhoods on early-life development, we show that the influence of surrounding non-parental adults is an under-studied source of the

“exposure effect”. Although we focus on a specific political status, the implications of our results apply generally to the external influence of parents who have a high socioeconomic status.

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# A Tables and Figures

Table A1: Sample Construction Process

| Criteria  | Remaining number of |        |         |          |
|---|---------------------|--------|---------|----------|
|   | Schools             | Grades | Classes | Students |
| Initial   | 112                 | 222    | 438     | 19487    |
| Randomized class assignment                                       |                     |        |         |          |
| Principal reports a randomized classroom assignment               | 93                  | 184    | 362     | 15900    |
| principal confirms no reassignment btw. grade 8 and grade 9       | 78                  | 154    | 302     | 13046    |
| Headroom teacher reports no students are assigned by test scores  | 67                  | 108    | 210     | 9029     |
| Dropping entire grades with only one classroom                    | 64                  | 102    | 204     | 8760     |
| Principal confirms no parents ask for favor during the assignment | 28                  | 43     | 86      | 3804     |
| Dropping observations with missing variables                      |                     |        |         |          |
| No missing parents' cadre status                                  | 28                  | 43     | 86      | 3692     |
| No missing midterm scores   | 28                  | 43     | 86      | 3585     |
| No missing students' characteristics                              | 28                  | 43     | 86      | 3350     |
| No missing family background                                      | 28                  | 43     | 86      | 3179     |
| No missing headroom teachers' characteristics                     | 28                  | 43     | 83      | 3098     |
| Dropping entire grades with only one classroom                    | 28                  | 40     | 80      | 2989     |

Table A2: Balancing Test Using Comparable Sample in Earlier Studies

|                                  | Proportion of peers with cadre parents |                           |
|----------------------------------|--|---------------------------|
|                                  | (1)                                    | (2)                       |
| Age                              | 0.00617<br>(0.00513)                   | -0.00177***<br>(0.000497) |
| Female                           | 0.00229<br>(0.00226)                   | 0.000713<br>(0.000514)    |
| Ethnicity - Han                  | 0.00478<br>(0.00838)                   | -0.00310*<br>(0.00164)    |
| Migrant                          | -0.0107**<br>(0.00469)                 | -0.00112<br>(0.000979)    |
| Agricultural Hukou               | -0.0562***<br>(0.00751)                | -0.00440***<br>(0.00138)  |
| Only-child                       | 0.0203***<br>(0.00454)                 | 0.000474<br>(0.000900)    |
| Repeated grade in primary school | -0.0152**<br>(0.00616)                 | -0.00254**<br>(0.00123)   |
| Skipped grade in primary school  | -0.0170**<br>(0.00751)                 | -0.00437<br>(0.00367)     |
| Standardized persistence score   | 0.00201<br>(0.00186)                   | 0.000223<br>(0.000420)    |
| Attended kindergarten            | 0.0156***<br>(0.00413)                 | 0.000471<br>(0.00118)     |
| College mother                   | 0.0408***<br>(0.00833)                 | 0.00414**<br>(0.00199)    |
| College father                   | 0.0461***<br>(0.00745)                 | -0.000308<br>(0.00164)    |
| Low-income family                | -0.0116**<br>(0.00447)                 | -0.000368<br>(0.00130)    |
| High-income family               | -0.00628<br>(0.00469)                  | -0.000649<br>(0.00104)    |
| Constant                         | 0.00318<br>(0.0706)                    | 0.1000***<br>(0.0131)     |
| Observations                     | 6,947                                  | 6,947                     |
| R-squared                        | 0.253                                  | 0.897                     |
| School-grade fixed effects       |  | X                         |

Notes:

<sup>1</sup> Sample selection follows the criterion in Xu et al. (2020) and Chung and Zou (2020). Each column represents a separate regression which regresses the leave-me-out proportion of peers with cadre parents on the pre-determined characteristics of students.

<sup>2</sup> Standard errors are clustered at the class level and reported in the brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A3: Balancing Test for the Assignment of Headroom Teacher

|   | Proportion of students with cadre parents |                      |
|---|---|----------------------|
|   | (1)                                       | (2)                  |
| Female  | 0.0251<br>(0.0291)                        | 0.0129<br>(0.0200)   |
| Age   | 0.00335<br>(0.00287)                      | 0.00275<br>(0.00207) |
| College                                       | 0.0193<br>(0.0277)                        | 0.00587<br>(0.0196)  |
| Grad. from pedagogical universities or majors | 0.0223<br>(0.0467)                        | -0.0227<br>(0.0292)  |
| Professional title: below level-A teacher     | -0.0414<br>(0.0334)                       | -0.0224<br>(0.0231)  |
| Professional title: above level-A teacher     | -0.00723<br>(0.0460)                      | -0.0266<br>(0.0333)  |
| Subject taught: math                          | 0.00707<br>(0.0358)                       | 0.00996<br>(0.0220)  |
| Subject taught: English                       | -0.0147<br>(0.0348)                       | 0.0202<br>(0.0248)   |
| Subject taught: other                         | -0.0150<br>(0.0485)                       | 0.00606<br>(0.0302)  |
| Constant                                      | -0.0485<br>(0.126)                        | -0.0529<br>(0.0870)  |
| Observations                                  | 80  | 80                   |
| R-squared                                     | 0.114                                     | 0.926                |
| School-grade fixed effects                    |   | X                    |

## Notes

<sup>1</sup> Each column represents a separate regression that regresses the proportion of students with cadre parents in homeroom classes on the pre-determined characteristics of the homeroom teacher.

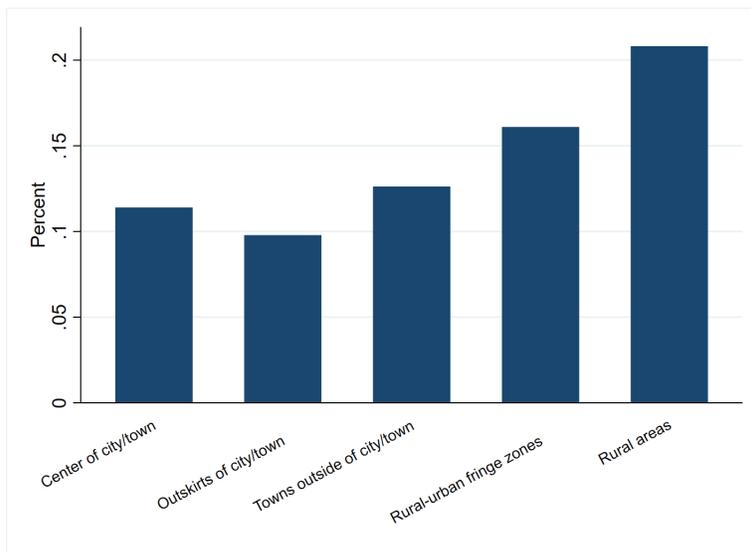
<sup>2</sup> We group a teacher's professional title into three categories: below level-A, level-A, and above level-A. Level-A teachers are the base group in the regression. Besides, homeroom teachers may teach Chinese, math, English, or other subjects, and we use Chinese homeroom teachers as the base group.

<sup>3</sup> Standard errors are reported in the parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

## B The Rural-Urban Differences in Public Sentiments towards Cadres

In Figures A1 and A2, we tabulate the statistics from two national representative surveys of Chinese households to contrast the public sentiment in rural versus that in urban areas. In the CGSS (2013), one question asks the respondents to rate their satisfaction with cadres on a 5-point scale (1=very unsatisfied, 5=very satisfied).<sup>10</sup> Figure A1 illustrates the percentage of people rating their satisfaction with cadres higher than 3. The categories on the horizontal axis are ordered by the proximity to urban cities. Approximately 10% of the respondents in the center of a city/town, on the outskirts of a city/town, and towns outside of a city/town report being satisfied with cadres, lower than the 20% share in rural areas.

Figure A1: Higher public satisfaction towards cadre members in rural than urban China



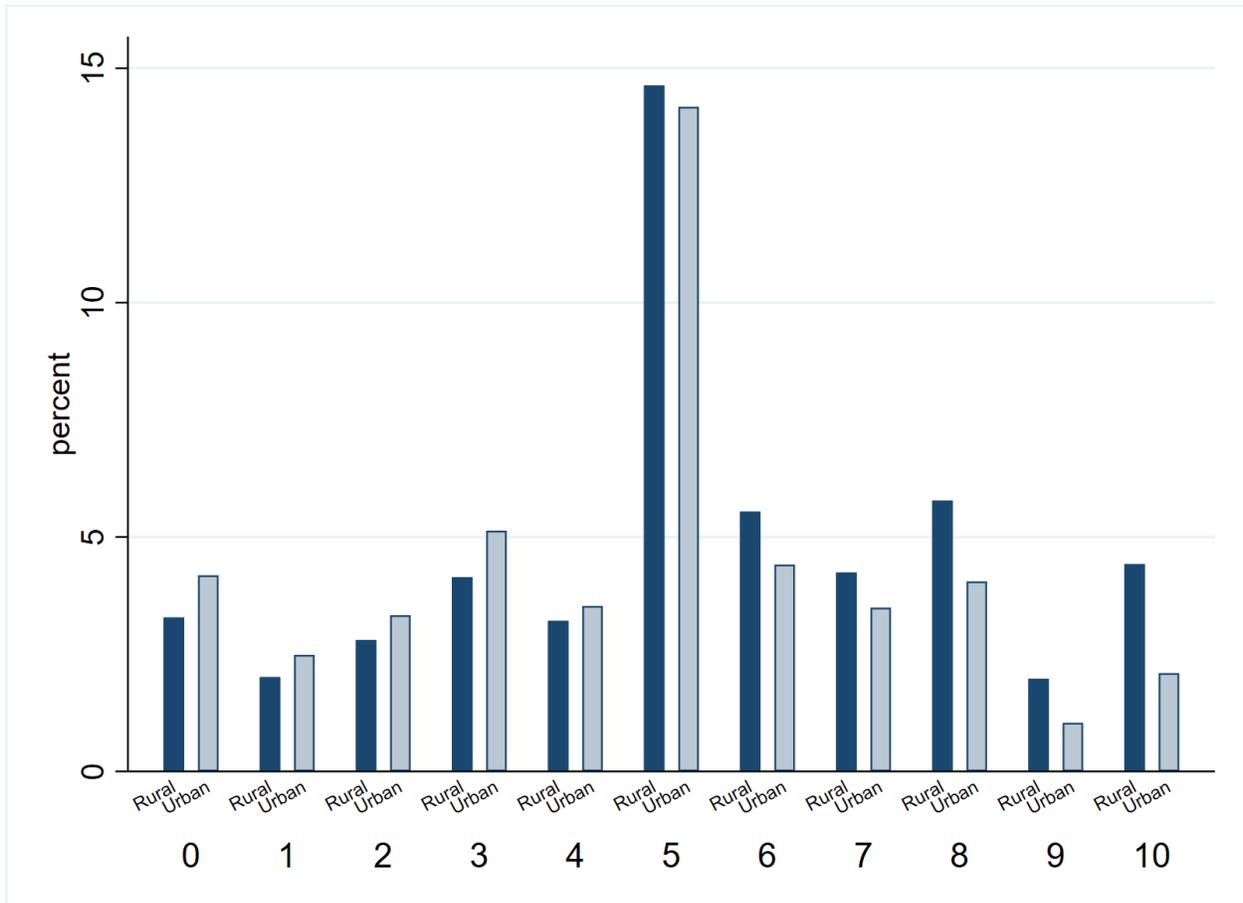
Source: Author tabulation using the Chinese General Social Survey (2013)

We cross-check the regional heterogeneity of public sentiment towards cadres using another national survey, the CFPS(2014). A question on this survey asks the respondents to rate

<sup>10</sup>The Chinese General Social Survey (CGSS) is the first national continuous social survey project in mainland, which can be considered as the Chinese counterpart of the General Social Survey (GSS) in the U.S. It was jointly initiated in 2003 by Renmin University of China (RUC) and Hong Kong University of Science and Technology. We use the 2013 wave of this survey, which asks the respondents “How satisfied are you with the morality of cadres?”

their trust in cadres on a 10-point scale (0=no trust, 10=full trust).<sup>11</sup> In Figure A2, the bars compare the percentage of respondents for each point scale for rural areas with the urban areas.<sup>12</sup> Similar to the result for the CGSS, a higher percentage of urban respondents gave a rating between 0 to 4, indicating low trust, whereas a higher percentage of rural respondents gave a rating between 5 to 10, indicating high trust.

Figure A2: Higher levels of trust in cadre members in rural than urban China



Source: Author tabulation using the China Family Panel Studies (2014)

<sup>11</sup>China Family Panel Studies (CFPS) is an ongoing nationally representative, annual longitudinal survey of Chinese communities, families, and individuals. It was launched by the Institute of Social Science Survey (ISSS) of Peking University. Interviews were conducted annually from 2010-2012 and biennially since then. Here we use a question in the 2014-wave of the survey. The question was phrased as “How much do you trust : Cadre (ganbu) ?”

<sup>12</sup>The geographical regions in the CGSS were divided into five parts as seen in Figure A1. Different from the CGSS, regions in the CFPS were classified using a simple rural-urban dichotomy.