

## **Keeping Teachers Happy: Job Satisfaction among Primary School Teachers in Rural China<sup>\*</sup>**

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## **Abstract**

Teachers are a crucial element of educational opportunity structures. In China, the recent opening-up of labor markets in general and within the school system has raised concerns about retaining qualified teachers in schools serving poor communities. This paper considers the question, what factors keep teachers serving poor communities satisfied with their work?

With multivariate analyses of a survey of rural primary school teachers, principals and village leaders in one of China's poorest provinces, we investigate the role of individual teacher background, school environment, and community factors as influences on three measures of teacher work satisfaction. Consistent with research elsewhere, results show that younger, better-educated teachers are less satisfied, and suggest that teachers may be more satisfied in schools with an organizational climate that supports collaboration and in communities where village leaders support education.

More surprisingly, models show ambiguous effects of economic resources in the community and school: while timely payment of salaries and school expenditures are positively linked to teacher satisfaction, other indicators of economic status of communities and schools such as village income per capita, contributions of the village collective to the school, and teacher salary are negatively linked to teacher satisfaction, or not linked at all.

These results underscore the challenge that faces rural, impoverished communities as they seek to retain teachers, and especially well educated teachers. Results also suggest that economic development alone may not ameliorate the problem.

## Introduction

Frameworks for understanding academic achievement and the labor force outcomes of schooling have conceptualized teacher quality as a key input (see Darling-Hammond, 1997). Recruitment and retention of qualified teachers tends to be most difficult in areas of high poverty, such as in inner city schools in the United States (Darling-Hammond & Green, 1990) and in the rural areas of developing nations (Farrel and Oliveira, 1993), leading to a situation in which the neediest children are often paired with the least qualified teachers. Little research has considered factors associated with retaining teachers in schools that serve impoverished children in developing countries.

In China, concerns about teacher retention are acute. With market transition and the opening-up of labor markets, alternate career paths are increasingly open to current and potential teachers (see Bian, 2002 for an excellent review of increasing social and labor market mobility in post-reform China). Perhaps even more important, decentralization of school finance in China has disequalized the economic resources available to schools in different locales (Park, Rozelle, Wong, & Ren, 1996; Tsang, 1996). At the same time that jobs increasingly vary in their compensation, good teachers have greater flexibility to move to better jobs within the school system. These changes have increased the career choices of individuals, but they also mean that schools serving poor rural communities face new barriers to retaining qualified teachers.<sup>1</sup>

In this paper, we address the question, what factors keep teachers serving poor communities satisfied with their work? We analyze a survey of rural primary school teachers,

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<sup>1</sup> For example, a study of schools in Zouping County showed that top-ranked schools in the county town and townships had high percentages of high-ranking teachers, while lower ranking township schools and village schools were able to attract fewer (Paine, 1998).

principals and village leaders conducted in the year 2000 in one of China's poorest provinces.

We look at three measures of satisfaction: whether teachers perceive teaching as their ideal profession, whether teachers want to change their profession, and whether teachers are satisfied with the local education bureau. Drawing on earlier research, we test hypotheses about three kinds of factors associated with teacher satisfaction:

1. Community factors: Teachers are more satisfied in communities with greater economic and social resources, and in communities that are less remote.
2. School environment: Teachers are more satisfied in schools with better economic resources, in larger schools, in schools where there are more opportunities for professional advancement, and in schools where there is an organizational climate that supports teacher collaboration.
3. Teacher background: Young teachers, male teachers and teachers with greater human capital are less satisfied, while teachers who are more socially similar to the local community are more satisfied.

We begin the paper by motivating our hypotheses with a discussion of research on teacher satisfaction in general and in the context of rural China in particular. We then provide a brief overview of the data and methods used in the study, followed by a multivariate analysis of teacher satisfaction. We close by considering implications of the main results for understanding educational opportunity and inequality in rural China, as well as for further research on the role of teachers as elements of educational opportunity and inequality in developing countries.

## **Background and Context**

### *Teachers and Educational Stratification*

Teachers are an essential element of educational opportunity, and the lack thereof, for poor children and communities. In developing countries, Bruce Fuller's extensive reviews of school factors that raise student achievement indicate that factors such as teachers' knowledge of subject matter, verbal and math proficiency scores and, to a certain extent, formal education and post-secondary training have all tended to be associated with higher student achievement (Fuller, 1987; Fuller & Clarke, 1994). In rural China, evidence is also available to suggest that teachers matter for student achievement: approximately one fourth of student test score variation may be attributable to teacher differences (Park & Hannum, 2001).

In addition to having an important impact on student achievement, teachers may also play a crucial role in educational attainment. Hanushek (1995) highlights the problem of the poor efficiency of low quality schools in developing countries. He argues that higher school quality results in lower dropout rates and that teacher quality is the most important factor contributing to overall school quality. Dropout rates would be much lower if the quality of teaching could be raised such that students perceive schooling to provide valuable skills and learning. Using data from Kenya, Lloyd, Mensch and Clark (2000) find that teacher characteristics, in particular teacher attitudes, have an important impact on attainment, especially for girls. Earlier work in China has shown that attributes of teachers can be significantly linked to students' attachment to the schooling process (Hannum & Park, 2003).

## *Teachers Serving Poor Populations*

Despite the importance of teachers as an element of educational stratification, especially in poor settings where dropout rates are high, little research in developing countries has considered the factors that help under-resourced schools to retain teachers. Discussing the U.S. case, Rosenholtz (1985) identifies the central problem of establishing effective schools in poor settings as being that “good teachers are difficult to recruit and almost impossible to retain because the rewards of teaching do not outweigh the frustrations.” (p. 354) The rewards and frustrations of teaching can be linked, conceptually and sometimes empirically, to aspects of the community contexts in which teachers function, to the schools where they work, and to the individual characteristics of the teachers themselves.

### Community Factors

Around the world, community poverty presents significant challenges to teachers in under-resourced schools, ranging from the social problems that often attend impoverished communities to stringent limitations on the tax base for school funding. Teachers serving in rural communities in developing nations experience particular challenges. Physical conditions brought about by poverty often make even daily necessities difficult to come by. In addition, teachers in rural villages may face a lack of access to transportation and cultural or educational facilities. Recreation and opportunities for enrichment and personal advancement are often limited relative to those available in towns and cities. Teachers may feel isolated, especially if they are from the outside or if there is a wide educational gap between themselves and the local community.

Further, with global trends toward educational decentralization, teachers and schools in many developing countries are increasingly dependent on the degree of financial and other

support for education in the local community. In China in the 1980s, fiscal decentralization of the educational system shifted the responsibility for rural elementary education largely to individual villages. The village government generally allocates money for its schools from the village budget (Paine, 1998; Tsang, 1996).<sup>2</sup> In the case of many villages in post-reform China, local governments have controlled the development of collectively-owned enterprises to ensure that the village gets a portion of revenues. These revenues can be directed to public needs such as education (see Oi, 1998; & Unger, 2002: 148-9).

After decollectivization of agricultural production in the late 1970s and early 1980s, villages that were unable to establish industries and enterprises were left without revenue (O'Brien, 1994). The poorest villages can get some minimal support in the form of various kinds of categorical grants from higher levels of government (Tsang, 1996), but, even with this assistance, collecting enough money to fund village schools has been challenging. Village governments have frequently been unable to come up with adequate funds to cover personnel expenses, which constitute the main cost of education. Teachers have instead been paid with IOUs and sometimes have had to wait for months to get their salary (Hannum & Park, 2002).

With these factors in mind, we hypothesize that teachers in 1) villages with fewer economic resources, including where revenues are low and work opportunities few, 2) remote villages where connections to the outside are limited and the population is small, and 3) villages where social resources are limited, including where the population is poorly educated and where community-school linkages are weak, might have lower levels of job satisfaction. However, we acknowledge an alternative possibility: teachers in villages where there are state or privately-owned enterprises may be presented with a greater number of alternative employment

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<sup>2</sup> Village governments take different shapes and forms and the role they play in financing village schooling is heavily influenced by the degree of industrialization in the village and their relationship to it. See Jonathan Unger (2002) and Jean Oi (1998) for more on this topic.

opportunities and teachers in more connected, better educated, or higher income villages may have more access to information about the outside world, leading them to feel more dissatisfied with teaching as a career than those teachers in the poorest, most remote areas.

### School Environment

Socio-economic and organizational resources in schools may be linked to teacher satisfaction. Socio-economic conditions in the school encompass both broad measures, such as the human capital composition of the faculty and expenditures per student, as well as teachers' own economic circumstances. Concerns with remuneration may be paramount. In the U.S., poor salary is one of the most important reasons for leaving teaching due to dissatisfaction in urban, high-poverty public schools and attrition due to dissatisfaction for teachers in small private schools (Ingersoll, 2001; Perie, Baker, & Whitener, 1997). Schlechty and Vance (1983) also propose that low salaries and truncated salary scales are among the main reasons that the most academically able—those with alternative career options—leave teaching. In China, both level and reliability of remuneration may be important, given recent trends described in the preceding section that have led to late payments to teachers.

The organizational conditions of schooling have garnered considerable attention in research on the effects of school characteristics on teacher retention and satisfaction (Ingersoll, 2001; Lee & Dedrick, 1991; Little, 1982; Rosenholtz, 1985, 1989). Scholarly interest in organizational characteristics of schools in the U.S. in the 1980s and early 1990s coincided with a belief that school size was an important element. It was hypothesized that small, private schools were characterized by higher levels of the ingredients for collegial cohesion and organizational consensus. Later studies found no evidence for this hypothesis (see Ingersoll, 2001; Lee & Dedrick, 1991) and instead found school size to be positively associated with

teacher satisfaction (i.e. larger schools tend to have a higher proportion of satisfied teachers). Other aspects of school organizational climate that have been linked to higher levels of teacher satisfaction in the U.S. include norms of continuous improvement (Rosenholtz, 1985); collegiality and professional interactions among the staff (Lee & Dedrick, 1991; Newmann, Rutter, & Smith, 1989; Rosenholtz, 1985); and administrative support for teaching in the form of mechanisms of teacher induction and organizational socialization, such as internships and mentoring programs (Ingersoll, 1997, 2001; Rosenholtz, 1985).

In China, to our knowledge, there is no research on how either the school resources and working conditions or the organizational attributes of the school environment link to teacher satisfaction. We thus adopt a working hypothesis that teachers are less satisfied in schools with poorer socio-economic resources and a less cohesive organizational climate. We consider the human capital composition of the faculty and teacher remuneration—both remuneration level and reliability. Regarding organizational features, we consider school size, opportunities for professional development, and organizational climate that supports teacher collaboration.

### Teacher Background

In the U.S., a number of background attributes of teachers themselves have been found to be linked to levels of satisfaction. Demographic factors appear to matter. Young teachers have been shown to be more likely to leave than older teachers (Ingersoll, 2001; Murnane, 1987; Perie et al., 1997), though this might be partly a selection story. In addition, women have been found to be more satisfied than men (Chapman & Lowther, 1982; Ma & MacMillan, 1999). Perhaps more concerning is the finding that better qualified teachers tend to be more dissatisfied than less qualified teachers, and thus more likely to leave teaching (Darling-Hammond, 1984; Schlechty &

Vance, 1983). This finding may be in part attributable to the fact that teachers with better qualifications perceive more alternative opportunities.

Whether relationships between teacher satisfaction and teacher background characteristics that prevail in the U.S. also apply in the context of rural China remains an empirical question. Teacher demographics in China differ substantially from those of other nations. In a multi-country study of teachers using the World Education Indicators data, China was the only country with a majority of male primary and middle school teachers (OECD, 2001: 125). The gender balance is shifting, however. The teaching force is gradually becoming more feminized, as evidenced by the fact that among younger teachers, female teachers are in the majority (OECD, 2001: 125). Different levels of teacher job satisfaction by gender may provide insights into this trend. Further, China's teaching force is relatively young, with 60 percent of teachers under 40 years of age (OECD, 2001: 125).

We test the hypothesis that young teachers, male teachers and better-educated teachers have lower levels of satisfaction. In addition, we hypothesize that teachers who are more socially similar to the surrounding communities are more satisfied. To investigate these issues, we consider teacher gender, age, place of origin, whether or not teacher is also a farmer,<sup>3</sup> and teacher level of education.

## **Data and Methods**

### *Sample and Study Site*

Data for this study come from an add-on component to the Gansu Survey of Children and Families (GSCF), a survey conducted in Gansu Province in the summer of 2000. The main

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<sup>3</sup> Whether or not the teacher is also a farmer, like other community residents, may have implications for the extent to which he or she feels connected to other members of the rural community.

survey employed a multi-stage cluster sample, selecting first rural counties, then townships, then villages, and finally 2000 children, along with their mothers, fathers, and homeroom teachers.<sup>4</sup>

The add-on component employed here comes from three questionnaires administered to all village leaders and to all primary school teachers and principals in sampled villages. Data consist of 100 village leaders, 128 principals, and 1003 teachers.

Gansu is one of China's interior northwestern provinces, and stretches across flat Loess Plateau, parts of the Gobi desert, mountainous and hilly areas, and vast grasslands. Map 1 shows Gansu, with the GSCF sample counties marked. In the year 2000, Gansu province had a population of 25.62 million, 76 percent of which resided in rural areas (UNESCAP, 2003). Gansu has one of the highest incidences of rural poverty among provinces in China (World Bank, 2000).

[Map 1 about here.]

### *Variables Used in the Analysis*

#### Teacher Satisfaction

Our three outcome variables are based on the following questions: "Is teaching your ideal profession?"; "Do you want to change your profession?"; and "Are you satisfied with the local education bureau?". (See Table 1 for full definitions of variables included in the analysis and Table 2 for descriptive statistics for these variables.) These questions allow us to investigate teachers' attitudes toward the teaching profession and toward their particular local education bureau, which is responsible for many of the policies and financing that directly and indirectly affect the teachers' daily working lives. We investigate how teachers' attitudes are affected by community, school and individual factors.

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<sup>4</sup> A full description of the sampling technique is provided in Park and Hannum (2001).

[Tables 1 and 2 about here.]

### Community Factors

We use several economic measures to test our community hypotheses. Per capita income is measured as village income from agriculture and industry divided by the total village population. The presence of enterprises is measured as the proportion of the village labor force employed in county, township, village and household enterprises.<sup>5</sup> Our third economic resource variable is the amount of financial contributions given to schools during the year.

We use a remoteness scale generated from a series of nine variables that measure access to telecommunications, transportation and shopping for necessary goods.<sup>6</sup> We also consider village population size as a measure of remoteness.

Finally, we measure two social factors in the village. First, to measure human capital, we employ the illiteracy rate among the village labor force.<sup>7</sup> Second, village social support for schooling is measured using the number of times the village leader meets with the school principal during the year.

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<sup>5</sup> There has been rapid growth of the non-farm sector in the post-reform era with the development of township and village enterprises. At the national level, employment in these enterprises grew from accounting for 7 percent of the total rural employment in 1978 to accounting for 29 percent in 1997 (Fan, Zhang, & Zhang, 2002). The proportion of the village labor force employed in township and village enterprises in our sample was very low, with an average of 5 percent. About 32 percent of the village leaders reported that there were no villagers employed in enterprises located in the village. In communities where they exist, township and village enterprises have contributed greatly to the increase in the average income of rural dwellers and to available support for schooling.

<sup>6</sup> Telecommunication and transportation infrastructure has been increasing rapidly in China's northwest, including in Gansu, due to substantial public investment in the development of the interior regions (see Fan et al., 2002 Appendix C for tables comparing various measures of rural development across China's provinces). Relative to national averages however, Gansu lags behind in rural development measures, and many villages still offer very difficult living conditions for teachers.

<sup>7</sup> According to the 2000 census, 14.34 percent of the population of Gansu was illiterate; illiteracy rates for Gansu are higher than for China as a whole (Fan et al., 2002 p. 21; UNSTAT, 2003).

## School Environment

To measure human capital in the school, we consider the average years of education of teachers in the school (as reported by the principal). Our indicator of economic resources available in the school is semester expenditures on a per-student basis, excluding teacher salaries. This measure of school expenditure is a total of expenses for the daily running of the school. It includes the following components: water, electricity and heating fees, purchase of teaching equipment such as science lab or physical education supplies, and teachers' bonus and welfare. We also measure individual teacher salary and whether it is never, sometimes, usually or always paid on time.

Regarding organizational characteristics of the school, we first consider size, measured as the total number of students. We measure opportunities for professional development as the number of teachers in the school who attended professional development activities outside of the school in the previous year. To measure an organizational climate supporting collaboration, we use principal reports of the frequency that teachers work together to plan lessons and teacher reports of hours per week attending *jiaoyanzu*, or teaching and research section activities (see Paine, 1992, 1998).

The *jiaoyanzu* merits brief explanation. Teachers are required to participate in weekly activities of the *jiaoyanzu*, where they engage in joint lesson planning and professional discussion. It is through this structure that new teachers are inducted into teaching and into the norms and values of the school. Older, more experienced teachers support and mentor younger teachers. The *jiaoyanzu* also operates as an instrument of dissemination for information from the county and provincial level to the level of classroom practice ensuring that the educational

system from highest to lowest levels of administration is bound in a tightly integrated structure where all agencies work to establish a strong sense of central purpose and shared value system.<sup>8</sup>

### Teacher Background

We measure teacher age and gender, demographic factors that have been linked to levels of teacher satisfaction in previous studies. We test ties to the local community with two variables: whether or not teachers come from the same village and whether or not they also engage in farm work. Teachers' level of education is our indicator of teacher quality and qualifications. This variable has three categories: middle school and below, secondary school graduate and college level graduate.<sup>9</sup>

### *Methods of Analysis*

Our analysis is divided into two sections. We first provide a description of the social location of satisfied teachers. We then use random effects logit models to analyze the effects of community, school and individual characteristics on three dichotomous indicators of teacher satisfaction:

$$\eta_{ij} = \beta_0 + \beta_{1t} * X_{tij} + \beta_{2s} * X_{sj} + U_j, \quad (1)$$

where  $\eta_{ij}$  is the log odds of teacher satisfaction (*ideal*: teaching is ideal profession=yes, *change*: want to change profession=yes, or *local education bureau*: satisfaction with the local education bureau=yes) for individual teacher  $i$  in school  $j$ ,  $X_{tij}$  is a vector of teacher variables,  $X_{sj}$  is a vector

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<sup>8</sup> Lynne Paine (1992) argues that the induction process through the *jiaoyanzu* inhibits teacher innovation and creativity (i.e., teacher autonomy) due to the value it assigns to seniority and the dominance of textual knowledge. On the other hand, it is likely that teachers in Chinese elementary schools experience both substantial administrative support and also collegial cohesion through the activities of the *jiaoyanzu*.

<sup>9</sup> There is also a group of teachers who graduated from middle school and later bypassed high school graduation and acquired college level (*dazhuan*) certification usually by correspondence course. Due to data limitations, this level of education is counted in our measure as equivalent to high school graduation (Park & Hannum, 2001).

of school and village variables,  $\beta_{1t}$  and  $\beta_{2s}$  are vectors of parameters to be estimated, and  $U_j$  is a random intercept at the school level.<sup>10</sup>

## Results

### *Description of Teacher Satisfaction*

To shed light on the social location of satisfied and unsatisfied teachers, Tables 3 and 4 show teacher satisfaction measures by community, school, and individual factors included in our analysis. Table 3 shows means of selected community, school and individual factors by teacher satisfaction, and Table 4 shows school and individual characteristics tabulated by teacher-reported level of satisfaction.

[Tables 3 and 4 about here.]

### Community Factors

Table 3 shows that several community-level factors differ, on average, for satisfied and dissatisfied teachers. For *ideal*, strikingly, where differences emerge, they suggest that teachers in more economically developed communities are less satisfied. For example, satisfied teachers live in villages with significantly lower income per capita, villages with significantly fewer residents working in village enterprises, and villages that are significantly more remote. Satisfied teachers in the sample live in slightly smaller villages, though this difference is only marginally significant. These tables do not show a significant difference between satisfied and dissatisfied teachers by illiteracy in the work force, or by community contributions to schooling or community support for schooling.

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<sup>10</sup> Although a 3-level model with schools nested within communities would make sense conceptually, the small number of villages containing more than one school makes this strategy untenable.

For the *change* outcome, the only community factor that significantly differentiates satisfied and dissatisfied teachers is village income. Consistent with the *ideal* measure, teachers who wish to change their career are living in significantly wealthier villages than teachers who do not wish to do so. For the *local education bureau* outcome, levels of satisfaction do not differ by conventional tests of significance. Marginally significant differences suggest that satisfied teachers live in communities where the workforce is more literate and where principals have more meetings with village leaders. Overall, these findings suggest that better-off villages do not necessarily have more satisfied teachers; in fact, teachers may be less satisfied in these villages.

### School Environment

Considering the bivariate relationship of school environment variables with the teacher satisfaction outcomes leads to seemingly mixed conclusions. A number of interesting differences between dissatisfied and satisfied teachers emerge for *ideal*. Satisfied teachers are in schools where their colleagues have fewer years of schooling and where they are more poorly paid (Table 3). On the other hand, on-time payment of salary is positively linked to satisfaction (Table 4): 77 percent of teachers who reported that their salary was never on time were satisfied, compared to 90 percent of teachers whose salary was usually or always on time. Finally, the number of hours that a teacher spends in *jiaoyanzu* activities is greater among satisfied than dissatisfied teachers as measured by *ideal*.

For *change*, teachers who want to change their career are, on average, in poorer schools (as indexed by expenditures per student). Likewise, for *local education bureau*, school expenditure per student is significantly lower in the schools of unsatisfied teachers. Teachers in schools where salaries are paid on time and where teachers plan lessons together report higher levels of satisfaction with the local education bureau. School size and opportunities to

participate in professional development outside the school are not significantly related to teacher satisfaction on any of our measures.

These results suggest the complexity of school factors. More satisfied teachers appear to be in schools where economic resources for the support of teaching and for teacher and student welfare are more available and where payment of salary is received on time. However, teachers' salary level is negatively related to satisfaction as measured by *ideal*. Results hint at a positive role for organizational climate: hours per week spent on *jiaoyanzu* differs by *ideal*, and teacher collaboration in lesson planning differs by *local education bureau*.

### Teacher Characteristics

Teacher demographic characteristics work in the expected fashion, based on research in other settings. Most notably, dissatisfied teachers by each of the three measures were likely to be significantly younger than satisfied teachers, and for two of the three outcomes (*ideal* and *change*), less educated teachers displayed higher levels of satisfaction. For *ideal*, local teachers reported higher levels of satisfaction; for *ideal* and for *change* (marginally), teachers who engaged in farm work were more satisfied. Gender does not have a significant bivariate relationship with teacher satisfaction on any of the three measures.

These results suggest three insights. First, just as in the U.S., younger teachers are less satisfied than older teachers are. To some degree, it is possible that this may be a survival effect, as the composition of older teachers is likely to be weighted toward teachers who liked the profession enough to persist in it. However, the previous difficulty of changing careers in China due to strict controls on labor mobility in the past argues against this interpretation. Second, also like the U.S., more educated teachers are less satisfied with their profession, perhaps due to perceived alternative opportunities. Finally, these results suggest the importance of ties to local

areas: those from the local village and those who, like local villagers, are also farmers, are more satisfied.

### *Multivariate Analysis of Teacher Satisfaction*

The preceding section illuminates the social location of satisfied teachers. However, given that many of these attributes of communities, schools and teachers may be related to each other, we perform multivariate analysis to consider net effects of specific community, school and teacher background factors. Table 5 shows coefficients from random effects logistic regression models for the three teacher satisfaction measures.

[Table 5 about here.]

### Community Environment

Like the bivariate results, multivariate analysis also suggests that greater economic resources in the village do not contribute to teacher satisfaction, and in some cases are linked to lower levels of teacher satisfaction. Per-capita income is not significantly related to *ideal* or *local education bureau*, but it is positively related to the desire to change professions. The proportion of the village labor force working in enterprises exerts a significant negative effect on *ideal* and a marginally significant negative effect on *local education bureau*. While we might anticipate that the more dynamic communities, where private enterprises are emerging to a greater degree, might be more pleasant places for teachers to live, in fact the evidence suggests a different interpretation. In settings where alternate career paths are visible, teachers are less satisfied than in settings where no such paths are evident. That enterprise presence is not significantly related to the desire to change jobs is consistent with the notion that teachers may be influenced by the presence of these jobs, but do not perceive them as being accessible.

The contributions made by village collectives to schools also matter. Strikingly, these contributions were negatively linked to *ideal* and *local education bureau* (marginally) and positively linked to *change*, lending further support to the alternative hypothesis that teachers are less satisfied in more prosperous villages where there is revenue from village industries available to contribute toward village schooling through the agency of the village collective.

Considering measures of remoteness, we find that remoteness is not associated with greater dissatisfaction among teachers. The remoteness scale is not significant once other village, school, and teacher factors are taken into account. This finding suggests that the differences between satisfied and unsatisfied teachers seen in Table 3 work through other characteristics included in the model. More strikingly, our other measure of remoteness, population size, is significantly negatively linked to *ideal* and significantly positively linked to *change*.

On the other hand, social resource variables are positively linked to teacher satisfaction in multivariate analysis. Results for *ideal* and *local education bureau* (marginally) suggest that teachers in better-educated villages are more satisfied. This result may stem from teacher's reduced social isolation in such settings. Further, net of other variables in the model, the number of meetings between principals and village leaders is positively related to teacher satisfaction. One additional meeting per year was associated with an increase in the odds of perceiving teaching as an ideal profession of almost 4 percent; an increase (marginally significant) in odds of satisfaction with the local education bureau by about 5 percent, and a reduction in odds of wanting to change jobs of about 4 percent. This finding, which was not apparent in table 3 without other factors controlled, highlights the role of community support for schooling in an era of decentralization.

What emerges strongly here is the lack of conclusive evidence that teachers in villages that are more developed and less remote are more satisfied. In fact, the evidence appears to support the converse of our hypothesis with regard to village economic conditions. Teachers in more prosperous village communities tend to be those who are least satisfied. On the other hand, factors that tap into community social resources—community literacy and social support for schooling—are positively linked to teacher satisfaction.

### School Environment

Results from the multivariate analyses of social and economic resources of schools are, by and large, consistent with the findings of the bivariate analyses. Average education among a teacher's colleagues has a significant negative effect on *ideal*. For other outcomes, this measure of average years of teacher education in the school was insignificant.

School expenditure per student has a significant positive effect on *ideal* and a significant negative effect on *change*. Similarly, payment of salary on time shows strongly significant positive links to *local education bureau* and marginally significant positive links to *ideal*. Salary levels continue to be significant and negatively linked to satisfaction, as measured by *ideal*.

Among school organizational features, neither school size nor opportunities for professional development have significant effects on any satisfaction outcomes. However, time spent in *jiaoyanzu* activities has a significant positive relationship with *ideal*, and in schools where teachers always plan lessons together, teachers are significantly more likely to be satisfied with the local education bureau.

Together, these findings suggest that the most consistent school-level factors predicting satisfaction are on-time payment of salary and per-student expenditures. Furthermore, there is

some evidence to suggest that organizational structures that enhance collaboration are positively associated with teacher satisfaction.

### Teacher Background Characteristics

The relationships of teacher background characteristics to teacher satisfaction show certain results that are consistent with findings elsewhere. Net of other factors, younger teachers are less satisfied than older teachers, and women are more likely to state that teaching is their ideal profession. Teachers with higher levels of education are significantly less satisfied with the teaching profession and significantly more likely to state that they wish to change their career. Teachers with a college level education are 66 percent less likely to feel that teaching is their ideal profession than those teachers with middle school or below as their highest level of educational attainment. Teachers with a college education are 138 percent more likely to wish to change their profession than those with a middle school education or less. This finding is consistent with the interpretation that more qualified teachers are less satisfied.

Finally, controlling for other factors, whether the teacher is from the local village or works as a farmer is not significant. This result suggests that the observed higher levels of satisfaction among local and farmer-teachers in Table 3 are explained by other variables in the models.

### **Discussion and Conclusions**

Sociologists and economists have expended considerable efforts to illuminate those attributes of families and schools that promote favorable student outcomes in developing countries (Buchmann & Hannum, 2001). Teachers are an essential part of educational opportunity in such settings. However, very little research has emerged about those factors that

might be conducive to maintaining the teacher work force in low-resource communities in developing countries. We have sought to address this gap with a case study of factors associated with teacher work satisfaction in a poor rural province in China.

We laid out working hypotheses about factors that influence teacher satisfaction at the level of community, school, and individual. At the community and school levels, we conjectured that teachers in less remote locales with better resources—economic, social, and organizational—would be more satisfied. At the individual level, we anticipated that younger teachers, female teachers, teachers with more ties to the local community, and less-qualified teachers would be more satisfied.

The hypotheses that were most consistent with our results were those at the level of the teacher. Across the board, younger teachers and teachers with greater human capital are less satisfied. Weaker evidence suggests that female teachers may be more satisfied. Bivariate analysis provided evidence that teachers with greater ties to the local community were more satisfied, though multivariate analyses indicated that this relationship was probably explained by other factors.

We believe that these results carry some significant implications. The dissatisfaction of younger, more qualified teachers underscores the unsurprising but important challenge that impoverished communities face in retaining qualified teachers, as teacher labor markets and general labor markets continue to evolve. While concerning, this result is unsurprising, given research in the U.S. showing that better qualified teachers tend to be more dissatisfied than less qualified teachers, and thus more likely to leave teaching (Darling-Hammond, 1984; Schlechty & Vance, 1983).

In contrast, results related to school environment were more ambiguous. In general, the results support the original hypothesis that schools with better working conditions, or more ample economic resources for the support of teaching and teacher and student welfare, have more satisfied teachers. Timely payment of salaries was also strongly linked to increased teacher satisfaction with the local education bureau. However, inconsistent with this story, teacher salary level was not positively linked to teacher satisfaction, and was, in fact, negatively linked to perceptions of teaching as an ideal profession in both bivariate and multivariate analyses. This set of findings may reflect the fact that teaching in China is perceived to be a profession that brings a reliable salary, rather than a high salary. There is also certain evidence to support the hypothesis that schools with an organizational climate that supports collaboration may have more satisfied teachers.

Finally, results for the community effects differed considerably from what our working hypotheses suggested. Indicators of the economic development of communities, such as village income per capita and contributions of the village collective to the school, are negatively linked to teacher satisfaction with other factors controlled. How can we interpret these findings? The alternative careers that are perceived as available by teachers may be important elements of teacher satisfaction. In developing countries, Farrel and Oliveira (1993) warn that qualified teachers are likely to abandon teaching if what they earn in teaching differs too greatly from what they could earn in an alternative career.

The perceived quality of teaching alternatives may improve with economic development of the village community. Based on a study in Jamaica, Rodgers-Jenkinson and Chapman (1990) postulate that teacher job satisfaction is decreasing as the modern sector of the economy develops and teachers have more job alternatives. In China, with market transition, emerging

labor markets, and especially emerging teacher labor markets, unsatisfied teachers may increasingly desire, and be able to take, other jobs, creating new problems for retaining qualified teachers in impoverished settings. Our results provide evidence suggesting that development in poor rural areas could just as easily exacerbate as ameliorate problems of teacher satisfaction in schools.

Results also highlight the need for further attention to the social aspects of village communities as influences on teacher satisfaction. Our indicator of non-economic support from the village community for schooling was strongly positively related to all measures of teacher satisfaction in multivariate models. These results are significant in China where, as more and more decision-making authority has shifted to local communities, cross-community disparities in social, human, and cultural resources are increasingly tied to school conditions. Ross and Lin's (2002) recent fieldwork shows that communities in China differ dramatically in the social resources they can garner to support education, and these social resources increasingly have tangible consequences for the formation, sustainability, and effectiveness of schools.

The value of social resources in communities indicated here may have significance beyond China. As international agencies encourage decentralization of decision making as well as finance, communities' abilities to mobilize human resources to support education are likely to loom even larger in school functioning.<sup>11</sup> Results presented here suggest the potential value of further work to understand how these resources link to teacher work satisfaction, as well as other aspects of school functioning, in less-developed settings.

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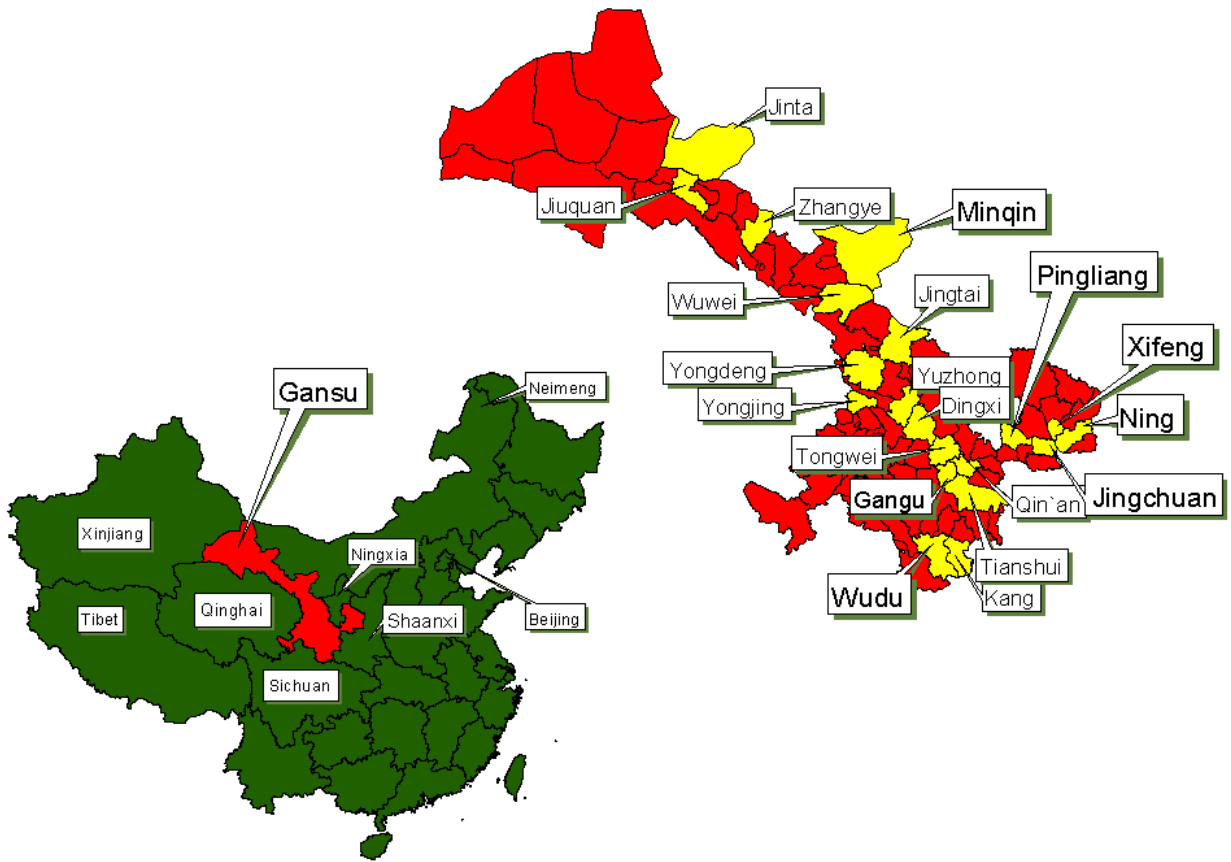
<sup>11</sup> See Oulai (1999), in passing. Consider, for example, the local human resources needed for successful implementation of the "demand-side financing" strategies recommended in Patrinos and Ariasingam (1997). For an explicit discussion of community finance and human resource mobilization issues, with specific reference to Nicaragua, see Rivarola and Fuller (1999). See Bray (1996) for descriptions of the many forms that community finance takes around the world.

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Map 1. Gansu Province, GSCF Counties Marked

**Table 1: Definitions of Measures used in the Analysis**

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**TEACHER SATISFACTION OUTCOME VARIABLES**

- “Is teaching your ideal profession?” 1=yes, 0=no
- “Do you want to change your profession?” 1=yes, 0=no
- “Are you satisfied with the local education bureau?” 1=yes, 0=no

**COMMUNITY FACTORS**

**Economic resources:**

- Previous year village income per capita from industry and agriculture
- Enterprise presence: the proportion of the village labor force that works in county, township, village, or household enterprises located in the village
- Amount of money that the village collective contributed to the school in the past year

**Remoteness:**

- Remoteness scale: nine measures of remoteness were standardized, summed, and divided by the number of measures to generate a scale. The nine measures consisted of four dichotomous variables that measured access to telephone, postal services, radio broadcasts, and bus, and five continuous variables measuring distance to nearest railway, highway, bus station and shops for daily necessities and durable goods. More positive values indicate more remote villages. Cronbach’s alpha for the reliability of the scale was 0.74.
- Village population

**Social resources:**

- Human capital: Proportion of the village labor force that is illiterate
- The number of times the village leader met with the school principal in the past year

**SCHOOL ENVIRONMENT**

**Socio-economic status:**

- Average years of teacher education
- Semester’s school expenditure per student
- Teacher salary\*
- Payment of salary on time: a categorical variable where 0=never, 1=sometimes, 2=usually or always\*

**Organization:**

- School size: Total number of students
- Opportunities for professional advancement: Principal report; number of teachers who have participated in professional development outside of the school
- Teachers plan lessons together: Principal report; 0=sometimes or never, 1=over half the time, 2=always
- Teachers’ report of number of hours spent per week on *jiaoyanzu* activities\*

**TEACHER BACKGROUND**

**Teacher demographics:**

- Age
- Female: 1=female teacher and 0=male teacher

**Teacher ties to the local community:**

- Teacher from the same village: 1=yes 0=no
- Teacher also does farm work: 1=yes 0=no

**Teacher human capital:**

- Teacher education: a categorical variable measuring teacher’s highest level of educational attainment where: 0=middle school or below, 1=high school or post middle school training, 2= college

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\* Attributes of the school environment measured at the individual teacher level.

**Table 2: Teachers' Satisfaction, Community and School Environments, and Teacher Background Characteristics in Rural Gansu**

	Mean or Proportion (SD)	N
<b>Teacher Satisfaction Outcome Variables</b>		
Proportion who feel that teaching is their ideal occupation	.83 (.38)	1003
Proportion who wish to change profession	.17 (.38)	1003
Proportion satisfied with the local education bureau	.79 (.41)	991
<b>Community factors</b>		
Income per capita (Yuan)	1289.63 (2248.84)	874
Proportion labor force working in enterprises	.05 (.08)	948
Village collective contributions to school per year (Yuan)	9005.47 (26829.06)	989
Remoteness	-.10 (.50)	1003
Total village population	1738.77 (933.40)	1003
Proportion illiterate workers in labor force	.22 (.20)	1000
Number of times village leader and principal meet per year	7.16 (8.96)	989
<b>School environment</b>		
Average years of teachers' education	12.14 (1.21)	947
Semester's expenditure per student (Yuan)	29.35 (53.59)	1003
Individual teacher salary	524.63 (323.25)	996
Payment of salary on time		999
Never	31.63	316
Sometimes	55.76	557
Usually or always	12.61	126
School Size (total number of students)	342.97 (290.45)	1003
Number of teachers who participated in professional development outside the school	6.34 (11.70)	963
Teachers plan lessons together		1003
Never or sometimes	.23	230
Over half the time	.44	443
Always	.33	330
Hours per week on <i>jiaoyanzu</i> activities	4.25 (2.61)	1003
<b>Teacher Background</b>		
Age	.36 (.11)	1000
Proportion female	.38 (.48)	998
Proportion from the same village	.35	1003
Proportion engaged in farm work	.49 (.50)	1001
Teacher education		1003
Middle school or lower	.23	234
High school	.63	628
College	.14	141

**Table 3: Mean Levels of Selected Community, School and Teacher Characteristics by Teacher Satisfaction**

	Teaching is ideal career			Teacher wants to change career			Satisfied with local education bureau		
	No	Yes		No	Yes		No	Yes	
<b>Community factors</b>									
Village income per capita (Yuan)	1912.44 (132)	1179.62 (741)	**	1205.29 (725)	1710.22 (147)	*	1194.70 (175)	1325.6 (689)	
Proportion of village labor force working in enterprises	.08 (164)	.05 (782)	**	.05 (780)	.06 (166)		.05 (205)	.05 (731)	
Village collective contributions to school per year (Yuan)	8562.56 (168)	9116.12 (819)		8652.87 (811)	10505.31 (175)		8024.83 (207)	9405.94 (770)	
Remoteness	-.24 (170)	-.07 (831)	**	-.10 (824)	-.10 (176)		-.09 (210)	-.10 (781)	
Total village population	1847.64 (170)	1716.50 (831)	+	1720.42 (824)	1811.37 (176)		1703.61 (210)	1764.57 (781)	
Proportion illiterate workers in labor force	.22 (170)	.22 (828)		.22 (822)	.22 (175)		.24 (210)	.21 (778)	+
Number of times village leader and principal meet per year	6.68 (168)	7.27 (819)		7.32 (811)	6.45 (175)		6.18 (207)	7.50 (770)	+
<b>School environment</b>									
Average years of teacher education	12.51 (166)	12.05 (779)	**	12.13 (781)	12.17 (164)		12.26 (203)	12.10 (732)	+
Semester's school expenditure per student (Yuan)	23.75 (170)	30.55 (831)		31.47 (824)	19.59 (176)	*	22.39 (210)	31.53 (781)	*
Individual teacher salary	584.20 (169)	511.47 (825)	**	519.94 (818)	552.13 (175)		507.65 (207)	529.93 (777)	
School size: Total number of students	341.31 (170)	342.48 (831)		346.57 (824)	326.88 (176)		327.02 (210)	342.13 (781)	
Number of teachers who participated in professional development outside the school	6.81 (165)	6.24 (796)		6.21 (793)	6.93 (168)		5.43 (207)	6.18 (244)	
Hours per week on <i>jiaoyanzu</i> activities	3.79 (170)	4.35 (831)	*	4.31 (824)	3.98 (176)		4.20 (210)	4.30 (781)	
<b>Teacher background</b>									
Age	30.81 (170)	36.59 (828)	**	36.11 (821)	33.31 (176)	**	32.74 (210)	36.32 (778)	**

Two tailed t-test: + 0.10 level, \* 0.05 level, \*\* 0.01 level indicating means are significantly different for satisfied and unsatisfied teachers  
(N) Number of observations in parentheses

**Table 4: Teacher Satisfaction by Selected School and Teacher Characteristics**

	Proportion of teachers who feel that teaching is their ideal career	Proportion of teachers who wish to change their career	Proportion teachers satisfied with the local education bureau
<b>School Environment</b>			
Salary payment on time:	**		**
Never	.77	.20	.68
Sometimes	.85	.17	.81
Usually or always	.90	.13	.93
Teachers plan their lessons together			**
Sometimes or never	.81	.19	.69
Over half the time	.84	.17	.78
Always	.83	.19	.86
<b>Teacher Background</b>			
Teacher gender			
Male	.83	.17	.80
Female	.82	.19	.77
Teacher comes from the same village	**		
Yes	.90	.16	.79
No	.79	.19	.79
Teacher also works on a farm	*	+	
Yes	.86	.15	.79
No	.80	.20	.79
Teacher education	**	*	
Middle school or lower	.88	.14	.83
High school	.84	.17	.78
College	.71	.26	.75

Chi-square test of independence: + 0.10 level, \* 0.05 level, \*\* 0.01 level

**Table 5: Random effects logit models for Teacher Satisfaction Outcomes**

	(1)		(2)		(3)	
	<b>Ideal</b>		<b>Change</b>		<b>LEB</b>	
	b	S.E.	b	S.E.	b	S.E.
<b>Community Factors</b>						
Village income per capita (Yuan) (x100)	0.001	(0.000)	0.011*	(0.000)	0.009	(0.000)
Enterprise presence (Proportion of village labor force working in enterprises)	-5.827**	(1.741)	-0.246	(1.783)	-4.136+	(2.453)
Village collective contributions to school (Yuan) (x100)	-0.001*	(0.000)	0.001**	(0.000)	-0.001+	(0.000)
Remoteness	0.383	(0.287)	0.156	(0.250)	0.428	(0.343)
Total village population (x100)	-0.038**	(0.000)	0.035*	(0.000)	-0.026	(0.000)
Proportion of village labor force that is illiterate	-1.681*	(0.689)	0.920	(0.616)	-1.736+	(0.898)
Number of times village leader and principal meet per year	0.038*	(0.017)	-0.039*	(0.016)	0.048*	(0.022)
<b>School Environment</b>						
Average years of teacher education	-0.177*	(0.087)	-0.086	(0.085)	-0.147	(0.111)
Semesters' expenditure per student (Yuan) (x100)	0.648*	(0.003)	-0.818*	(0.004)	0.207	(0.002)
Teacher salary (Yuan) (x100)	-0.179**	(0.001)	0.052	(0.000)	-0.014	(0.000)
Payment of salary on time (ref. Never)						
-Sometimes	0.358	(0.219)	-0.109	(0.209)	0.690**	(0.215)
-Usually or always	0.752+	(0.392)	-0.543	(0.347)	1.414**	(0.438)
School size (Total number of students)	0.000	(0.001)	-0.001	(0.001)	0.000	(0.001)
Number of teachers who participated in professional development outside the school	-0.011	(0.014)	0.021+	(0.012)	-0.003	(0.017)
Teachers plan lessons together (ref. Never or sometimes)						
-Over half the time	-0.097	(0.272)	-0.142	(0.255)	0.127	(0.329)
-Always	0.118	(0.276)	0.131	(0.253)	1.134**	(0.369)
Hours per week on <i>jiaoyanzu</i> activities	0.091*	(0.041)	-0.053	(0.038)	-0.011	(0.037)
<b>Teacher Background</b>						
Age	0.088**	(0.014)	-0.032**	(0.011)	0.044**	(0.011)
Female	0.538*	(0.229)	-0.218	(0.217)	0.139	(0.221)
Teacher from the same village	0.149	(0.240)	0.086	(0.212)	-0.254	(0.214)
Teacher also does farm work	0.029	(0.220)	-0.168	(0.198)	-0.091	(0.209)
Teacher education (ref. Middle school or below)						
-Secondary	-0.629*	(0.272)	0.275	(0.237)	-0.383	(0.245)
-College	-1.087**	(0.335)	0.866**	(0.309)	-0.291	(0.337)
<b>Constant</b>	2.442+	(1.286)	0.006	(1.202)	1.913	(1.559)
<b>Observations</b>	950		950		950	
<b>Number of Schools</b>	124		124		124	

+ Significant at 10%; \* significant at 5%; \*\* significant at 1%. Standard errors in parentheses  
Missing variable dummies used for: village income, average teacher education, number of teachers who participated in professional development outside of the school. None of the dummies were significant.