Community-based Development and Poverty Alleviation:
An Evaluation of China's Poor Village Investment Program*

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1. Introduction

Community-based development, defined in a recent review article as "an umbrella term for projects that actively include beneficiaries in their design and management" (Mansuri and Rao, 2004, p.1), has recently emerged as a popular model for development assistance.[1] For instance, depending on whether one uses a narrow (broad) definition, World Bank lending to community-based development projects increased from $325 million ($2 billion) in 1996 to $3 billion ($7 billion) in 2003 (Mansuri and Rao, 2004). This trend is one manifestation of the growing recognition that sound governance and local accountability may play a critical role in the success of public projects (see, for example, Easterly, 2002; World Bank, 1999). However, some have argued that decentralized community development projects are often ineffective in reaching the poor, with local elites frequently dominating community decision-making (Bardhan and Mookeherjee, 2005 and 2000; Galasso and Ravallion, 2005; Platteau, 2004; Rao and Ibanez, 2005; Tendler, 2000). Specific features of local governance and institutions, and the extent of village inequality or other dimensions of heterogeneity, also may play important intermediating roles in determining both the amount of public goods provided and the projects chosen (Araujo et al., 2005; Banerjee and Somanathan, 2005; Besley, Pande, and Rao, 2005a; Foster and Rosenzweig, 2003; Khwaja, 2004a and 2004b).

In 2001, the Chinese government converted its flagship anti-poverty program into a new poor village public investment program based on participatory village planning. The previous investment program had targeted poor counties since 1986, with no participatory component. By the end of 2001, 148,000 villages, or 21 percent of all rural

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[1] Mansuri and Rao (2004) distinguish this from community-driven development in which communities are fully in control of projects.

villages in China, were officially designated as poor villages by the national government, entitling them to targeted investment funds provided by multiple government agencies. Under the program, each village is expected to complete a public investment plan following a procedure that includes the active participation of villagers. The government has committed itself to completing investments based on these plans by the end of the decade.

The Chinese poor village investment program is distinctive for at least two reasons. First, in terms of sheer size, the Chinese program is without doubt one of the largest poverty alleviation programs in the world. About 140 million persons, or 15 percent of the rural population, live in officially designated poor villages. The central government allocated 32.7 billion yuan (about $4 billion), equal to over 5 percent of the central government budget, to official poverty investment programs in 2004 (Table 1). Second, the Chinese program is one of the few examples of community-based development initiated and administered by the government of a developing country rather than international donors. A rigorous evaluation of the program thus may shed light on the potential benefits and pitfalls of government administration of such programs.

This paper takes advantage of a unique household and village panel data set with national coverage for the years 2001 and 2004 to provide the first quantitative evaluation of the impacts of China's poor village investment program. The research design focuses on a comparison of changes in officially designated poor villages that have already begun investments based on village planning with changes in designated poor villages that have yet to begin village investments but for which there is an "intention to treat". We employ a nearest neighbor matching method which allows for bias adjustment and heterogeneous

treatment effects to calculate difference-in-difference estimates of the impact of the program on program villages (the treatment effect on the treated). We examine four research questions: 1) did the program increase public investments in program villages?; 2) how did the program alter the types of projects that were selected?; 3) what were the impacts of the program on the income, consumption, and migration propensity of households?; and 4) to what extent did village governance influence the impact of the program? Our focus throughout is on whether the program has been beneficial for poor households, in particular.

The rest of the paper is organized as follows. In section 2, we describe the institutional features of the program and discuss specific issues related to implementation of the program that could affect our interpretation of the results. Section 3 introduces the data, section 5 describes the empirical strategy, and section 6 presents the results. Section 7 concludes.

2. China's poor village investment program

China's poor village investment program began in 2001, under the administration of the Leading Group Office for Poor Area Development (LGOPAD) under China's State Council. The Leading Group is a super-ministerial body whose members comprise top officials from different ministries involved with poverty alleviation work. The new program was in part a response to criticism that county-level targeting had failed to reach many of China's poor (World Bank, 2001; Park, Wang, and Wu, 2002). The decision to base investments on participatory village plans reflected concerns that investment projects were not sufficiently focused on the needs of China's poor, and was influenced

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by active engagement by international donors, especially the Asian Development Bank, which provided technical assistance for the design of the new program.

According to official guidelines, poor villages were selected according to a weighted poverty index based on eight indicators.[2] However, local governments could alter the weights or the indicators based on local circumstances, and often were constrained by the limited administrative data available for each village in their jurisdiction. Given the multitude of indicators and substantial local discretion, it is perhaps not surprising that there was substantial mistargeting of villages when evaluated on the basis of income or consumption (Chaudhuri et al, 2006). The regional breakdown of designated poor villages is presented in Table 2. Nearly half of all poor villages are in the western China even though the West accounts for only 28 percent of all villages in China. The percentage of villages designated as poor is 41 percent in the northwest, 32 percent in the southwest, 26 percent in the northeast, 22 percent in the central region, and 8 percent in coastal areas.

China's official poverty alleviation programs have focused on financing public investment projects in poor, rural areas. In addition, various government agencies administer a wide array of other policies and programs that may benefit the poor,[3] and international and domestic donors and NGOs also have undertaken development projects with a focus on poverty reduction. The three main poverty investment programs are administered by different government agencies, and have historically emphasized

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[2] The eight indicators were: grain production per capita, cash income per capita, percent of low quality houses, percent of households with poor access to potable water, percent of natural villages with reliable access to electricity, percent of natural villages with all-weather road access to the county seat, percent of women with long-term health problems, percent of eligible children not attending school.
[3] For example, the Ministry of Civil Affairs provides disaster relief, and assistance for the elderly indigent and the disabled, the Ministry of Education provides scholarships for poor children, and the Minority Affairs Committee funds projects in poor minority areas.

different types of projects since their creation in 1986. The subsidized loan program provides cheap credit to households and enterprises for income-generating projects and is administered by the Agricultural Bank of China, with interest subsidies paid by the Ministry of Finance. The Food-for-Work (FFW) program finances rural infrastructure projects, usually by paying for material costs while villages contribute corvee labor. Administered by the National Development and Reform Commission (and planning commissions at lower levels), the program initially emphasized road and drinking water projects, but over time the scope of projects widened. Finally, the Ministry of Finance provides earmarked budgetary grants to local governments to finance a wide range of public investment projects in poor areas. Table 1 describes central government spending on the three main poverty investment programs since the start of village planning in 2001.

The poor village investment program was intended to integrate and coordinate investments under the three official poverty investment programs. However, as in the past, coordination among government agencies has proven difficult because each agency is reluctant to relinquish control over resources and the LGOPAD has limited practical authority over other government units. As a result, the extent to which investment funds from the three programs are integrated into village plans depends on local bureaucratic politics. Field interviews suggest that subsidized loans are rarely made in conjunction with village plans, FFW projects are sometimes coordinated with village plans, and budgetary grants closely follow village plans (Wang, 2005). The lack of inter-agency coordination is one reason why village investment plans often have budgets that far exceed the amount of actual investments that are financed. It also suggests that actual

village investments undertaken could reflect the mandates of government agencies as the needs of villagers.

According to official guidelines provided to local governments (Gao, Wang, and Huang, 2001), the following principles were expected to guide the village planning process:

- projects helping the poor should be favored;

- participation of households and different groups (e.g., women) should be emphasized;

- plans should integrate resources from different sources;

- plans should be for a 3-5 year time horizon and reflect local conditions and causes of poverty; and

- plans should be developed following standardized procedures set by the county government.

The guidelines go on to recommend specific procedures to be followed in designing village investment plans. First, an analysis of the causes of poverty in the village should be conducted and possible solutions identified, based on analysis of village-level data and participatory workshops with 10 to 20 villagers. Next, with the support of technicians, a SWOT (strength, weakness, opportunity, and threat) analysis and feasibility analysis should be undertaken for potential projects. Projects then should be selected by a plenary session of the entire village, with the views of poor households given added weight. Once projects are chosen, a more detailed assessment and plan should be made regarding project beneficiaries, project requirements, including technical and other support, project implementation (schedule, budget, labor allocations), and monitoring and evaluation.

The final product is the village planning document, which serves as a detailed plan for the investment projects to be undertaken.[4]

Field investigations in different regions revealed that actual practice rarely meets these lofty standards. Plans were often designed by village committees, small group (hamlet) leaders, party representatives, and some household representatives, often under the supervision of township government officials who had received training from the county LGOPAD. Thus, the true extent of participatory planning that occurred is difficult to verify.

3. Data

The household data we analyze are a subset of the National Bureau of Statistics (NBS) annual rural household survey, a nationally representative survey of over 60,000 rural households throughout the country. Households in about one third of all counties in China are included in the annual survey. As part of the 2006 World Bank China Poverty Assessment Project, NBS provided access to limited data for households in all designated poor counties (about 25 percent of all counties) and one third of all non-poor counties for the years 2001 and 2004. It turns out that 97 percent of the 2001 and 2004 samples are surveyed in both 2001 and 2004, making it possible to construct a two-year panel for nearly all sample households. The household variables include net income, consumption expenditures, education of household head, household size, number of laborers, number of out-migrants, and amount of land. Income and expenditures are based on self-

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[4] Village planning documents should have eight sections: 1) introduction; 2) current situation; 3) guidelines and objectives; 4) project identification; 5) total budget; 6) supporting system; 7) implementation plan; 8) organization and management.

recorded diaries kept by sample households throughout the year, and so are precisely measured relative to many household surveys.

A special-purpose village survey also was conducted in 3036 villages by the World Bank and NBS in early 2005. The surveyed villages were precisely those villages in which our survey households reside. NBS normally surveys 10 households per sample village. The village questionnaire included detailed questions about all village investments by type of project each year from 2001 to 2004, regardless of whether they were financed by official poverty programs. Investments were also disaggregated by financing source, including government investments, village investments, and the amount of village corvee labor provided for investment projects. In designated poor villages, detailed questions were also asked about the implementation of the poor village investment program.

To evaluate the impacts of the investment program, we restrict attention to designated poor villages and households living in designated poor villages. This reduces our sample to 666 designated poor villages and the 5500 households surveyed in those villages in both years.

4. Research questions

In this section, we present four research questions related to the impacts of the program, and discuss the motivation and provide appropriate context for each.

4.1. *Did the program increase public investments in targeted villages?*

It might seem obvious, almost tautological, that the program would increase public investments in targeted villages. But there are several interesting aspects to this question. First, given the concerns that some funding agencies are not coordinating their poverty investments with village plans, it is worthwhile to verify that the targeted villages, in fact, are receiving higher funding as envisaged. Local governments also could decide to reallocate non-poverty investment funds away from poor villages and so dilute the impact of the program. Finally, it is of interest to examine whether government financing of village projects is a substitute or complement to villages' own financing of projects. There is a natural incentive for the village to substitute government financing for its own, which could enable the village to spend more funds in other areas, such as for social assistance. On the other hand, government-funded projects often require matching funds from villages, either in the form of village financing or village corvee labor. Such projects could also raise the returns to complementary investments.

4.2. *How did the program affect the types of projects that were selected?*

Changes in the types of projects undertaken by poor villages could reflect the new voice of villagers in the project selection process. Given the goals of the program, we are particularly interested in whether the preferences of the poor are being taken into account. On the other hand, if village elites are controlling the process, project choices could reflect their preferences. Other factors potentially influencing project selection are exogenous village characteristics which reflect the returns to different projects (e.g., geography, land quality, existing infrastructure), and the agendas of specific funding agencies (Ministry of Finance, Planning Commissions, Agricultural Bank) or local

county or township governments. These agendas could be pushed forward through approval policies or the persuasion of government staff mediating the planning process in each village. However, these other factors are unlikely to have changed quickly over time, so are less likely to explain systematic changes in project selections.

What projects are preferred by households in poor villages, and which projects are particularly attractive to the poorest households? Foster and Rosenzweig (2003) claim that in rural India, roads are pro-poor, irrigation investments are pro-rich (helping landowners), and schools are neutral. Araujo et al (2005) argue that latrines are pro-poor. Recent field research found that China's poor are often unable to take advantage of public projects that require household complementary investments, for example to connect one's home to a new water supply source or to purchase a new telephone and connecting line (Wang, 2005).

Although the main dataset used for this study did not include questions about the preferred projects of households, in order to get a better sense of which projects are desired by rural households in poor villages, in particular by the poor, we examine survey data from over 700 households collected as part of a rapid participatory demand assessment undertaken in 2003 in designated poor villages in three counties—one in the northwest China (Gansu Province) one in southwest China (Yunnan Province), and one in the East (Hebei Province). See the notes to Table 3 for more details about the survey. Households were asked to divide 50 physical markers (e.g. stones, potatoes) among 14 possible public expenditures. In Table 3, we present the mean scores for the 9 investment-related expenditures for the full sample and for each county, sorted by overall popularity, in each case re-scaling the points to total 100. Roads are the most popular,

followed by drinking water, irrigation, school construction, improving the quality of medical care, migration assistance, electricity, telephone and communication, and TV or broadcast infrastructure. As seen in Table 3, there are some clear differences in preferences across counties. For instance, in the southwest, the most popular project is drinking water, and support for electricity projects is nearly nonexistent in the eastern county, presumably because access to electricity is already nearly universal.

We can also look at the relationship between wealth and preferences for different projects. We estimate Tobit models of the determinants of points awarded to each project type, and include the log of per capita housing value (the only socioeconomic indicator collected in the survey) as our wealth indicator. For the full sample, we find that higher wealth is positively associated with preferences for drinking water, irrigation, and TV or broadcast infrastructure, and negatively associated with roads, school construction, and migration assistance. However, these results mask significant regional diversity. When we estimate the Tobit models separately by county, we find that the project preferences that are correlated with household wealth vary across regions. For instance, wealth is positively associated with telephones and communication only in the Northwest and negatively associated with electricity only in the East. Nonetheless, the findings are consistent with our expectations about which projects the poor are likely to prefer, and there are no cases in which the coefficients on log housing value per capita are opposite in sign and statistically significant in different counties. Later in the results section, we will examine the extent to which changes in project selection are consistent with these preferences.

4.3. *What were the impacts of the program on the income, consumption, and migration propensity of rural households?*

A main goal of China's poor village investment program is to alleviate poverty, so quantifying the impacts of the program on income and consumption levels is a central task of the evaluation. A few caveats, however, are in order, because our evaluation of household impacts is likely to underestimate the true benefits of the program. First, investments under the program began in 2002; by the end of 2004 the mean duration of program investments in villages that began investments was only 2 years. This means that most "treatment" villages had not completed plan investments by 2004. It is also very plausible that there will be lags in the effects of public investments as households gradually learn how best to utilize access to new public goods. Second, important benefits of the program are unlikely to be fully captured by household income or consumption measures (e.g., health benefits of clean drinking water, higher quality of education and/or health services). Nonetheless, many of the public investments do aim to raise productivity and improve market access or information (i.e., roads, irrigation, land improvement, communications). So it is still meaningful to investigate the extent to which the program affects the income and consumption of rich and poor households.

We also examine the effect of the program on migration behavior. Given the rapid speed of structural change occurring in China, especially in coastal regions, increasing labor mobility of the poor and including them in China's rapid industrialization and urbanization may be an important vehicle for poverty reduction. At the same time, recent research suggests that households with poor endowments are less likely to migrate (Du, Park, and Wang, 2005). There is a possible tension between

investment strategies that focus on increasing local agricultural productivity and facilitating the flow of labor out of poor areas, although in subsistence economies it is also plausible for the two strategies to be complementary. At the same time, some government officials are concerned about congestion costs in cities caused by rapid increases rural-urban migration. For all of these reasons, it is of interest to understand whether poverty investments are inhibiting or facilitating labor migration out of poor rural areas.

4.4. *To what extent did the quality of village governance influence the impact of the program on rich and poor households?*

There are two ways in governance may matter. First, governance may be influenced by the program, for instance if the exercise of going through the village planning process makes villagers feel more engaged and enthusiastic about participating in civic activities. Or, the infusion of new investment funds could raise the stakes of leadership and so attract more individuals to run for village office or participate in village decision-making, whether for selfish or unselfish reasons. Second, good governance or leadership may influence the effect of the program on other outcomes of interest, for instance through better design of project or better maintenance of infrastructure.

The village questionnaire included a detailed set of questions about village leaders, the village committee (the main decision-making body in the village), and the frequency of and attendance at meetings of the village committee and village assemblies (meetings of all villagers). We conducted a principal components analysis of eight governance variables, which resulted in three principal factors with very intuitive

interpretations. In the empirical analysis we focus on two governance variables. The first is the education level of village leaders, which heavily weights three variables about equally—years of schooling of the village party secretary, years of schooling of the village mayor, and the share of village committee members with a middle school education or above. In China village mayors are elected every three years, as are village committee members. Party secretaries are usually appointed by township officials at the same time as village leaders are elected. Education of village leaders is an appealing variable for testing whether elites in the village act on the behalf of the rich, the poor, or both.

We label the second village governance variable as "the quality of the village committee." This factor heavily weights the number of members of the village committee and the frequency of meetings of the village committee. Both of these variables are likely to be positively associated with the level of interest among villagers in participating in governance activities, the amount of activities requiring organization and discussion, and the extent of consultation and consensus-building that goes into village decision-making.[5] Because of political sensitivity and the difficulty of coming up with reliable indicators of the quality of elections, we did not ask any questions about recent village elections.

A key challenge in analyzing the relationship between governance and program impacts is that we do not have governance measures that predate the implementation of the village planning program. This introduces potential endogeneity that complicates

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[5] The third principal factor heavily weights the frequency of and attendance rate at village-wide meetings. This factor was not found to be significantly associated with program impacts. One interpretation of this result is that village-wide assemblies are related in a fairly mechanical way to the size (population and area) of the village. Large villages rarely organize such assemblies.

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interpretation of the results. These issues are discussed in great detail in the discussion of results.

5. Implementation of the investment program

How many poor villages have actually begun investments based on village planning? Figure 1 describes the share of poor villages completing plans and the share of villages starting investments based on village plans. By the end of 2004, 55 percent of poor villages (366 sample villages) had completed plans and 37 percent of poor villages (244 sample villages) had begun investments based on the plans.[6] A main reason that most villages had yet to begin planned investments three years after the program had begun is that county governments generally concentrated annual program allocations in a subset of villages. The decision to fund village plans sequentially rather than simultaneously was due to practical concerns such as economies of scale in investments and the fixed costs associated with supervising the design and implementation of plans in each village. The village data confirm that that increase in "treated" villages over time was due to a gradual expansion of investments in new villages within counties rather than expansion across counties.

We focus on a comparison of poor villages with and without planned investments. This design avoids selection biases associated with poor village designation, but is potentially vulnerable to selection biases associated with the timing of village plan financing. We believe the former biases are likely to be far more problematic than the latter. Poor village designation is a politicized process with substantial resources at stake.

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[6] The Leading Group Office for Poor Area Development reports that a higher percentage of poor villages (83 percent) had completed village plans but a lower percentage of poor villages (32 percent) had begun investments based on the plans.

Moreover, the highly visible designations are likely to be used as the basis for targeting for other projects and policies initiated by local governments, social organizations, or international donors. If that is the case, using non-poor villages as controls could lead us to confound the effects of the investment program with the impacts of other targeted programs and policies.

Nonetheless, we remain concerned about the endogeneity of the timing of investment financing. Which poor villages tend to get plan-based investments first? In Table 4, we present estimates of the determinants of whether a poor village began planned investments. The first two models are a logit model and linear regression including provincial fixed effects. The third model adds county fixed effects to the linear regression to examine how counties decide which villages to fund first. Not very many variables enter significantly or consistently across specifications, consistent with a fair extent of arbitrariness in which villages received funds first. Being in a mountainous region positively predicts starting investments, which could suggest negative selection of more remote, low potential locations into treatment. But other positive factors, such as having road access positively predict treatment, making it difficult to generalize about the nature of treatment and control villages. Some of the variables that would suggest serious endogeneity problems, in particular, income per capita, the poverty headcount, and initial investment amounts all are not predictive of starting investments under the planning program.

6. Empirical strategy

To estimate the treatment effect on the treated, we assume that selection is based on observables, so that systematic differences in outcomes between treated and control observations with the same values of the covariates can be attributed to the treatment. A number of regression-based and matching estimators have been developed to estimate treatment effects under this unconfoundedness, or exogeneity assumption. Matching methods have the advantage of relying less on distributional or parametric assumptions, which minimizes bias, but possibly at the expense of less precision (Imbens, 2004; Abadie and Imbens, 2006). They do not rely on linearity or other functional form assumptions relating outcomes to a set of covariates, and are less subject to a lack of common support.

Although the exogeneity assumption may seem strong, specific features of the data and estimation algorithm can significantly improve the reliability of such estimates, producing results that have been shown to be very close to those based on a randomized design (Smith and Todd, 2005; Abadie and Imbens, 2006). Smith and Todd (2005) counsel that geographic mismatch between matched observations should be avoided, common survey questions and survey methods should be used for treatment and control groups, and difference-in-difference matching is preferred to cross-sectional matching, especially if other problems exist. Abadie and Imbens (2006) propose a method to eliminate bias caused by imprecise matching of covariates between treatment and control observations using nearest neighbor matching. They also develop a formula to estimate standard errors for matching with a fixed number of nearest neighbors that are

asymptotically consistent and which can accommodate unobserved heterogeneity in the treatment effect.[7]

In this paper, we use the nearest neighbor matching algorithm with bias adjustment developed by Abadie and Imbens (2006). For each treatment observation i, we can write the following expression for our estimate of outcome Y_i if treatment occurred ($\tilde{Y}_i(0)$) and if treatment did occur ($\tilde{Y}_i(1)$):

$$\tilde{Y}_i(0) = \frac{1}{M} \sum_{j=\mathfrak{I}_M(i)} (Y_j + \hat{\mu}_0(X_i) - \hat{\mu}_0(X_j)) \tag{1}$$

$$\tilde{Y}_i(1) = Y_i. \tag{2}$$

The function $\hat{\mu}_0$ is a fitted linear regression function of Y_j on covariates X_j using the control observations. It is used to adjust the counterfactual estimates to account for differences in the matching variables for each treatment observation (X_i) and its matched control observations (X_j). Abadie and Imbens (2006) show that this correction leads to an unbiased estimate of the average treatment effect on the treated, which can be expressed as:

$$\tau = \frac{1}{N_1} \sum_{W_i=1} (Y_i - \tilde{Y}_i(0)), \tag{3}$$

Where N1 is the number of treated observations and Wi=1 means that the observation is in the treatment group.

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[7] In another paper, they show that boostrapping is inappropriate for estimating standard errors for matching methods with a fixed number of matches (Abadie and Imbens, 2005).

In making specific choices about the methodology, our basic approach is to minimize potential bias whenever possible, even at the cost of lost efficiency. To minimize geographic mismatch, we enforce exact matching by province.[8] Data for both treatment and control villages and households come from the same survey administered by the NBS. For the most part, we restrict attention to variables for which we have observations for the same households and villages both before and after the program, enabling difference-in-difference comparisons. Each treatment observation is matched to 3 control observations with replacement, which is few enough to enable exact matching by province for nearly all observations but enough to significantly reduce the asymptotic efficiency loss (Abadie and Imbens, 2006).

Matching is based on a set of covariates which are time-invariant or were measured before the start of the program. The weighting matrix uses the Mahalanobis metric, which is the inverse of the sample variance/covariance matrix of the matching variables. We choose the following set of 17 matching variables for village level matching:

1) veduyr: mean years of schooling of household heads
2) linv_pc_t1: log of total investment per capita in 2001
3) linv_pc_g1: log of government investment per capita in 2001
4) pkcoun_yn: indicator variable for whether in designated poor county
5) lcpop: log of county population
6) lyindex: county agricultural productivity index, based on predicted grain yield from regression on geographic variables: slope, elevation, rainfall, and temperature
7) tel_1: percent of village hamlets with telephone access in 2001
8) water_1: percent of village hamlets with access to safe drinking water in 2001
9) road_1: percent of village hamlets with road access in 2001
10) road_1: percent of village hamlets with paved road access in 2001
11) mkdis_1: kilometers to nearest market in 2001
12) mount_yn: indicator variable for mountainous region
13) oldreg_v: indicator variable for whether an old revolutionary base area

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[8] This is accomplished by assigning an arbitrarily high weight to the exact matching variable in defining the matching criteria.

14) town_dis: kilometers to nearest township
15) coun_dis: kilometers to nearest county
16) linc_pc_h_01: mean log(income per capita) in 2001 (from household data)
17) hcr_opl_01_v: village poverty headcount rate in 2001 (from household data)

The relatively large number of matching variables, in addition to perfect matching by province, does raise concerns about lack of common support, since few control villages are likely to share similar values for all covariates. Nonetheless, bias adjustment using these variables will help control for differences in the covariates. To provide a sense of the comparability between treatment and control observations, in Appendix 1, we provide output from a balancing test based on matching using logit-based propensity scores. The table describes the mean values of all covariates for treatment and control observations before and after matching. We use the propensity scores as a diagnostic tool to restrict the sample used in each matching estimation to those with common support (at least one control observation has an equally high propensity score). We also visually examine graphs of the propensity score and trim the sample if there is a large imbalance between control observations and treatment observations with similar propensity scores. This prevents the estimates from relying too heavily on just a few control observations. A plot of the propensity score distribution for the full set of treatments and possible controls is provided in Figure 2. The observations shaded in green are treatment observations that lack common support, and which are excluded in the estimation.

7. Results

7.1. *Investment amounts*

Table 5 presents the estimated impacts of the investment program on the amount of village investments. Total investment includes the value of corvee labor days based on the daily male labor wage rate in 2004 as reported in the village questionnaire. Total monetary investment is inclusive of government and village investment. The results confirm that the beginning of village investments based on the plan was associated with a very substantial increase in the amount of total investment per capita—by over 200 percent on average.[9] Both village and government investments increased significantly, suggesting that government financing was a complement not a substitute for village financing in practice. However, there was no effect of the program on village corvee labor, which suggests that villages either were not required to contribute corvee labor or, if they were, then they responded by reducing corvee labor assignments for other activities.[10]

Table 5 reveals a number of interesting contrasts in the village financing of investments in western versus non-western regions. The total amount of investment increase was twice as great in non-western villages than in western villages. This was not because government financing was greater, but rather because village investments and village corvee labor increased substantially in non-western villages but not in western villages. In fact, in western villages, village corvee labor was actually reduced in villages that began investments under village plans. There are a number of possible explanations for these differences. Local governments may have required matching investments and corvee labor in richer, non-Western regions, but not in poorer, Western regions. Even if

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[9] Percentage increases in investment should not be interpreted literally because for villages with zero initial investment, log investment per capita was set equal to zero.
[10] This is consistent with regulations that prohibit excess corvee labor requirements of more than 25 days (check).

required, it is possible that the poorer villages in the West lacked available revenues to meet the requirements. Western villages may have reduced corvee labor because project funds were available to pay for labor investments and villages suspended other projects while poverty investments were being implemented. Or the opportunity cost of time increased with new opportunities made possible by the project. In non-West regions, villages could have been well below their maximum corvee labor assignments because revenues were available to pay workers to work on public projects, providing more scope for increasing such investments. The types of investment projects selected may have been ones requiring more labor input.

7.2. *Project selection*

Before presenting the matching estimates, we describe the structure of project investment categories before and after the program in both treatment and control villages in Table 6. In treatment villages, before and after shares for each village correspond precisely with the year in which the plan investments began. For control villages, before is defined as the mean investment in 2001 and 2002 and after is defined as the mean investment shares in 2003 and 2004. Because the mean starting point of the program in treatment villages is nearly exactly the beginning of 2003, this comparison is not biased by the effect of annual trends. The figure reveals quite significant changes in the types of projects undertaken under the program.

In treatment villages, prior to plan-based investments, electricity projects received the most funding (35 percent), followed by roads and bridges (20 percent), marketing infrastructure (10 percent), schools (9 percent), irrigation (6 percent) and drinking water

(6 percent). In comparison to the preference ordering of households in poor villages described earlier, there appears to be over-investment in electricity and under-investment in drinking water and possibly irrigation. Under village planning the top six investments were roads and bridges (35 percent), electricity (16 percent), irrigation (10 percent), schools (9 percent), and afforestation (8 percent), and communication (8 percent). Under the new plans, there were increases in investment shares of roads and bridges, "other" investments, communication, afforestation, and medical clinics (ordered by the change in investment share), and reductions in spending on electricity, marketing, drinking water, and schools.

In untreated villages, there was greater initial investment in roads and bridges, irrigation, and schools, and less investments in electricity, marketing, and afforestation. Similar to treated villages, there were significant increases in spending on roads and bridges, and "other" investments and reductions in spending on electricity, marketing, terracing and land improvements, and schools. But in contrast to treatment villages, there were declines in investments in irrigation and communications, both categories preferred by wealthier households. If we compare the growth rates in investment shares in treated and untreated villages, we find the largest relative increases for "other" investments, communication, medical clinics, irrigation, and roads and villages, and the largest relative decreases in drinking water and marketing infrastructure. Because of the differences in initial investment structure and other village characteristics, we do not read too much into these patterns, but instead turn to the matching estimates.

The matching estimation results are presented in Table 7. We include the log of the pre-program investment amount per capita in the set of matching variables when

estimating the effect of the program on growth in that type of investment. For the full sample, we find that the program has the largest positive effect on school investments, followed by "other" investments, irrigation, marketing, and communication. The effects on investments in roads and afforestation are positive but not statistically significant. There are no large or statistically significant negative effects. Comparing these changes to the household preferences described earlier, in relative terms the increase in schooling investments is pro-poor, while the increase in irrigation and communication investments is anti-poor. This, of course, does not mean that the poor are not made better off in absolute terms by the investment choices. There does not appear to be an obvious improvement of the fit of investments to average preferences in treatment villages relative to control villages. The impact of the program on both electricity (over-invested) and drinking water (underinvested) are statistically insignificant from zero in contrast to much larger positive effects on other types of investment. The increase in irrigation investment could be viewed as responsive to household preferences; however the demand for this investment is particularly sensitive to geographic conditions, drawing into question the representativeness of our demand assessments in a few counties.

When we examine the effects of the program separately by region, we find differences in the effect of the program on project selections. In the West, the largest increases are for roads and bridges, marketing infrastructure, "other" investments, and terracing/land improvement and there is a large negative effect on drinking water. There are positive but statistically insignificant effects on electricity, irrigation, afforestation, and schools, and communication. Only the reduction in drinking water appears inconsistent with the average household preferences described earlier (drinking water is

highly ranked but gets low initial investments). Nor do these changes appear to be biased against the poor; if anything the greater weight on roads can be viewed as pro-poor.[11]

In the non-West, the largest increases are for schools, irrigation, and communication and there are large negative but imprecisely measured effects on electricity and terracing/land improvement. The increased investment in irrigation and decreased investment in electricity seem consistent with the average household preferences described in Table 3. Irrigation was ranked relatively high but had low initial investment and electricity was ranked low but had high initial investment. The increased (decreased) investments in irrigation and communication (electricity) could be viewed as anti-poor to the extent that these projects are found to be more (less) desired by the rich in some surveyed areas.

7.3. *Household income, consumption, and migration*

How did village planning affect the well-being of rural households in program villages? Table 8 reports the estimated impacts on income growth, consumption growth, and changes in the share of laborers who migrated. We report results for all households, poor households, and rich households. To maximize the sample size for within-village comparisons of rich and poor, we use median income as the poverty line. Even so, some villages will have only rich or only poor households. Of the 588 villages in the matched sample, 552 have at least one poor household, 484 have at least one rich household, and

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[11] The reduction in drinking water could be viewed as pro-poor in a relative sense based on the full sample positive correlation between preferences and wealth, although even the poor could rank drinking water higher than other projects. However, in the western counties, there is a negative but statistically insignificant relationship between preferences and wealth. If one accepted the region-specific negative coefficient, reduction in drinking water projects would be anti-poor in a relative sense (the rich could also feel there was underinvestment in drinking water, but just less intensely).

448 villages have both rich and poor households. We report results both for the maximum sample sizes and for the restricted sample of villages with both rich and poor households. A comparison of results for rich and poor households using the restricted sample is analogous to the inclusion of village fixed effects. In addition, we may consider villages with both rich and poor households to be more heterogeneous with respect to poverty, and so a comparison of estimates for the restricted and maximum samples can provide clues to how program impacts may vary with this dimension of village heterogeneity.

The results are quite striking. There are no statistically significant effects on mean income growth, consumption growth, or change in migration propensity for the full sample of villages. However, whether we use the maximum or restricted samples, we find significantly positive effects on all three household outcomes for the rich, but no statistically significant effects for the poor. For the rich, the program increases household income per capita by 6.6 (9.6) percent, consumption per capita by 8.8 (11.4) percent, and reduces the share of labor that migrates by 5.2 (4.7) percent using the maximum (restricted) sample. The more positive impacts for the restricted sample suggest that the program creates larger benefits for the rich in villages that also have poor households, which is consistent with rich households capturing benefits for themselves.

7.4. *Governance and program impacts*

Next, we examine the interaction between village governance and program impacts. We first treat the governance variables as outcome variables and test whether the program had an impact on village governance. The results are reported in Table 9.

We find that the program had a significant positive effect on the education level of village leaders, but no significant effect on the quality of the village committee.

Because we lack information on governance outcomes prior to the program and so cannot difference out the effect of unobserved time-invariant factors, our measured impacts could reflect selectivity into treatment rather than impacts of the program. This is not a major concern for the second governance variable, for which we do not estimate a significant treatment effect. For the leader education variable, this will not be a problem if the matching variables adequately control for possible confounding factors. To make this case, we point out that the matching variables include the average years of schooling of household heads, 2001 log investment per capita, 2001 mean log income per capita, and the 2001 village poverty headcount rate. Thus, the effect of the education of village leaders is not likely to be proxying for the overall education level of villagers, and the matching variables effectively control for any differences in unobserved initial governance inasmuch as they influence initial village investment or the level and distribution of income.

Nonetheless, we are not overly concerned about the interpretation of the positive relationship between the program and the education level of leaders, even though it provides empirical support for the idea that elites (the more educated) will become more actively engaged in the political process if external projects raise the returns or stakes to their participation. We are more interested in analyzing whether governance characteristics influence whether the program helps the poor. This second question is much more relevant for assessing whether the program achieves its self-proclaimed objectives. In addition, by comparing how governance affects program impacts on the

rich and poor, we can also focus on within-village comparisons that are not subject to bias from unobserved village-level factors, including selection bias associated with initial governance or endogenous treatment effects of the program on village governance. The analogy in a linear regression specification would be to look at the triple interaction of the treatment variable, the governance variable, and initial income while controlling for village fixed effects and initial income.

We implement this idea by restricting the sample as before to villages with both rich and poor households, and then splitting this restricted sample evenly into high governance villages and low governance villages. Using these subsamples, we then estimate four treatment effects—for the poor in low governance villages, the poor in high governance villages, the rich in low governance villages, and the rich in high governance villages. It is then straightforward to calculate the differences and differences-in-differences of these impact estimates to examine whether better governance helps the poor, whether it helps the rich, and whether it helps the rich more than the poor.

The results are presented in Table 10. We focus on changes in income per capita and changes in consumption per capita. We find that when leaders are more educated, the benefits of the program, whether measured by income or consumption, decline for the poor and increase for the rich. The difference in impacts on the poor when leaders are educated or not is statistically significant. More importantly, so is the preferred difference-in-difference estimate comparing the effect on consumption of educated leaders on the rich versus poor.[12] These results support the idea that educated leaders are more likely to help other elites in the village rather than the poor.

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[12] We conduct a simple t-test for whether coefficients differ using the estimated standard errors.

The influence of the quality of the village committee is somewhat different. In this case the effect of better governance on household welfare is strongly positive for both poor and rich households, whether one looks at income or consumption. The difference in income gains from the program in high versus low governance villages is over 30 percent for income and over 20 percent for consumption. The difference-in-difference estimate of the effect of village committee quality on the program benefits to rich versus poor households is close to zero and not statistically significant.

As before, we can also compare the estimated differences for the restricted and maximum samples (which include villages that have all rich or all poor households). In results not (yet) reported, we do not find systematic differences in the effect of the education of leaders in the two samples. But we do find that the effects of high quality village committees on program benefits is consistently higher in the restricted sample of heterogeneous villages, whether considering income or consumption or effects on the poor or rich. This suggests that governance matters more in heterogeneous communities regardless of whether you are rich are poor.

8. Conclusions

Taken together, our evaluation of China's poor village investment program finds little evidence that participatory decision-making has helped the poor benefit more from China's targeted investment program or played a major role in rural poverty reduction during its first three years of operation. We do find evidence that governance matters in the distribution of program benefits. More educated leaders are likely to favor rich

households over poor households, and high quality village committees deliver much

greater benefits for both poor and rich households alike. **[to be completed]**

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Figure 1
Poor village completion of plans and start of investments based on plans,
2001 to 2004
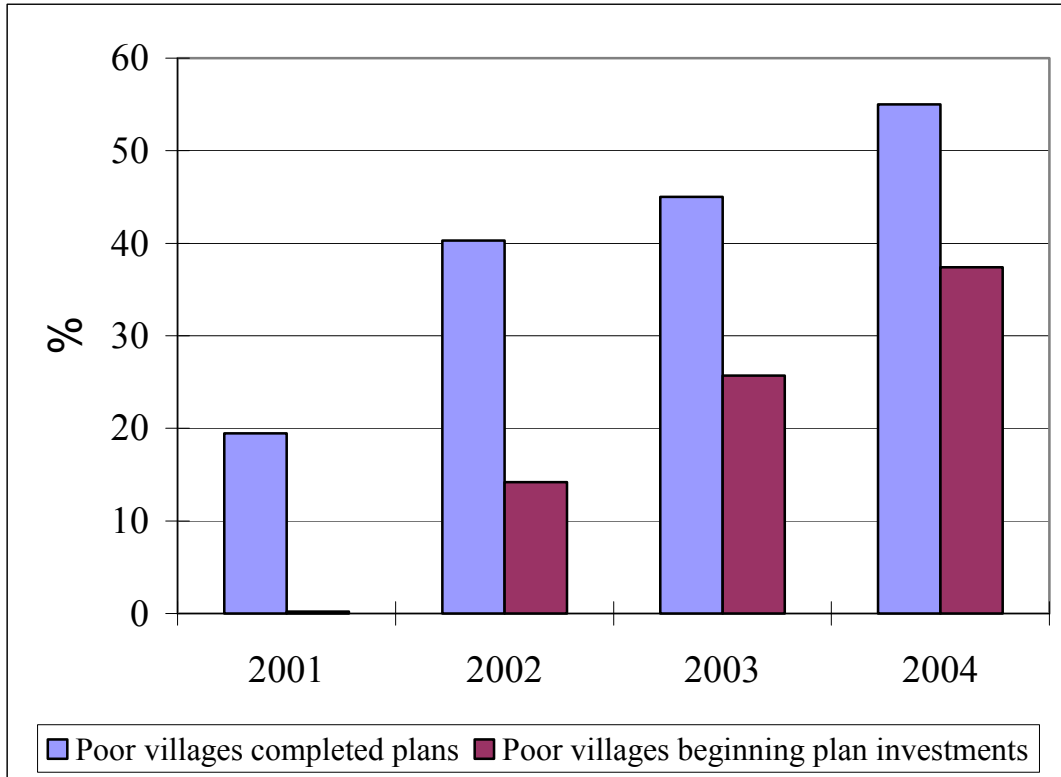
Figure 2
Distribution of propensity scores (logit) for treatment and control poor villages
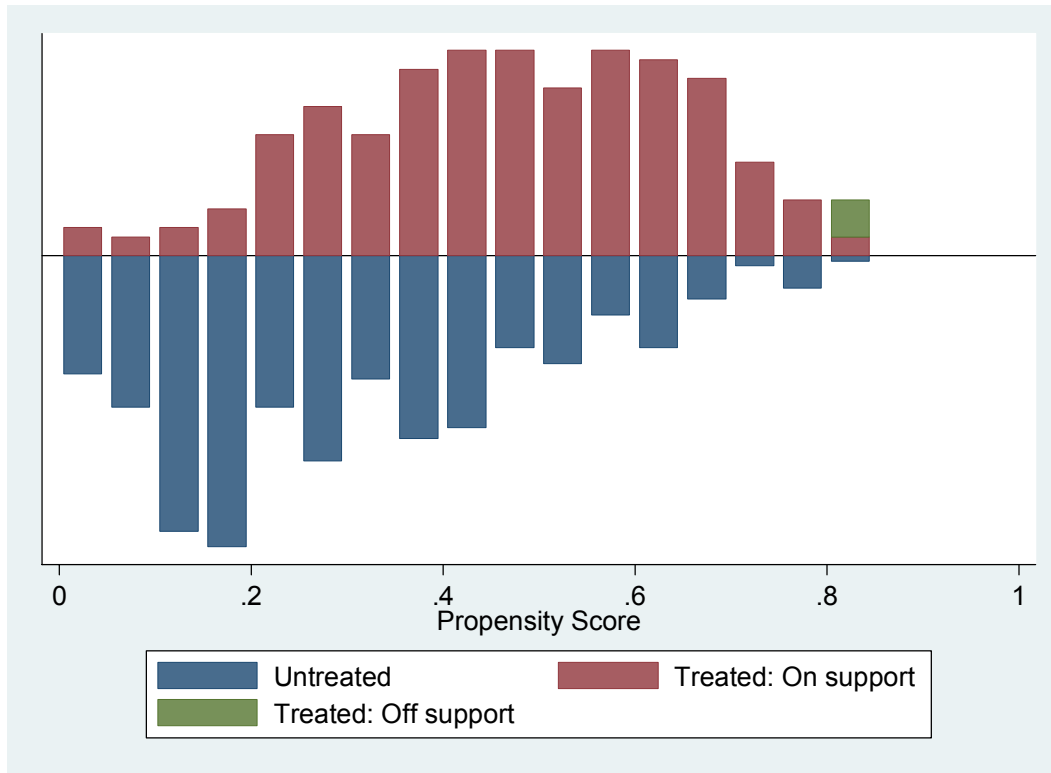
Table 1
Central government funding for poverty alleviation programs, 2001 to 2004
(billion Yuan)

Year	Subsidized loans	Food for work	Budgetary funds	Total
2001	18.5	6.0	6.0	30.5
2002	18.5	6.0	6.6	31.1
2003	18.5	6.0	7.4	31.9
2004	18.5	6.0	8.2	32.7
Total	74.0	24.0	28.2	126.2

Source: LGOPAD and MOF

Table 2
Number of designated poor villages, by region

Region	Total no. of villages	No. of designated poor villages	% of villages designated poor	Share of poor villages (%)
Coastal	249,723	20,698	8.3	14.0
Northeast	35,540	9,182	25.8	6.2
Central	225,964	48,950	21.7	33.0
Southwest	132,879	42,647	32.1	28.8
Northwest	65,151	26,654	40.9	18.0
Total	709,257	148,131	20.9	100.0

Source: LGOPAD

Table 3
Which projects are preferred by the poor?

	Road	Drinking water	Irrigation	School Building	Medical clinic	Help migrate	Elect	Tel/ comm	TV or broad- cast
Mean scores									
Full sample	23.9	16.2	13.3	11.7	10.1	7.3	6.8	6.0	4.5
By region:									
Non-west	27.1	14.2	17.0	10.3	11.6	8.4	0.6	4.9	5.9
Southwest	19.3	21.2	19.8	8.8	7.2	3.4	10.4	4.5	5.4
Northwest	25.2	13.0	1.9	16.6	11.6	10.4	10.2	9.0	2.1
By housing value p.c.:									
Low	26.2	13.4	6.8	15.3	11.0	8.7	7.6	7.6	3.5
Medium	24.2	16.1	13.3	11.0	10.0	7.0	7.2	6.3	4.9
High	21.8	18.5	18.7	9.3	9.5	6.4	6.1	4.5	5.2
Tobit estimation: coefficient on log(housing value p.c.)									
Full sample	*-0.74	***1.80	***4.79	***-2.06	-0.53	*-1.09	0.02	-0.90	***1.46
	(0.44)	(0.58)	(0.53)	(0.46)	(0.41)	(0.57)	(1.13)	(0.56)	(0.51)
Non-west	0.91	***4.12	0.28	-0.52	-1.38	1.45	**-3.84	-1.77	-0.02
	(0.97)	(1.39)	(0.71)	(0.76)	(1.15)	(1.15)	(1.87)	(1.13)	(1.09)
Southwest	-0.47	-1.79	-0.17	***-4.05	0.41	-0.97	3.52	-0.36	**2.48
	(1.26)	(1.20)	(1.01)	(1.49)	(0.82)	(1.59)	(2.42)	(1.23)	(1.10)
Northwest	***-1.37	-1.40	***3.38	0.01	-0.59	1.22	-1.11	***2.82	-1.77
	(0.54)	(1.02)	(1.27)	(0.77)	(0.59)	(0.94)	(0.86)	(1.09)	(1.13)

Notes: Scores rank importance of each project type based on rapid participatory appraisal methodology in which respondents are given 100 points to divide among all projects. Omitted project categories and their mean scores are school fee reduction (12.9), agricultural technology training (11.5), reduction of medical fees (9.1), grain-for-green, a crop set-aside program (7.2), relocation (1.7), and other (1.0). Mean scores in table renormalize scores of selected categories to total 100.

Source: surveys of 714 rural households in 2003 conducted in officially designated poor villages in 3 national poor counties, one each in Hebei Province in eastern China, Yunnan province in southwest China, and Gansu Province in northwest province. The survey sampled 4 poor townships in each county, 3 villages in each township, 2 hamlets in each village, and 10 households per hamlet. Counties, townships and villages were selected to be typical of poor areas in each region.

Table 4
Determinants of village plan implementation by poor villages

	logit		OLS		OLS	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Mean yrs of schooling	0.084	0.064	0.015	0.013	0.022	0.015
Ln('01 tot. inv. p.c.)	0.067	0.045	0.015	0.010	0.005	0.010
Ln('01 gov. inv. p.c.)	-0.008	0.092	-0.009	0.019	-0.016	0.021
Poor county	0.164	0.385	0.014	0.057		
Ln(county pop.)	-0.344	0.219	**-0.081	0.041		
Ln(county ag prod.)	0.576	0.842	0.302	0.205		
'01 share w/telephone	**0.007	0.003	0.001	0.001	0.001	0.001
'01 share w/water	-0.002	0.003	**-0.001	0.001	**-0.001	0.001
'01 share w/road	-0.001	0.003	**0.001	0.001	-0.001	0.001
'01 share w/pave rd.	-0.007	0.004	0.000	0.001	***0.003	0.001
Distance to market	*-0.024	0.014	-0.005	0.003	-0.002	0.003
Mountainous	***1.082	0.327	*0.105	0.063	-0.055	0.099
Rev. base area	-0.375	0.291	-0.048	0.057	0.192	0.150
Distance to town	-0.013	0.015	-0.002	0.003	***-0.008	0.003
Distance to county	0.009	0.012	0.003	0.002	0.000	0.002
Ln('01 inc. p.c.)	0.312	0.325	0.062	0.067	-0.018	0.075
'01 poverty rate	0.334	0.645	0.117	0.150	-0.065	0.171
Province fixed effects	X		X			
County fixed effects					X	
N	625		625		625	

Table 5
Effect of village investment program on growth in village investment per capita,
by financing source (village matching estimates)

Financing source	All China	West	Non-west
Total investment	***2.23	***1.54	***3.70
	(0.539)	(0.345)	(1.23)
Total monetary investment	***1.38	***1.46	***1.37
	(0.285)	(0.331)	(0.548)
Govt monetary investment	***0.99	***1.13	***0.85
	(0.204)	(0.313)	(0.284)
Village monetary investment	***0.64	0.07	***1.43
	(0.232)	(0.179)	(0.510)
Corvee labor days	-0.19	**-0.66	**0.38
	(0.164)	(0.320)	(0.172)
N	588	373	215

Notes: ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels.

Table 6
Change in investment composition in poor villages with and without plan investments

	Plan investments begun			Plan investments not begun			Diff-in-growth
	Before	After	Growth	Before	After	Growth	
Roads and bridges	19.6	33.5	71.0	32.7	45.8	40.0	30.9
Electricity	34.6	15.9	-54.2	20.7	9.1	-56.3	2.1
Irrigation	6.4	10.3	60.0	10.7	8.3	-22.5	82.5
Schools	9.1	8.8	-3.8	12.7	11.3	-10.7	6.9
Afforestation	6.1	8.3	35.5	3.2	3.5	9.3	26.3
Communication	3.1	7.8	150.2	2.5	2.2	-10.7	160.8
Drinking water	6.3	3.6	-43.5	7.0	7.9	13.2	-56.7
Terrace/land improvement	3.3	2.8	-15.8	4.1	3.0	-25.1	9.3
Marketing and transport	10.1	2.1	-79.6	2.3	1.5	-32.2	-47.3
Medical clinics	0.2	0.3	110.0	0.8	0.9	12.8	97.2
Other	1.1	6.6	525.7	3.5	6.5	87.7	438.0

Table 7
Effect of village investment program on growth of investment in specific projects
(village matching estimates)

Project type	All China	West	Non-west
Roads and bridges	28.4	***99.8	8.8
	(25.1)	(28.5)	(34.7)
Communication	***23.9	11.1	**26.2
	(8.4)	(9.8)	(11.3)
Marketing and transport	***27.9	**49.4	N/A
	(10.8)	(23.2)	
Electricity	1.8	22.2	-39.8
	(19.4)	(29.6)	(25.2)
Drinking water	-9.7	**-37.1	16.5
	(13.6)	(15.8)	(12.2)
Terrace/land improvement	-3.6	***23.5	-29.6
	(11.6)	(6.8)	(26.5)
Irrigation	**30.0	19.9	***48.9
	(12.8)	(17.9)	(18.3)
Afforestation	14.4	15.9	19.3
	(14.1)	(20.9)	(19.1)
Schools	***56.3	13.2	***106.1
	(15.5)	(16.5)	(29.0)
Medical clinics	**4.5	2.6	1.9
	(2.0)	(3.5)	(1.9)
Other	***36.9	***44.3	***22.1
	(38.1)	(9.5)	(7.8)
N	588	373	215

Notes: ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels. N/A due to insufficient variation.

Table 8
Effect of village investment program on household income p.c., consumption p.c.,
and share of labor that migrates
(village matching estimates)

	Δln(inc. pc)	Δln(cons. pc)	Δmigration-share
All villages			
All	0.030	0.010	-0.025
	(0.031)	(0.029)	(0.017)
	588	588	588
Poor	-0.039	0.001	-0.005
	(0.062)	(0.042)	(0.018)
	552	552	552
Rich	*0.066	**0.088	***-0.052
	(0.035)	(0.036)	(0.018)
	484	484	484
Villages with both poor and rich households:			
All	0.029	0.054	-0.031
	(0.037)	(0.039)	(0.019)
	448	448	448
Poor	-0.061	0.006	0.000
	(0.067)	(0.045)	(0.020)
	448	448	448
Rich	***0.096	***0.114	**-0.047
	(0.039)	(0.038)	(0.019)
	448	448	448

Table 9
Impact of village investment program on village governance in 2004
(village matching estimates)

Governance outcome	All China	West	Non-west
Education of leaders	***0.606	***0.821	***0.754
	(0.122)	(0.204)	(0.128)
Quality of village committee	0.069	0.143	-0.057
	(0.099)	(0.105)	(0.165)
N	583	371	212

Notes: ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels.

Table 10
Governance and Program Impact on the Rich and Poor within Villages
(Village Matching Estimates)

		Education of village leaders			Quality of village committee		
		Low	High	Diff.	Low	High	Diff.
mean Δln(inc. pc)	Poor	0.073	0.031	-0.042	**-0.195	0.130	***0.325
		(0.059)	(0.059)		(0.082)	(0.096)	
	Rich	-0.048	0.032	0.080	0.052	***0.409	***0.357
		(0.072)	(058)		(0.053)	(0.070)	
	Diff.	-0.121	0.001	0.122	***0.247	***0.279	0.032
Mean Δln(con. pc)	Poor	0.032	***-0.121	***-0.153	***-0.159	0.047	***0.206
		(0.089)	(0.047)		(0.058)	(0.075)	
	Rich	-0.057	0.023	0.080	0.057	***0.300	***0.243
		(0.069)	(0.038)		(0.044)	(0.059)	
	Diff.	-0.089	***0.144	***0.233	***0.216	***0.253	0.037

Notes: Coefficients are program impacts. ***,**, and* signify statistical significance at the 1, 5, and 10 percent levels. Education of village leaders is principal component that gives high weights to education of party secretary, education of village head, and share of village committee members with middle school education or above. Quality of village committee is principal component that gives high weights to the number of village committee members and the frequency of village committee meetings. Villages are divided into even-sized groups of low and high. Relative poor and rich households are those below and above the 2001 median income per capita. The sample is restricted to villages with both poor and rich households, and ranges in size from 196 to 224 villages.

Appendix 1
Balancing test for village matching, based on propensity score matching

```
--------------------------------------------------------------------------
                      |     Mean           %reduct |    t-test
   Variable    Sample | Treated Control  %bias |bias| |    t    p>|t|
----------------------+-------------------------------+----------------
     veduyr Unmatched |  7.487   7.2445   12.5        |  1.48   0.140
            Matched   |  7.4781  7.5949   -6.0   51.8 | -0.69   0.489
                      |                               |
  linv_pc_t1 Unmatched|  .5574   .01933  19.5        |  2.30   0.022
            Matched   | .50571  .48699    0.7   96.5 |  0.08   0.935
                      |                               |
  linv_pc_g1 Unmatched| .64029  .49984   10.8        |  1.33   0.185
            Matched   | .63328  .63653   -0.3   97.7 | -0.03   0.978
                      |                               |
  pkcoun_yn Unmatched | .88987  .90306   -4.3        | -0.52   0.602
            Matched   |  .8894   .8553   11.2 -158.5 |  1.14   0.257
                      |                               |
      lcpop Unmatched | 12.885  12.838    7.2        |  0.85   0.394
            Matched   | 12.881  12.895   -2.1   70.2 | -0.24   0.807
                      |                               |
    lyindex Unmatched | 5.6607   5.576   45.1        |  5.37   0.000
            Matched   |  5.656  5.6589   -1.5   96.6 | -0.17   0.863
                      |                               |
      tel_1 Unmatched | 53.765  39.744   33.7        |  4.02   0.000
            Matched   | 53.197  51.843    3.3   90.3 |  0.36   0.721
                      |                               |
    water_1 Unmatched | 62.571  60.098    5.8        |  0.70   0.487
            Matched   | 62.183  64.886   -6.4   -9.3 | -0.72   0.471
                      |                               |
     road_1 Unmatched | 75.034  75.557   -1.5        | -0.18   0.856
            Matched   |   76.2  78.429   -6.5 -326.9 | -0.74   0.459
                      |                               |
    proad_1 Unmatched | 9.8626  10.694   -3.1        | -0.37   0.712
            Matched   | 10.317  12.302   -7.4 -138.8 | -0.79   0.429
                      |                               |
    mkdis_1 Unmatched | 6.4084  8.4148  -23.8        | -2.74   0.006
            Matched   | 6.4871  6.3015    2.2   90.7 |  0.29   0.770
                      |                               |
   mount_yn Unmatched |  .5022   .625  -24.9        | -3.00   0.003
            Matched   | .49309  .48111    2.4   90.2 |  0.27   0.790
                      |                               |
   oldreg_v Unmatched | .22026  .19898    5.2        |  0.63   0.529
            Matched   | .21198  .20369    2.0   61.0 |  0.23   0.821
                      |                               |
   town_dis Unmatched | 7.6282    8.17   -7.5        | -0.90   0.368
            Matched   | 7.7219  7.9669   -3.4   54.8 | -0.39   0.699
                      |                               |
   coun_dis Unmatched | 23.775  23.972   -2.1        | -0.26   0.796
            Matched   | 23.626  24.275   -7.0 -228.1 | -0.79   0.431
                      |                               |
linc_pc_h_01 Unmatched| 7.0863  7.0027   15.5        |  1.83   0.067
            Matched   | 7.0709  7.1019   -5.8   63.0 | -0.67   0.503
                      |                               |
hcr_opl_01_v Unmatched| .16251  .18986  -11.3        | -1.36   0.174
            Matched   | .16845  .15856    4.1   63.8 |  0.46   0.649
                      |                               |
--------------------------------------------------------------------------
```