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Education management and performance after rural education finance reform—Evidence from Western China[☆]

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ABSTRACT

Based on a survey of rural school districts in Western China, this essay explores the effects of fiscal centralisation on the relationship between local governance and school district management, most particularly on how managerial power is distributed in the rural education sector. The essay also examines some of the possible effects that changes in managerial arrangements may have on teacher incentives and on educational quality as measured by student test scores. Our analysis suggests that teachers' incentives and students' education performance are unlikely to benefit from the excessive centralisation of decision-making power or from incessant horizontal level power struggles among different government bodies.

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1. Introduction

In China, a major fiscal reform initiated in 2001 and implemented in 2002 fundamentally changed how education is funded.¹ Instead of funding being mainly a township government responsibility with the money coming from rural parents, it has become primarily a county government responsibility with the money coming from central government transfers. In this article we investigate the impact of fiscal centralisation – or the 'to the county reform' (*yi xian wei zhu*) – on the relationship between local governance and management in the rural education sector. In particular we examine how fiscal centralisation has affected the distribution of managerial power within rural school districts, and the possible knock-on effects for approaches to teacher management and to the structuring of teachers' incentives in different districts. Further, we use limited available data to offer tentative thoughts on how the different managerial arrangements across school districts may affect students' educational performance.

This essay is based on survey data from township-school districts in rural areas of Gansu, a province located in Western

China. As the name suggests, the township-school districts are coterminous with the area of the township: for reference a township is subdivided into several villages, and is itself a subdivision of the county. Examining data from 2000 to 2007 inclusive allows us to track fiscal and administrative changes overtime. The data reveal considerable heterogeneity across township-school districts (from hereon referred to as 'school districts' or 'districts') in the managerial forms that have emerged in response to fiscal re-centralisation. Most interestingly the data also indicate considerable heterogeneity across the sample districts in students' exam results. This set of circumstances – variation in how education is managed and variation in exam results – enables us to not only document the managerial consequences of fiscal de/centralisation, but also to consider the possible implications for educational quality.

In focusing on the managerial consequences of changes in educational funding, our case study contributes to an emerging effort in the literatures in both Chinese education (e.g. An et al., 2007; Hannum and Adams, 2008; Hannum and Park, 2002; Postiglione, 2006) and in international education (Fuller, 1987; Hanushek, 2003; Umansky, 2005) to move beyond input–output variances when considering the effects of changes in education financing.

2. Decentralisation and centralisation in education

The wider education literature suggests that interconnections among de/centralisation processes within education systems take

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¹ The reform was re-emphasised in 2003, and in some localities implementation began in 2003 or even as late as 2004.

different forms. Below we draw on the wider education literature to identify four ways that these interactions occur. First, in general terms, there are ongoing oscillations between decentralisation and centralisation tendencies (Weiler, 1990). To take the example of fiscal decentralisation, advocates argue that in raising more local level resources for funding education, communities are afforded increased power to hold local authorities and teachers accountable over the cost and quality of education. However even when fiscal decentralisation prevails, a centralisation undercurrent continues because while governments are happy to accept grassroots resources, they are generally unwilling to relinquish control (Weiler, 1990, p. 438). The centralisation undercurrent may gain particular impetus once inequalities in the distribution of educational inputs or other problems associated with local level abuses of resources are deemed detrimental to the affordability and the quality of education available in certain communities (Hawkins, 2000; Tatto, 1999, p. 280; Weiler, 1990; Winkler and Gershberg, 2000).

Second, the dynamics of decentralisation and centralisation enable and counterbalance each other. As an example, a study in Mexico found that the implementation of a programme to give schools and teachers space to innovate with ongoing teacher training and curriculum development required central state guidance and monitoring (Tatto, 1999). Indeed education scholars argue that centralisation itself may be a prerequisite for enabling, co-ordinating and monitoring innovations (Tatto, 1999; Weiler, 1990, p. 439). Meanwhile central state reforms can often only be implemented effectively if there are spaces for individuals and communities to innovate, harness local resources and adapt policies to local conditions (Winkler and Gershberg, 2000, p. 20). High quality education leaders at the lower levels are often crucial in this regard. Such leaders develop and communicate school-wide and communitywide commitment to a shared vision and make maximum use of upper level support, upper level information, local knowledge, local pressures and incentives to advance this vision (Chapman, 2000; Winkler and Gershberg, 2000).

A third aspect of the inter-relatedness of decentralisation and centralisation is that any given dimension of education management may be affected by both centralised and local level decision-making. A case in point is teacher remuneration. Often teachers' longer term remuneration (via the basic salary) is determined at higher levels of government: the bulk of the salary is commonly determined by years of teaching experience (Vegas, 2007). Such an approach to arranging remuneration is seen to be the most appropriate given that many teachers' activities are difficult to measure (Umansky, 2005, p. 24). Such an approach to setting a salary also has the advantage of creating relative security for teachers and supporting the recruitment and retention of skilled people. At the same time decentralisation and locally managed projects offer the possibility for education managers to experiment with schemes that link teachers' short-term rewards (such as bonuses) with student exam scores; such schemes appear to lead to higher student exam scores for as long as they are in place (Kingdon and Teal, 2006; Vegas, 2007), though of course there is the risk that teachers 'game' the system and just teach to the exam (Glewwe et al., 2003; Umansky, 2005).

Finally, decentralisation or re-centralisation in any one specific area of education management such as finance, personnel management or the curriculum is likely to influence how other aspects are managed (Hanushek, 2007; Bray, 1999; Ryan et al., 1998; Weiler, 1990; Winkler and Gershberg, 2000). An example examined by some scholars (Fuller, 1987; Umansky, 2005) and one that our case study also explores, is that changes in the fiscal arrangements of an education system may well generate certain incentives for teachers and so produce unintended consequences for teaching quality (Fuller, 1987; see review by Umansky, 2005).

Clearly then, even though funding rather than education quality considerations generally provide the impetus for fiscal de/centralisation (Bray, 1999; Hawkins, 2000; Vegas, 2007), it is to be expected that the effects of fiscal changes extend considerably beyond patterns of resource allocation. Indeed, insights from the wider education management literature summarised above suggest that fiscal de/centralisation is likely to affect who education managers are accountable to, the emergence of spaces for education leaders' local autonomy, approaches to teacher remuneration, and teaching quality. Before considering how these aspects of managerial change may be affected by fiscal restructuring in rural China, it is useful to first review the nature of China's education system and its experience of fiscal de/centralisation.

3. Education management in rural China

The education sector in rural China is embedded in a wider top-down system of governance. In the current fiscal institutional setting, so that which has prevailed since 2002/3, basic education has been largely the responsibility of the county government. Accordingly the county government raises a substantial portion of the revenue needed for supporting the staff, building schools, and implementing restructuring programs. As a subordinate of the county government, the county education bureau is responsible for the routine management of the education sector and the quality evaluation of schools.

At the township level, the township-school district governors (*xuequ xiaozhang*) follow plans devised and directed by the County Bureau of Education. The township government also takes a certain complementary responsibility for education policy areas such as repairing schools and ensuring the enrollment rate of village schools. In rural China a school is generally considered by planners to be too small to co-ordinate the deployment of inputs and the management of personnel, so these functions are administered at the level of the district. No matter what kind of governance structure exists in a county, therefore, the task of routine education management is mostly undertaken by school district governors in co-ordination with village school heads.

The vertical line of command in the rural education sector is evident in the subdivision of responsibilities and targets and the associated agreements signed between each descending level of administration. To take the example of quality monitoring, county education bureaus, district governors, village headmasters and teachers all sign an 'education objective-accountability agreement assessment', and the outcomes serve as an important barometer in making decisions about official appointments and promotions (Fig. 1).

Such a top-down system offers relatively little scope for bottom up dynamics to influence the managerial process. Rural parents

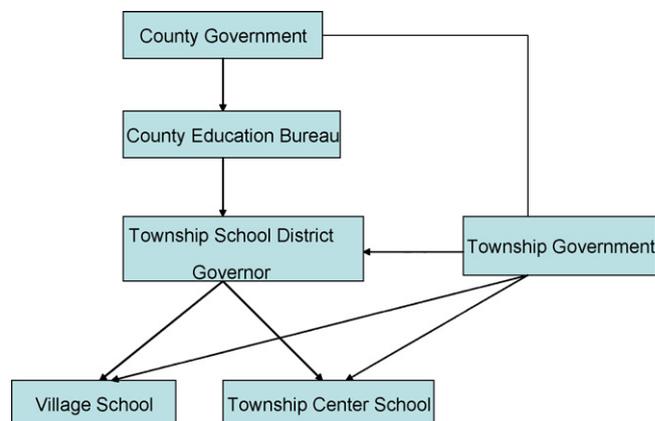


Fig. 1. The administrative structure of education at county level.

have little political voice and there are few levers through which they can respond to cost or quality issues in education provisioning: for instance, it would be difficult for most rural parents to reject a local school in favour of a better one or a cheaper one elsewhere. Also, school district governors and school headmasters have relatively limited powers for ensuring quality education, for instance, they do not have a say in the hiring and firing of teachers.

4. Decentralisation and re-centralisation in the funding of education in rural China

Fiscal decentralisation in China started during the mid 1980s when governments at village, township and county levels were permitted to retain a greater share of their revenue. But in exchange for this increased autonomy, they also became responsible for raising the extra-budgetary revenue necessary for meeting local expenditure (Hawkins, 2000; Li et al., 2007; Zhao, 2009). In 1994 arrangements for the sharing of tax revenues between different administrative levels were implemented with the aim of minimising the sliding away of funds from the central government to the localities. At the local level these reforms required county and township levels of government to 'eat in separate kitchens'. Practically this arrangement meant that lower levels of government were unable to turn to the county government for help to cover emergency expenditures (Zuo, 1997; Li et al., 2007). Under such a system the funding of 9 years compulsory education depended heavily on township governments' fiscal resources (Murphy, 2006). Townships with strong industrial and commercial tax bases benefited from the increased latitude afforded by the reforms and were able to retain more revenue for investment in public goods. In poor rural townships however, such as those located in Gansu, resources were lacking and the burden of teachers' salaries and school operation costs claimed the lion's share of the township governments' revenue.

During the late 1990s two key problems intensified in seriousness with respect to the financing of education in poor localities. First, the burden of school fees shouldered by rural households increased, leading to considerable unrest among farmers who faced the imposition of all manner of levies and taxes by cash-strapped local officials. Under such pressure, children in the poorest families, children with lower grades and female children were vulnerable to being withdrawn from school. Second, there was a dearth of funds to maintain school buildings and facilities and to pay rural teachers' wages. Indeed wages were commonly delayed by several months or paid only in part (Murphy, 2006). This shortage was often exacerbated because unaccountable local governments responded to distorted priorities by diverting funds away from schools, the poor and villagers (Bardhan and Mookherjee, 2005). It is hardly surprising therefore that several studies on educational inequalities in China throughout the 1990s and early 2000s identified local wealth as a key determinant of school fee levels, schooling quality and students' progression rates (Brown and Park, 2002; Hannum, 1999; Hannum and Wang, 2006; Li et al., 2007).

These circumstances created part of the impetus for a trend towards the re-centralisation of fiscal powers. Since the early 2000s the central government has increasingly claimed a share of the personal and enterprise income taxes that used to belong exclusively to localities. At the same time, in 2002 the central government initiated rural tax reforms which aimed to remove those local fees that so crippled and outraged poor farmers, replacing them with fiscal transfers from upper administrative levels. Such reforms deprived local governments of much of their fiscal and administrative autonomy and made them more dependent on transfers. The reforms also placed more revenue expenditure under the monitoring of upper administrative levels with the aim of constraining local level abuses.

During the 2000s the central government also decided to use its increased fiscal powers to redress the inequalities in educational inputs that had prevailed throughout the 1990s and early 2000s. Most pressing politically was the need to reduce the burden of school fees on rural households and to ensure the payment of teachers' salaries. In 2001 the central government required that responsibility for funding compulsory education be shifted up from the township government to the county level of government and ear-marked transfers to facilitate this. In 2004 the central government also capped school fees while in 2006/7 it increased transfers to education in rural and Western regions and proclaimed free compulsory education for all. Such measures clearly reduced the economic burden that 9 years of compulsory education placed on poor township governments and therefore on rural households. In the case of Gansu, while in 2000 around 70% of compulsory education was paid for by the township government by 2008 this figure had fallen to 10%.² Such measures have helped to stabilise the rural teaching profession and ensure that students can stay in school.

5. Data

We selected school districts as our unit for data gathering and analysis because, as mentioned, these districts are the basic unit of education administration in rural areas. Our survey, administered in 2005, covered 50 school districts. The sample districts encompassed 103 primary schools and 70 junior high schools, and the survey obtained data from 223 district governors or headmasters, 910 teachers and 518 parents. The questionnaires gathered retrospective and current information on fiscal centralisation, the relationship between school districts and local government, the institution/individual that has responsibility for different aspects of appointing and allocating educational staff, the distribution of managerial power in the districts, the use of incentives in teacher management, and teachers' perception of the fairness of evaluations and remuneration. Further supplementary information on school management was gathered from each school district in 2008.

The school districts were randomly sampled from 20 counties included in the data set of the Gansu Study on Families and Children.³ This GSFC data set comprises an initial sample of 2000 children aged 9–12 and five linkable secondary samples of children's mothers, household heads, home-room teachers, school principals, and village leaders. A second wave of the GSFC survey was conducted in 2004. We combine analysis of the district level data on school management and teacher incentives with analysis of the GSFC data on student's examination scores.

A caveat is that the data used in this essay is not entirely representative of rural China because the sampled districts are located in the country's poorest regions. The findings may nevertheless be extrapolated more widely because the process of fiscal centralisation, the close links between the local government and the rural education sector and the heterogeneity in forms of educational management across districts apply to much of rural China.

6. Changes in the locus of decision-making power in educational management

6.1. Fiscal decentralisation and the distribution of managerial power

We use data from the survey of school districts to consider the effects of fiscal re-centralisation on the distribution of managerial

² Interviews with school district governors conducted in Gansu Province in October 2008.

³ The Gansu Survey of Families and Children is co-directed by Dr Emily Hannum and Dr Albert Park. For more details on GSFC see <http://china.pop.upenn.edu/Gansu/intro.htm> and <http://repository.upenn.edu/gansu/>.

Table 1
Changes in jurisdiction for deploying staff in school districts, 2000–2007 (unit: number of school districts).

Year	2000	2003	2005	2007
Appointment of school district governors				
(1) Appointed by the county party organization department	4	4	8	15
(2) Appointed by the county education bureau	28	30	32	31
(3) Recommended by the township government and appointed by the county education bureau	11	9	6	4
(4) Appointed by township government	7	7	4	0
Total number of school districts	50	50	50	50
Appointment of village school headmasters				
(1) Appointed by the governor	0	9	14	17
(2) The governor has much influence to recommend and the township government appoints	14	13	7	6
(3) The governor has little scope to recommend and the township government appoints	35	19	15	7
(4) The county education bureau appoints	1	9	11	16
(5) The governor, township government and county education bureau jointly appoint	0	0	3	4
Total number of school districts	50	50	50	50
The deployment of teachers				
(1) The county education bureau allocates teachers to their posts	4	9	14	18
(2) The township government allocates teachers to their posts	40	16	8	8
(3) The governor recommends the allocation of teachers to their posts, and the decisions are approved by the township government	6	16	18	11
(4) The governor allocates teachers to their posts	0	9	10	13
Total number of school districts	50	50	50	50
Approval for teacher transfers within the district				
(1) The governor or school headmaster approves	0	9	14	16
(2) The county bureau of education approves	1	10	9	13
(3) The governor has weak recommendation power and the township government approves	35	10	7	4
(4) The governor has strong recommendation power and the township government approves	14	18	15	14
(5) Transfers require joint approval from the governor, the township government and the county education bureau	0	3	5	3
Total number of school districts	50	50	50	50

Source: 2005 and 2008 survey.

power within the education sector. In order to chart changes in the locus of decision-making power in education across the 50 districts for the years 2000, 2003, 2005, 2007, we identify three key areas of decision-making which pertain to the appointment and allocation of educational staff. These are

- Which body appoints the school district governor?
- Which body appoints the village school headmasters?
- Which body approves the appointment and the transfer of teachers within a district?

6.1.1. Which body appoints the school district governor?

The survey of 50 school districts indicates that in 2000, so before fiscal centralisation, township governments had considerable influence with regard to the appointment and supervision of district governors. Even though in just over half of districts ($n = 28$) the county education bureau appointed the governor, in reality, these governors had little power vis-à-vis the township government in key areas of management such as the appointment of primary school heads and teachers and the transfer of teachers. In some districts however the governors did have a say in teacher evaluations. In a further one-third of districts ($n = 18$) the governors were appointed or recommended by township government officials who routinely meddled in the former's work.

After the implementation of the fiscal reform in 2002 the influence of the township government over the appointment of the school district governors steadily eroded and the power to appoint the governor started to formally transfer to county level institutions. The number of districts in which the governor was appointed by the county party organization department (the most power institution in the Party-state apparatus, responsible for cadre appointment and discipline) increased from 8% ($n = 4$) in

2000 to 30% ($n = 15$) in 2007, with most of this increase occurring after 2002/3.⁴

Over the same time period, the numbers of districts in which township governments had a say in the appointment of governors decreased from over 30% ($n = 18$) in 2000 to 8% ($n = 4$) in 2007, with most of the decline occurring after 2002/3. Across the periods 2000, 2003 and 2007 the proportion of districts in which governors were appointed by county education bureaus remained relatively constant at just over half.

6.1.2. Which body appoints the village school headmasters?

Prior to the fiscal reform of 2002 the township government had much influence in the appointment of village school headmasters. As shown in Table 1, in 2000 nearly all (49 out of 50) of the sampled districts the township government directly appointed the village school headmasters or else approved the recommendations of the district governor. By 2007 however this proportion had fallen to 26% ($n = 13$). Meanwhile the number of districts in which the county bureau of education either appointed the village school headmasters or else appointed by the district governors increased: from 2% ($n = 1$) in 2000 to 66% ($n = 33$) in 2007. Additionally, the number of districts in which the district governor and the county education bureau participated in decision-making alongside the township government increased from zero in 2000 to four in 2007.

⁴ Under the current political regime, the county party organization department controls the personnel appointment of official leaders in the township government and bureaus of county government. However, school district governors as the managers of public institutions should be appointed by the upper-level administrative unit, such as county education bureau or township government. If the county party organization department directly intervenes in the appointment of governors, then the political power is overly centralized by the official leaders at county level.

6.1.3. Which body decides on teacher allocation and teacher transfers within a school district?

Prior to the fiscal reform, in most localities the township government exercised control over the appointment and transfer of rural primary school heads and teachers. As shown in Table 1, in 2000, in most districts the township government decided on the allocation of teachers to schools and classrooms or else gave approval for these appointments based on the recommendation of the governors. Also in most districts the township government had the power to approve teacher transfers – this decision could considerably affect a teacher's quality of life as it could involve allowing him or her to transfer from a remote rural school to one near a county seat and has often been associated with the payment of bribes. Over the duration of 7 years, however, the proportion of districts in which the township governments controlled teacher deployments fell from 92% to 36% (from 46 to 18) and the proportion of districts in which the township government approved teacher transfers fell from 98% to 38% (from 49 to 19), with most of the decline occurring after 2002/3.

This decrease in the power of the township government was accompanied by an increase in the influence of county education bureaus. From 2000 to 2007, the numbers of districts in which new teachers were allocated to schools by the county education bureau rose from 8% to 36% (from 4 to 18) and the number of districts in which the county education bureau controlled the transfer of teachers increased from 2% to 26% (from 1 to 13). In other districts changes in the locus of power to decide on teacher allocations and transfers involved less clear designations of authority. Instead county education bureaus, district governors and township governments had varying degrees of input into the decision-making.

Significantly, there was in some other districts a shift to an increased role for the district governor in deciding on teacher allocations and teacher transfers. Indeed between 2000 and 2007 the number of districts in which governors oversaw the allocation of teachers and the approval of teacher transfers increased from 0 to 13 and from 0 to 16 respectively. An increased role for governors in personnel management occurred in those districts in which county education bureaus had initiated competitive recruitment reforms. Subsequently through their own personal profiles and hard work, these district governors had been able to achieve successes at work in ways that had enabled them to develop and retain power advantages, while remaining ever mindful of the need to balance relationships with power-holders in county level institutions.

6.2. Changes in the institutions that manage school districts

A composite of two areas of decision-making – power to appoint the district governor and power to transfer teachers within a district – form the basis for our grouping of the 50 districts into five categories according to the managerial body or bodies that dominate educational management within the district. This exercise of looking at changes in the numbers of districts which fall into each managerial category over time offers a further way to trace the influence of fiscal centralisation on the allocation of decision-making power in rural education.

For convenience, below are definitions of each category of district:

- (1) *Township government managed district.* The township government appoints the township-school district governor. Or else, the township government makes recommendations that are ratified by the county education bureau, and all transfers of teachers within the township-school district require the permission of the township government.

- (2) *County government managed district.* The county party organization department (this is the most powerful institution within the Party, responsible for Party cadre management and discipline) appoints the township-school district governor. Alternatively, the county education bureau controls the transfer of teachers within the districts. While the district governors may make suggestions, these can and often are ignored by the county level institutions.
- (3) *Governor managed district.* The county education bureau appoints the district governor. The district governor decides on the appointment/transfer of teachers within the district. The district governor is directly evaluated by the county bureau of education, and has a large amount of autonomy over staffing and management matters within the district.
- (4) *District governor and township government jointly managed.* The district governor is appointed on the recommendation of the county bureau of education, but the county education bureau does not directly participate in decisions about the assignment of teachers. The governor has relatively large power to make recommendations on the transfer of teachers while the township government has responsibility for final authorisation.
- (5) *County education bureau and township government jointly managed.* The county education bureau appoints the district governor and the township government controls the assignment of teachers within the district. Alternatively, the district governor, the township government and the county education bureau all intervene to varying degrees in decisions about teacher transfers, with the greatest influence being held by the latter two.

6.2.1. Changes in the management of education districts

Tracing changes in the number of districts that fall under the five managerial categories reveals that after 2002/3 the number of school districts managed by the county government increased. Moreover, most of these 'county government' managed districts evolved from previously being 'governor and township government jointly managed' and 'county education bureau and township government jointly managed'. In each district the timing of the change from being jointly managed by the township government and another institution to being managed by the county government was influenced by the timing of the local implementation of the 'to the county' fiscal centralisation policies. In districts in which fiscal reforms started in 2002/3, the change occurred earlier. In most districts however, the change occurred during the 4 years following 2002/3 (Table 2).⁵

We also find that after fiscal centralisation to the county level a number of governor managed districts also came into being: nine immediately after 2002/3 and a further five during the following 4 years. All but one of these districts had formerly been 'district governor and township government jointly managed'. Then in the wake of fiscal centralisation, the township government education committees were dissolved and their managerial powers and duties were transferred to the governors. In only one district did a 'township managed' district change to become a 'governor managed' district in advance of fiscal centralisation.

Finally we see that alongside an increase in the numbers of school districts managed by county level institutions or by governors, there was a decline in the numbers of districts in which management was dominated by township governments. Most of the decline involved a process of conversion from being

⁵ In 2003, four districts that were originally jointly managed by the township government and county education bureau and one district that was originally jointly managed by the governor and the township government became managed by the county government. In the 4 years after 2003, six districts managed jointly by the county education bureau and the township government and five districts jointly managed by the governor and the township government became managed by the county government.

Table 2
Changes in the numbers of districts falling under the five managerial categories, 2000–2007.

Managerial category	2000	2003	2005	2007
(1) Governor managed	0	9	11	14
(2) Township managed	16	9	6	2
(3) Governor and township government jointly managed	14	11	11	5
(4) County government managed	5	10	14	25
(5) County education bureau and township government jointly managed	15	11	8	4
Total	50	50	50	50

Source: 2005 and 2008 survey.

managed by the township government to being jointly managed by the township government and at least one county level institution.⁶ In the 2 years immediately after fiscal decentralisation, no district transferred directly from being solely managed by the township government to being county government managed without undergoing an intermediate stage of mixed power sharing. But direct conversions from being township managed to county managed did occur in four districts after 2005 once the effects of fiscal decentralisation had become more entrenched and the county government had appropriated control over teachers' appointments and transfers.

Not surprisingly, the analysis in this section confirms that in the previous section – that fiscal centralisation has been accompanied by a general tendency for township governments to lose control over decision-making and for county level institutions to gain it. At the same time, however, some reform-oriented districts have emerged in which governors have gained increased managerial autonomy.

7. Incentive systems and district management: the implications for education performance

Clearly, in the education system of Western China, the management of both schools and teachers retains a strong administrative/political flavour. Decisions about teachers' long-term salary (through their professional grade or through promotion) and their short-term income (through rewards and bonuses) depend largely on the decisions of upper administrative levels. Methods for determining the allocation of rewards to teachers require tangible measures. In many education systems measures commonly include combinations of (1) indicators of professional conduct (punctuality, evaluation of teaching plans, evaluation of homework correction, teaching and research achievements, assessment of teaching experience), (2) the evaluations of professional peers, education managers, parents and students and (3) the exam results of students (see review in Umansky, 2005). Of these, exam results are perhaps the easiest measure on which to collect data and they are also perceived to be the most objective. In rural Gansu exam scores are used frequently to assess the competence of teachers and therefore form the basis for structuring incentive systems for teachers and allocating rewards.

7.1. Teachers' professional grades

In rural Gansu, every teacher is formally graded. Most teachers at the primary school level and the middle school level are ranked at mid-grade or below. There are moreover quota limitations for

⁶ In 2003, of 16 districts that were originally managed by the township government, five became 'governor and township government jointly managed' and two became 'education bureau and township government jointly managed'. The others did not change. During 2003–2007, out of nine township government managed districts: four became 'county government managed' districts and 3 became 'governor and township government managed' districts.

designations at each professional grade. The quotas for assigning different grades to primary and middle school teachers are usually allocated at the district level. Teachers graded at any one level are selected by the governor from a wider pool of those who meet certain criteria, and the governors' decisions are usually ratified by the county education bureaus.

The basic requirement for being appointed to a rank of mid-grade teacher is the same across all categories of district. But the method of deciding who is graded at this level first and who is graded next may vary across districts, and this ordering process affects the system of incentives in which teachers operate. In most districts the professional grading of teachers depends on a combination of their educational background, years of teaching experience, the results in the most recent end-of-year evaluations, and consideration of their publications or prizes, if any.

Here we focus on the three factors that governors and teachers identified in the questionnaires to be the most important to the outcome of professional gradings in their district. These were: years of teaching experience or years since last progression up the job scale; achievements in the end-of-year work evaluations; and personal recommendations by the governor or other leader in the district. The first factor is largely a matter of Buggin's turn and waiting it out and so does not rely on professional achievements. It is however perceived to be a fair reflection of teaching experience and is therefore used to determine a large portion of teachers' income in many countries (Vegas, 2007, p. 226). Indeed teachers' experience is shown to have a positive relationship with student achievement, most particularly in developing countries, although effects flatten after the first few years (Hanushek, 2006, pp. 11–12). The second factor aims to incentivise greater effort from teachers but as the literature from other countries testifies, the efficacy of evaluations in teacher management is likely to depend on the nature and consistency of the process and the associated rewards (Hanushek, 2003; Vegas, 2007, p. 225). The third factor is more subjective and has also been noted for other countries, could leave scope for the misuse of power (Umansky, 2005).

7.2. Teacher incentives and the managerial characteristics of school districts

Approaches to awarding teachers' professional grades vary across categories of school district. Broadly, in districts in which education is managed by county level institutions, years of teachers' service dominate in the grading of teachers' professional grade.⁷ But, when the township government or the county education bureau appoints the governor and the governor in turn has the latitude to control the transfer of teachers (including having a substantial scope for making suggestions about the

⁷ Tables 3 and 4 indicate that in the districts in which the county organization bureau appointed the governor or the county education bureau approved the transfer of teachers, or the county education bureau and the township government together decided on the transfer of teachers, a greater proportion of teachers were graded according to the principle of Buggin's turn and years of service.

Table 3

Most important factor in ranking teachers' professional job gradings in different categories of school districts (districts classified according to which body appoints the district governor).

District classification according to which body appoints the governor	Years of teaching experiences	Evaluation achievements	Social connections	Subtotal
(1) County party organization department	75%(6)	25%(2)	0	100%(8)
(2) County education bureau	40.63%(13)	46.88%(15)	12.50%(4)	100%(32)
(3) Township government recommends and county education bureau appoints	33.33%(2)	66.67%(4)	0	100%(6)
(4) Township government appoints	0	100%(4)	0	100%(4)

Source: 2005 survey. Note: the number of districts is in the parentheses.

Table 4

Most important factor in ranking teachers' professional job gradings in different categories of school districts (districts classified according to which body approves teacher transfers).

District classification according to which body approves teacher transfers	Years of teaching experience	Evaluation achievements	Social connections	Subtotal
(1) The governor or headmaster approves	42.86%(6)	57.14%(8)	0	100%(14)
(2) The governor recommends and county education bureau approves	55.56%(5)	44.44%(4)	0	100%(9)
(3) The governor has weak recommendation power and the township government approves	28.57%(2)	28.57%(2)	42.86%(3)	100%(7)
(4) The governor has strong recommendation power and the township government approves	26.67%(4)	66.67%(10)	6.67%(1)	100%(15)
(5) The governor, township government and county education bureau jointly approve	80%(4)	20%(1)	0	100%(5)

Source: 2005 survey. Note: the number of districts is in the parentheses.

Table 5

Most important factor in ranking teachers' professional job gradings in different categories of school districts.

District category	Teaching experience	Evaluation achievements	Social connections	Subtotal
(1) Governor managed	45.45%(5)	54.55%(6)	0	100%(11)
(2) Township government managed	33.33%(2)	66.67%(4)	0	100%(6)
(3) Governor and township government jointly managed	9.09%(1)	81.82%(9)	9.09%(1)	100%(11)
(4) County government managed	71.43%(10)	28.57%(4)	0	100%(14)
(5) County education bureau and township government managed	37.50%(3)	25%(2)	37.50%(3)	100%(8)

Source: 2005 survey. Note: the number of districts is in the parentheses.

transfer of teachers), more teachers are graded according to their achievements and end-of-year evaluations. The break-down of the data supporting this generalisation is presented in Tables 3 and 4.

A similar picture is shown in Table 5: in more districts managed by the county government years of teaching experience is the main factor affecting teachers' professional grades. But in more districts which fall into the categories of 'governor and township government jointly managed' and 'township government managed', end-of-year evaluations and achievements are the most important factors in job gradings. In half the districts managed by the governor alone, years of teaching experience are identified to be the most important factor while in the other half of governor managed districts the end-of-year evaluations of the teachers' achievements are identified to be the most important, though in reality both carry much weight. In the districts jointly managed by the county education bureau and the township government both job evaluations and patronage/personal recommendations are deemed important in the process of ranking teachers' professional grade.

7.3. Fairness of the professional grading

Even though survey respondents are able to identify what they think is the most important factor for judging teachers' professional gradings in a district, in reality, the professional gradings of teachers rely on a range of fuzzy cross-cutting and complex factors. Even in districts in which achievements in the end-of-year evaluations were identified to be the most important factor, the process was not necessarily 'objective' and fair. Some districts only announced the result of teachers' end-of-year evaluations (excellent, good, graded, and ungraded) but did not publicise how the scores had been calculated, and this may have reduced the fairness of the process.

We investigated teachers' personal opinions about the fairness of the end-of-year evaluations. Table 6 shows that in districts in which more teachers knew how the evaluations were conducted, fewer teachers thought that the evaluations were unfair. Worthy of emphasis is that in the districts managed by governors, the main approach to teachers' management and remuneration involved striking a balance between 'priority to long-term service' in job gradings and the students' examination results. Such districts had the greatest proportion of teachers who perceived the end-of-year evaluations to be transparent and the lowest proportion who perceived them to be unfair: 73.5% ($n = 100$) of survey teachers were clear about how the end-of-year evaluation was conducted and were most satisfied with it, with only 17.11% ($n = 26$) of survey teachers feeling it was unfair.

In the districts managed by the 'county government' the method of Buggin's turn dominated (Table 5), and most teachers were satisfied with the fairness (Table 6). Such a method of grading teachers prevailed in districts managed by county government institutions in part because the political position of governors was relatively vulnerable. In circumstances in which educational managerial power and resources were concentrated and in which there was frequent intervention from upper level officials, governors sought to ensure harmonious relationships with the teachers, and in particular to avoid offending any teachers who may have had upper level connections and may have had a role in affirming the selection of a governor.

In the 'township government managed' districts and the 'township government and governor joint managed' districts, end-of-year evaluations dominated in the job grading of teachers, but in such districts, the proportion of teachers who felt that the method was unfair was relatively high (Table 6). The reasons for this need further investigation. However conversations with

Table 6

Teachers' views on annual evaluations in different categories of school districts.

District category	Know how evaluation is conducted	Do not know how the evaluative is conducted	Subtotal	Thinks the evaluation process is unfair	Thinks the evaluation process is fair	No opinion on the fairness of the evaluation process	Subtotal
(1) Governor managed	73.53%	26.47%	100%(136)	17.11%	66.45%	16.45%	100%(152)
(2) Township government managed	63.79%	36.21%	100%(58)	29.79%	53.19%	17.02%	100%(47)
(3) Governor and township government managed	70.44%	29.56%	100%(159)	23.19%	49.28%	27.54%	100%(138)
(4) County government managed	68.07%	31.93%	100%(166)	21.43%	64.29%	14.29%	100%(168)
(5) County education bureau and township government jointly managed	47.96%	52.04%	100%(98)	42.11%	40.00%	17.89%	100%(95)

Source: 2005 survey. Note: the number of sample teachers is in the parentheses.

Table 7

Frequency of centralised exam in different categories of school districts.

District category	Exam for every semester	Exam for every year	Exam infrequently	Subtotal
(1) Governor managed	54.55%(6)	45.45%(5)	0	100%(11)
(2) Township government managed	0	50.00%(3)	50.00%(3)	100%(6)
(3) Governor and township government managed	45.45%(5)	45.45%(5)	9.09%(1)	100%(11)
(4) County government managed	28.57%(4)	57.14%(8)	14.29%(2)	100%(14)
(5) County education bureau and township government jointly managed	37.50%(3)	50.00%(4)	12.50%(1)	100%(8)

Source: 2005 survey. Note: the number of districts is in the parentheses.

teachers and administrators suggest that when carrying out teachers' end-of-year evaluations, some township leaders focused exclusively on students' exam results, a situation that was often accompanied by the use of administrative pressures on teachers to ensure good end-of-year evaluations. This led to some negative side-effects, for instance, teachers prevented poor students from sitting exams, and schools traded the best students among themselves in order to ensure better exam outcomes for certain schools. Such gaming behaviours have similarly been reported for other low income countries where merit pay incentives are strong (see review by Umansky, 2005).

Among the five categories of districts, the 'county education bureau and township government jointly managed' model were perceived by teachers to be the least transparent and the least satisfactory – only 47.9% ($n = 46$) of these teachers knew how the evaluation was conducted and 42.11% ($n = 40$) thought that the system was unfair. This was because owing to the indeterminate nature of the competition, the governors' management of teachers in these districts was rather muddled.

7.4. Variation across districts in use of exams-based incentives

Students' results in co-ordinated district-wide exams were used by the county bureaus of education throughout the province to assess the performance of the governors. Below we have divided the different managerial categories of districts into three groups according to the frequency with which they held these exams: once per term, once per academic year, and less than once per academic year. Table 7 indicates that compared with other categories of district a greater proportion

of districts managed by governors used exams on a regular basis. But fewer of the other categories of districts held exams more than once a year.

Table 8 shows that more of those districts which held exams on a frequent basis also placed greater weight on students' exam results when distributing short-term rewards and penalties to teachers. In particular the link between students' exam results and short-term teachers' rewards was the clearest and most direct in governor managed districts and in districts that were jointly managed by the governor and the township government.

7.5. The relationship between district management and educational performance

We used the students' results from the 2004 Chinese and maths exams administered in the GSFC survey to compare the academic performance of students in the different categories of district. At this point it is worth noting the limitations to using test scores as a measure of education quality. First, test scores focus on a small area of the curriculum and do not take into account less tangible indicators of teacher quality such as the classroom environment and the implications for student self-esteem and engagement (An et al., 2007; Umansky, 2005), though may capture some of these effects. Second, as learning is cumulative, test scores may reflect the gains of teaching methods of previous years rather than the teaching approach used in the year of the test (Umansky, 2005). Finally, as is discussed in more detail later, test scores capture effects other than school effects, most particularly family effects including family wealth and parental attitudes (Baker et al., 2002;

Table 8

Award and punishment scheme in different categories of school districts.

District category	The scheme covers all the teachers in the district	The scheme only for part of schools within districts	No scheme	Subtotal
(1) Governor managed	81.82%(9)	18.18%(2)	0	100%(11)
(2) Township government managed	50.00%(3)	16.67%(1)	33.33%(2)	100%(6)
(3) Governor and township government managed	54.55%(6)	45.45%(5)	0	100%(11)
(4) County government managed	21.43%(3)	50.00%(7)	28.57%(4)	100%(14)
(5) County education bureau and township government jointly managed	50.00%(4)	37.50%(3)	12.50%(1)	100%(8)

Source: 2005 survey. Note: the number of districts is in the parentheses.

Table 9

Standardized test score of sample students averaged in different categories of school districts.

District category	Test score of literature for grade 2–6	Test score of mathematics for grade 2–6	Number of sample students
(1) Governor managed	0.279	0.358	82
(2) Township government managed	0.111	0.106	65
(3) Governor and township government managed	–0.154	–0.095	83
(4) County government managed	–0.133	–0.186	60
(5) County education bureau and township government jointly managed	–0.168	–0.289	97

Source: GSFC 2004 survey.

Coleman et al., 1966; Hannum and Adams, 2008; Hanushek, 2003). Despite these qualifications, however, test scores do offer a widely accepted standardized measure of teaching quality (Hanushek, 2003). In this essay test scores enable us to consider the possible implications of fiscal re-centralisation and associated administrative changes on educational quality.

The managerial categories presented in Table 9 are based on the situation that prevailed in 2003. The data in Table 9 show that the districts managed by governors produced exam results that were significantly above the provincial average. Meanwhile districts which fell into the categories of 'governor and township jointly managed', 'county government managed' and 'education bureau and township government managed' produced exam results significantly below the provincial average. This suggests that management modes characterised by overly centralised power or by fuzzily allocated power may adversely affect students' test scores.

It is not easy to explain the superior test scores of students in the governor districts relative to the other districts however the wider educational management literature provides some possible explanations. First, in the wider education management literature, community accountability is associated with better educational quality (Umansky, 2005; Winkler and Gershberg, 2000). In the governor managed districts it is likely that the main education decision-makers were more attuned and more responsive to the views of teachers and other local stake-holders. By contrast in districts in which most decisions were made by county leaders, governors would have had much less scope for bringing their local knowledge to the management of education.

Second, scholars of education management note the importance of leadership (Chapman, 2000, p. 295; Winkler and Gershberg, 2000, p. 21). Under the current system in rural China, the district governor is a specialist in rural education management and his or her promotion or demotion depends upon professional assessment. This is unlike the township government leaders and the county education bureau officials who are assessed on a set of social and economic indicators much broader than educational outcomes, and who may therefore not prioritise educational outcomes to the same extent.

A further dimension to leadership is that the governors in Gansu tended to use their latitude carefully, building evaluation and remuneration systems that did not alienate teachers but at the

same time offered some short-term and clear bonuses that were motivating. The perceived fairness of the evaluation and remuneration systems among teachers possibly also strengthened the leadership positions of the governors and increased their scope for using their local knowledge and skills to build appropriate incentive systems. By contrast in districts where county government officials called most of the shots, the grounding of their power in their political authority may have reduced the incentives for them to delicately balance interests and take account of teachers' interests.

Finally, the education literature suggests that methods of teacher remuneration and associated incentive systems rather than salary levels *per se* may affect student performance (Hanushek, 2003). In the governor managed districts, teacher remuneration incorporated salaries based on years of teaching experience complemented by clear and achievable performance bonuses determined by students' exam scores. Setting salaries partially according to years of experience may help teachers feel secure and satisfied in their jobs. Incentivising teachers with clear and achievable short-term economic bonuses is associated with improved exam results for as long as those incentives are in place (Kingdon and Teal, 2006; Postiglione et al., 2006; Vegas, 2007, p. 225). In addition, the end-of-year evaluations in governor managed districts are more transparent to the teachers than in other kinds of districts and this may have enhanced the effectiveness of the incentive schemes.

It must be noted however that in our sample the average income level in the governor managed districts is slightly higher than in the other types of school district (see Table 10). This is an important caveat because as mentioned previously, student test scores are the product of various input factors other than managerial arrangements, for instance family socio-economic background (Baker et al., 2002; Li et al., 2007; Yu and Hannum, 2007) and regional economic development (Hannum and Wang, 2006). With regard to family background, as discussed earlier, the literature for both China and for other countries shows that students in richer families generally do better at school (An et al., 2007; Baker et al., 2002). With regard to local wealth, it is likely that richer areas can retain more experienced teachers and have funds to pay bonus incentives. It is also possible that local governance reforms across sectors are to a certain extent endogenous to local socio-economic development.

Table 10

Averaged net income of sample households in different categories of school districts (unit: RMB yuan/year).

District category	Mean	Std	Median	Number of sample households
(1) Governor managed	2859.076	8,350.568	1431.417	376
(2) Township government managed	1804.649	6,342.81	1122.125	304
(3) Governor and township government managed	2158.767	4,498.856	1316.25	544
(4) County government managed	1317.215	2,060.351	851.125	286
(5) County education bureau and township government jointly managed	2504.969	11,932.56	826	396
Total sample	2186.09	7,503.391	1083.75	1906

Source: GSFC 2004 survey.

The slightly higher income levels in governor managed districts notwithstanding, we contend that managerial arrangements within the school districts are still likely to affect education outcomes. Even though students in richer families tend to do better at school, many scholars have shown that school factors nevertheless exert significant effects on variance in students' achievement net of family background (Hanushek, 2006, p. 19), and this is especially so in lower income settings (see review of 60 studies in Fuller, 1987; Heyneman and Loxley, 1983) such as those that prevail in rural Gansu. Further, data in Table 10 suggest that at the district level per capita rural incomes and student exam scores are not strongly correlated, so other factors must be at work as well. In particular the data show that the 'township government managed districts' are not the poorest of the district categories, yet they are also on average no richer than two other categories of district management which produced considerably lower exam scores.

8. Conclusion

While most of the literature on fiscal de/centralisation examines inequalities in the distribution of inputs, and implications for inequalities in educational outcomes, we have explored the wider institutional effects of fiscal centralisation. We have shown that the 'to the county' (*yi xian wei zhu*) model for financing rural education has involved not only changes in funding but also gradual changes in the relationship between the school district and the local government, and the distribution of managerial power within school districts. Broadly, the centralisation of educational funding has precipitated three broad directions of change in the distribution of managerial power within school districts:

1. The 'to the county reform' reduces the power sharing arrangements whereby the governor and the township government or the county education bureau and the township government jointly manage the school district.
2. Power shifts from township government to the county education bureau or the county government.
3. Power shifts from the township government to the governor. The first arrangement tends to be characterised by ongoing struggles and contestation among different local level players involved in education provisioning. The second arrangement enables most managerial power to be concentrated in the hands of county level political leaders who are relatively removed from the coalface of education work in the countryside. The third change gives those individuals with more immediate involvement in the frontline of education greater say.

What do these managerial arrangements reveal about the effects of decentralisation/re-centralisation on education quality? Given the limitations of test scores as an indicator for education quality and given the data limitations which do not permit us to calculate the proportion of variance in test scores attributable to other factors, the thoughts below are tentatively proposed. Broadly, educational performance would not appear to benefit from the excessive centralisation of decision-making power that characterises those districts managed by county level institutions. At the same time education would also appear to not benefit from fuzzy and cross-cutting power struggles such as those that occur between different educational institutions and local township governments in districts in which education is jointly managed by the township government and other institutions. Indeed other educational studies have noted the negative educational effects of poor administrative co-ordination and incessant horizontal level power struggles among different government bodies (ADB, 1995a, b; Chapman, 1998; Wheeler et al., 1997 all cited in Chapman, 2000, pp. 299–300). Rather, the situation in rural Gansu suggests that educational performance may be best in those districts which have

moderate governor autonomy and which are also free from both overly centralised management and from excessive interference by different competing local political interest groups. In sum, this essay has drawn attention to the implications of fiscal re/decentralisation for educational management, and has tentatively considered some of the possible effects that such changes in managerial arrangements may have on teacher incentives and on educational quality as measured by student test scores.

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