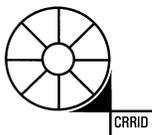


Fiscal Decentralisation and Resource Mobilization by the Panchayats for the Social Sector Development in Rural Punjab: An analysis of efficiency and equity effects

Sponsored by

Ministry of Panchayati Raj
Government of India
New Delhi

January 2007



Conducted by
Centre for Research in Rural and Industrial Development, CRRID
Sector 19-A, Madhya Marg, Chandigarh

And

Stanford Centre for International Development, Stanford University, USA



This report has been jointly prepared by Dr. Anjini Kochar, of the Stanford Centre for International Development, Stanford University and Dr. Kesar Singh, Sukhwinder Singh and Mr. M Satyapal, of CRRID, under the overall supervision and guidance of Dr. Rashpal Malhotra, Director General, Centre for Research in Rural and Industrial Development, Chandigarh.

PREFACE

Acknowledgement of any contribution or cooperation received from an individual or organisation in the process of accomplishment of a given task is a universally accepted ritual and practice. In the present case, it is neither a ritual nor a practice. It is an affirmation of the reality that but for the generous help, support and stimulus from a variety of sources, the present report would not have acquired its presence and quality.

In specific, I express my sincere word of gratitude to:

- (i) Ms. Meenakshi Dutta Ghosh, Secretary, Department of Panchayati Raj, Government of India, and Shri Wajahat Habibullah, former Secretary and Ms. Aditi Mehta, Joint Secretary, of the same department, for not only sponsoring the study but also regularly rendering all possible support;
- (ii) Dr. Roger G. Noll, Director, Stanford Centre for International Development (SCID), University of Stanford, United States, for making the study possible by way of according permission to Dr. Anjini Kochar, India Programme Coordinator of his university, to be directly associated with this assignment in its all aspects, including fieldwork, data analysis and report writing;
- (iii) Mr. M. Satyapal, Visiting Professor, CRRID, Chandigarh, for his valuable analytical and professional inputs to the study; and
- (iv) Mr. K B S Sidhu, Secretary, Rural Development and Panchayats, Punjab, Mr. Hussan Lal, Director of the same department, and their colleagues as well as the field staff for sharing their information on ground realities, in addition to providing the necessary cooperation.

I would also like to convey my sincere appreciation of the contribution made by the members of the faculty and administrative, library and computer staff of CRRID. Special mention may be made of Ms. Priti Real, Secretary-cum-Establishment Officer and Shri Rajesh Sharma, Project Administrative Officer, for facilitating the official obligations; Ms. Meena Jatana, Ms. Suman Khosla and library staff for making available reference material; and Shri Sanjay Gupta for processing the data. Dr. B K Pattanaik and Mr. Unmesh Rangnekar also deserve appreciation for their involvement at different stages of the study. Without the co-operation of all above, the timely completion of the project would have been unconceivable.

Above all, Dr. Anjini Kochar, Dr. Kesar Singh, Shri Sukhwinder Singh and Shri M Satyapal are to be congratulated for bringing out a study of such a splendid quality, incorporating valuable policy prescriptions. It is my firm belief that only a meaningful collaboration between serious researchers, supportive bureaucracy and pragmatic policy makers can fructify in such a document. The bottom line is that prestigious research organisations like CRRID and the world famous universities like Stanford must regularly collaborate in assignments of the present kind.

Dr. Rashpal Malhotra
Director General

Project Staff

Rashpal Malhotra	-	Director General
Anjani Kochar	-	Senior Fellow (SCID, Stanford)
M Satya Pal	-	Visiting Professor
Kesar Singh	-	Senior Research Fellow
Sukhvinder Singh	-	Senior Research Fellow
Anna Levine	-	Research Scholar (SCID, Stanford)
Harpal Singh Dhillon	-	Data Supervisor
Paramvir Singh	-	Field Investigator
Harpreet Singh	-	Field Investigator
Harpreet Singh	-	Field Investigator

Office Editor

Unmesh S Rangnekar

Administrative Staff

Priti Real	-	Secretary-cum-Establishment Officer
Rajesh Sharma	-	Project Administrative Officer
Sandipan Sharma	-	Accounts Officer

Computer Staff

Sanjay Gupta	-	Computer Programmer
Ashwani Sharma	-	Computational Assistant
Anita Gupta	-	Computational Assistant
Hem Singh Thakur	-	Data Entry Operator
Bindu Sharma	-	Senior Data Entry Operator
Jagtar Singh	-	Senior Data Entry Operator

Library Staff

Meena Jatana	-	Deputy Librarian
Suman Khosla	-	Publication Officer
Sukhwinder Singh	-	Library Assistant
Ashok Kumar	-	Library Attendant

Photostat

Shri Barham Singh

Contents

	Page No.
1 Introduction and Objectives of the Study	1-4
2 Review of Theoretical and Empirical Literature on decentralization of welfare and social sector programs	5-8
3 Local finance and Decentralization of social sector delivery in India and in Punjab	9-17
4 Survey Data: Characteristics of Villages and of Village Panchayats	18-23
5 Survey Data: Schooling Conditions	24-27
6 Theoretical Framework	28-38
7 Empirical Analysis of Infrastructural Investments in SC and other caste localities	39-45
8 Empirical Analysis of decentralized funding for schools and private schooling	46-51
9 Conclusion	52- 53
References	54-55
Tables	56-68
District-wise List of Selected Villages	I-III

CHAPTER 1

INTRODUCTION AND OBJECTIVES OF THE STUDY

Since the 1990s, the governments of many developing countries, including India, have decentralized the administration of social services and poverty programmes, entrusting local village governments with responsibility for funds intended for these investments. In many cases, this was prompted by the considerable inefficiency and waste of resources associated with centralized programmes. Such inefficiencies, it was believed, could be reduced if village governments were given control over the resources which mattered most to them. Yet, mindful of the possibility that decentralization may result in excessive “capture” by local elites, governments have, in practice, adopted a policy of limited decentralization, accompanying decentralization with central mandates which require a certain proportion of benefits from government funds to be provided exclusively to the poor and other targeted minorities.

Limited decentralization best describes the Government of India’s approach to the delivery of local public goods and poverty programmes. Decentralization of these programmes commenced with the passing of the 73rd Constitutional Amendment in 1992, which constitutional zed a three-tier system of local government, known collectively as the *Panchayati Raj Institutions* (PRIs). State governments were asked to ensure that the lowest tiers of this system, the Panchayats, or village governments, were vested with authority over social sector programmes. Most states have, since then, passed legislation to ensure that village governments are provided with sufficient funds from the state budget so as to enable them to function effectively.

However, this move towards greater decentralization has been accompanied by several measures, which constrain the freedom of village governments to choose the investments they want to support. First, funds provided by the central government are commonly subject to central mandates, which stipulate not just the distribution of funds across broad socio-economic groups of households, but also the purposes for which they can be used. Second, the 73rd Constitutional Amendment put into place a system of political reservations, which required one-third of the heads of village governments, the Sarpanch, to be women. Reservations were also put in place to ensure that scheduled castes (SC) were adequately represented amongst the Sarpanches; the proportion of SC sarpanches in a district had to be equal to the proportion of scheduled castes in the district population.

There is little evidence on whether such mandates deliver the equity objectives they were intended to achieve. While one would suspect that central mandates stipulating that some share of government investment directly benefit scheduled castes would generate an increase in such investments, their effectiveness may be reduced in several ways. It is possible, for example, that local governments respond to the increased level of transfers to scheduled castes by increasing the welfare weight on other caste households. This, in turn, would generate increases in incomes of other castes, a consequence of the mix of centralized and decentralized policies, which would make reductions in socio-economic inequality difficult to achieve.

This would be further heightened if the goods provided by governments are also available on a private market, which caters mainly to the non-poor. Any increases in household income of better-off other caste households might then increase their participation in the private sector, resulting in the use of public goods being confined to scheduled castes. This would further reduce investments in these goods.

This study provides empirical evidence on these issues. We start by examining whether central mandates increase investment in the goods they target, as well as their implications for other investment goods which do not fall under their purview. We then turn to our investigation of some of the trade-offs implied by central control over local funds. First, we examine whether the implementation of central mandates implies an efficiency cost, reflecting the inability of local governments to choose investments in response to local socio-economic and political conditions. To test the latter, we examine whether the system of political reservations for women and scheduled castes affects investment choices, for goods directly subject to central mandates, which stipulate how funds must be used, and for those which are not similarly controlled. Second, using schooling as our example, we examine whether “tied” funds, subject to central mandates, and untied funds differ in their implications for the growth of the private sector, and whether the existence of a private sector in turn affects local government financial support for schools.

There are few studies, which have investigated the determinants of expenditure allocations by village governments, and how they are affected by central government mandates and by economic conditions in the village economy. This is despite the fact that such research is essential for the design of effective policies. The lack of research in this area reflects the empirical difficulties in providing credible estimates of the effect of any given policy. Researchers frequently use a before-and-after methodology, which compares outcomes of interest before and after a policy change. However, this procedure confounds effects attributable to the regime change with effects caused by variation over time in other macro-economic parameters. An alternative approach exploits cross-sectional variation in the degree of centralization/decentralization across jurisdictions. However, this requires some treatment of the endogeneity of this choice: variation in the extent of adoption of the policy is likely to reflect unobserved socio-economic attributes of the community. If so, any identified effect may only be reflecting the influence of these attributes, rather than the effects of the policy per se.

Conditions in the North Indian state of Punjab provide a rare opportunity to credibly evaluate the equity effects of fiscal decentralization of social sector policies, and hence to substantially improve their design. Punjabi villages have access to significant funds of their own, through income earned from Common Property Resources (CPRs). In contrast to central government funds, which are accompanied by mandates stipulating how they can be spent, village governments have complete autonomy over funds from CPRs. This generates “untied” funds at the disposal of the village government, whose effects can then be contrasted with those of the “tied” funds provided by the central government, enabling a study of the relative merits and demerits of centralized versus decentralized control over expenditures.

Comparisons of the effect of decentralized and centralized funds are few, primarily because decentralized funds over which local governments have control commonly emanate from local taxation. Because decisions regarding how much to tax and who to tax are endogenous,

reflecting economic conditions within the village, interpreting the effect of local tax revenue on expenditure allocations is difficult. In contrast, income from historically owned common property resources represents an exogenous source of income.

Using village-level variation in access to untied funds and to funds provided under central government programmes, we find that central government mandates do bind the decisions of local governments, increasing investment in scheduled caste communities. This suggests that central government mandates, and the ensuing limitation on expenditure decentralization, are necessary to increase investments in scheduled caste habitations. However, we also find that these mandates increase investment in other caste habitations as well. This limits the overall effect of mandates on socio-economic inequality within the village.

We also show that central mandates limit the functioning of local democracy and the ability of local governments to choose an expenditure pattern which responds to local economic decisions: Central government mandates limit the effectiveness of the system of political reservations.

In our analysis of the private sector and its effect on the functioning of village governments, we focus specifically on schooling outcomes. We show that while government income increases the proportion of children enrolled in government schools, income over which local governments have less control do not have a similar effect. And, we show that the proportion of students in government schools is an important determinant of the willingness of the village Panchayat to provide financial support to government schools: the increased privatization of schooling reduces local support for government schools. Thus, the very policies which are intended to enhance equity within the village economy also cause changes which increase inequality through other means.

The policy implications we draw from our study are the following. First, it is unclear whether central mandates, which require a certain share of income from central government programmes to be spent on scheduled castes, achieve their objective of reducing existing levels of inequality within a village. While they increase investments in scheduled caste habitations, they also increase investments in other caste areas. A full treatment of the effect of central mandates on inequality within the village would, however, require an analysis based on household data on the effect of each of the investments supported by local governments on household wealth. Lacking household data, our analysis in this area is suggestive, needing to be confirmed through research based on household data.

Second, central mandates reduce the effectiveness of the system of political reservations, put in place by the government to ensure that the decisions of local governments also reflect the preferences of women and scheduled castes. Thus, one set of policy measures intended to achieve equity objectives (specifically, central mandates), reduce the effectiveness of a second set of measures (political reservations) intended to have a similar effect. Combined with the ambiguous direct effects of central mandates on equity, as discussed above, this constitutes an additional reason to eliminate such mandates.

Finally, we turn to the implications of our analysis that the growth of the private sector reduces local financial support for government schools, and hence their quality, and that this in turn

primarily affects scheduled castes and the poor. Many state governments are currently actively supporting the private sector, given fiscal constraints which limit their ability to devote significant resources to government schools, health services and other public goods. The negative effect of the private sector on village Panchayats' financial support for government schools suggests that an economy which supports both private and government schools could enhance existing socio-economic inequalities.

In our empirical work, however, we find a strong positive effect of government income on the funds provided by village *Panchayats* to government schools, and on the decision of households to choose government schools. This again suggests that eliminating central mandates which require the village government to fund investments which benefit only scheduled caste households may generate offsetting improvements in government schools and hence in the income of scheduled castes, because a reduction in these mandates would increase the "untied" income at the disposal of the village Panchayat, which could then be spent on schools. It also suggests that mandates which support investment in public goods which are local to the village, rather than those which benefit only scheduled castes, may have a larger effect on the welfare of scheduled castes, both because of their direct effect on school resources, but also because it tends to bring village elites back to government schools, thereby eliminating some of the social segregation between castes which currently exist. Reduction in social segregation, it is widely believed, will be critical if the policy of decentralized control over public goods is to be continued and strengthened.

In short, our study provides several reasons to question the policy of central mandates, which require funds to be spent specifically on scheduled castes. Instead, we would recommend that central mandates should be geared towards ensuring sufficient investment in public goods which are local to the village, such as government schools, which benefit all members of the village.

The remainder of this report is structured as follows. Chapter 2 reviews the theoretical and empirical literature on decentralization of welfare and social sector programmes. Chapter 3 turns to the Indian context, describing social sector policies in India and, more specifically, in the state of Punjab. It details these policies, focusing on the extent to which they are governed by central mandates and the role they assign to village governments. Chapter 4 describes the survey data, providing summary statistics on socio-economic characteristics of the village, on the income and expenditure of village panchayats, Chapter 5 repeats this discussion for schooling conditions. Chapter 6 discusses the theoretical framework, which underlies the empirical analysis of our study. The empirical methodology and results from the analysis of the effectiveness of central government mandates are presented in Chapter 7, while chapter 8 does the same for schooling outcomes, focussing on the role of the private sector. Chapter 9 concludes.

CHAPTER 2

REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE ON DECENTRALIZATION OF WELFARE AND SOCIAL SECTOR PROGRAMMES

Theoretical Literature

Historically, the welfare and social sector policies of developing economies have exhibited a very limited degree of decentralization. This policy bent has primarily been justified on equity grounds. Decentralization has commonly been associated with increased inter-regional inequality. For example, decentralized schooling systems in which schooling expenditures are locally financed or managed forge a correlation between school quality and the level of wealth in a community. This can generate persistence in the inter-regional income distribution, since wealthier communities will be characterized by better endowed schools (Bénabou 1996). Higher levels of adult schooling in these communities may also generate inter-community differences in the management of schools.

Decentralized systems may also exacerbate intra-community inequality, particularly in developing economies where limited residential mobility results in highly heterogeneous communities. High intra-community inequality in socio-economic status may make it difficult to agree on which public goods to support or on the appropriate level of investment (Alesina et al, 1999). This is likely to hurt the poor more than it does wealthy households, because the former cannot afford private alternatives to public goods, such as private schooling and private health care. The devolution of control over development funds to village governments may also result in their “capture” by local elites, and their subsequent diversion towards projects, which primarily benefit the wealthy (Bardhan and Mookherjee 2000).¹ Capture of public funds may be less in centralized systems which limit the authority of local elites, or if decentralization is accompanied by a system of centralized mandates which ensures an equitable distribution of funds.

In developing economies, the argument for fiscal decentralization, or the devolution of control over expenditure and resources to local governments, is generally made on productivity grounds.² Centralized programmes are widely associated with low productivity, primarily because the inability to monitor end-use of funds lends itself to high levels of waste and corruption, including high rates of absenteeism by teachers and health-service providers (Wade 1997, Drèze and Sen 1995). Moreover, the uniformity of centralized policies makes it difficult to write contracts, which ensure appropriate levels of effort by social service providers. Requiring communities to bear some part of the financial and time costs of managing social sector policies is thought to be the most effective way of improving productivity.

¹ This argument was made by Ambedkar in his colourful commentary on Indian villages: “I hold that these village republics have been the ruination of India. I am, therefore, surprised that those who condemn vincialism and communalism should come forward as champions of the village. What is a village but a stink of localism and a den of ignorance, narrow-mindedness and communalism?” (B.R. Ambedkar, quoted in H.D. Malaviya 1956, p. 258).

² The *World Development Report 2004*, entitled “Making Services Work for Poor People,” contains numerous examples of the low productivity of centralized social services in developing economies and makes the case for decentralized control (World Bank, 2004).

Advocates of decentralized policies suggest that their potential to enhance productivity may even redress existing levels of intra-community inequality. This view reflects the widespread belief that centralized decision making, because it generates expenditure priority and hence allocations which diverge from those desired by the local population, will increase the demand for private services. This effect will be exacerbated if centralized control reduces the quality of local public goods such as schools, because of the inability of such a system to effectively monitor schooling inputs, including teacher's time. If the costs of the private sector limit its use by the poor, then centralization-induced increases in private schooling may heighten intra-village economic inequality. Under these conditions, it is believed that the potential to control public goods may induce wealthier households to return to the public sector, further improving its quality and reducing socio-economic divides within the village.³

Recognizing the failure of centralized policies, but hesitant to fully embrace fiscal decentralization, most governments have modified their centralist policies to allow some level of local government involvement, generally in the form of oversight and monitoring of central government funds.⁴ The effectiveness of such tightly controlled experiments in fiscal decentralization in achieving productivity or equity objectives is an empirical question. There is little theoretical guidance on whether combining central mandates with decentralized oversight can maintain the levels of equity which might be obtained under a purely centralized system.⁵ Similarly, theory provides little guidance on whether centralized funds combined with decentralized oversight can produce the same level of productivity as can a system which relies on community funds and control.

Empirical Evidence

The theoretical ambiguity of the effect of decentralization on social outcomes suggests that an understanding of its benefits and costs requires empirical research. Despite the need, there is little empirical evidence on these issues, particularly for developing economies. This reflects the inherent difficulty in identifying the effects of a given policy, since the policy normally affects all households in the economy or region under study. This limits the variance in the variable of interest, variance, which is essential for the econometric evaluation of any program.

Much of the empirical work on the effect of social sector policies examines the effect of different systems of school finance in developed economies such as the United States, exploiting changes

³ This argument for fiscal decentralization is commonly voiced in policy debates. For example, the decision to decentralize schools in South Africa was heavily influenced by the argument that the failure to do so would induce elites to pull their children out of the public school system and to enroll them in private schools, thereby reducing support for public schools and other welfare programmes (Fiske and Ladd 2003). The Report of the Punjab Expenditure Commission, 2002, also notes that "with the ongoing polarisation of the education system into public schools and private schools, the quality of education is also getting polarised. The segments of the population that can assert for their rights and thereby ensure a reasonable quality of education for their wards are moving away from the public education system. In order to bring accountability back into the performance of the teachers and schools, it is therefore essential that the schools be managed by the people who benefit from the schools - the local bodies, where the parents have a larger say (pp. 50-51).

⁴ Mexico's well-known Progres program provides one example of such an approach. Disbursal of program funds is in the hands of local governments. However, the central government determines the level of funding to individual beneficiaries, the eligibility of households to the benefits of the program, and the conditions that must be met to receive funds. The central government also decided which regions of the economy were first eligible to participate in the program.

⁵ Indeed, recent research suggests that even the traditional association of centralization with improved equity and decentralization with enhanced productivity may be overly simplistic (McKinnon and Nechyba 1997); if local elites can usurp central government funds when given control over their use, they may also be able to circumvent any mandates which accompany these funds.

in policy over time as well as the cross-sectional variation in policies across the different states of the country. For example, Downes (1992) compares schooling achievements before and after the implementation of legislation fostering centralization of school funding in California. He finds little effect of changes in school finance on student achievements. In an alternative approach, Hoxby (2000) examines the effect of greater competition across schools on public school quality. Because decentralization is generally associated with increased choice amongst schools and hence with more competition, her results provide some evidence of effects of decentralization on school quality.

Studies which examine the effects of decentralization using data from developing economies are few, but growing rapidly in number. Much of the initial work in this area concentrated on the analysis of schooling policy, primarily evaluating the effect of expenditure and administrative decentralization in the form of the transfer of school management to communities or parent associations (Jimenez and Sawada 1998, King and Ozler 1998, Eskeland and Filmer 2000, Galiani and Schargrodsky 2002). The results are mixed: administrative decentralization appears to have improved student test scores in some cases (Argentina, studied by Galiani and Schargrodsky), but has generated no significant change in others (El Salvador, studied by Jimenez and Sawada).

These studies generally compare the performance of decentralized schools to “traditional” schools or, in the case of a change in the entire educational system in the country as in Argentina, outcomes before and after the policy change. As such, the estimates they generate are non-informative, in that they do not separately identify effects on schooling through a “schooling production function” from those caused by the effect of the schooling policy on school choice decisions, household decisions regarding investments in children, and a number of other confounding determinants of schooling. For example, Galiani and Schargrodsky (2002) examine the effect of Argentina’s experiments in school decentralization, by exploiting differences in the timing of the transfer of responsibility for schooling from the central to provincial governments across Argentina’s provinces. As they note, however, cross-sectional variation in the date of initiation of decentralized policies may not be wholly exogenous; it may also reflect unobserved time-varying characteristics of the province in question, characteristics which may directly affect schooling outcomes. To control for this, Galiani and Schargrodsky implement a “difference-in-difference” estimator, which compares enrollments across public and private schools, on the assumption that outcomes in private schools were unaffected by the decentralization of schooling. This assumption is at odds with a theoretical literature which argues that decentralization can have substantial effects on the schooling community.⁶

A widely cited study of the effect of decentralization is Faguet’s (2004) analysis of the Bolivian experience. The Bolivian Government announced a massive decentralization programme in 1994, whereby the share of national tax revenues devolved from the central government to municipalities doubled. Along with this, title to all local health, education, roads, irrigation, culture and sports infrastructure was transferred to municipalities, along with the responsibility to administer, maintain and equip it, as well as to invest in new infrastructure. In the process, 198 new municipalities, 64% of the total, were created. Faguet examines total investment, and its

⁶ Galiani and Schargrodsky do attempt to provide support for their assumption that decentralization does not affect school choice. However, in so doing, they are unable to control for any spurious correlation between their indicator variable for decentralization and unobserved determinants of school choice which are omitted from the regression equation.

composition, changed after 1994, while controlling for state and year level effects. He also takes the difference in state level effects before and after 1994, and sees if the change in expenditure patterns was related to “local need,” such as local literacy rates, the share of the population without water and sewerage, etc. He finds that decentralization significantly changed public investment patterns in Bolivia, increasing investment in education, water and sanitation, water management, agriculture and urban development. He also finds that these shifts are strongly and positively related to real local needs.

Following India’s 73rd constitutional amendment (1992) which constitutionalized a three-tier level of local government in India and devolved responsibility over the delivery of social services including poverty programs to village governments, several researchers have examined the effect of this institutional change on a variety of outcomes. Chattopadhyay and Duflo (2003, 2004) examine political decision making by village governments, focusing particularly on the issue of whether central mandates which require participation in village governments by women and members of the scheduled caste succeed in affecting the allocation of government expenditures at the village level. Their study, however, does not examine issues relating to fiscal decentralization, such as the productivity of internal resources relative to those obtained from the central or state governments.

Foster and Rosenzweig (2002) use data on 261 villages distributed across the Indian economy for the years 1981 and 1999 to examine the effects of democracy and fiscal decentralization on investments in local public goods (schooling, irrigation, and roads). To do so, they create village indices of democratization (whether the village has undergone two or three stages of legislation affecting local democracy) and fiscal decentralization (whether the state had established a tax commission in the given year). They find that both democracy and fiscal decentralization do affect the choices of public goods in village economies. However, the indices they use provide only very crude measures of the extent of fiscal decentralization or democratization, rendering it difficult to interpret their results. Moreover, as in the Galiani and Schargrodsky study, the authors are unable to fully account for any unobserved variation in other determinants of village level investments which also vary across states and across time.

CHAPTER 3

LOCAL FINANCE AND DECENTRALIZATION OF SOCIAL SECTOR DELIVERY IN INDIA AND IN PUNJAB

The Government of India has long embraced the goals of universal elementary schooling, access to quality health services and reductions in poverty. However, its progress towards these goals has been slow, and has been hampered by lack of adequate resources, particularly since the fiscal crisis which affected both central and state governments in the early 1990s. Low revenues have forced reductions in social sector spending. For example, though an Expert Committee charged with the responsibility of devising a centrally sponsored scheme to ensure universal elementary schooling⁷ estimated that this would require Rs. 1,37,000 crores over a ten year period, lack of financial resources required the government to trim back the programme, so that it entailed an investment of only Rs. 63,000 crores (Rani 2004).

India's low resource base has led many to opine that needed investments in social sectors can only be forthcoming if communities are required to raise some part of the needed resources (Singh 1997). The potential to mobilize community resources was created by the political decentralization initiated by the Government in the early 1990s. The 73rd Constitutional Amendment, enacted in 1992, constitutionalized the establishment of a three-tier structure of governance below the level of State Governments, the *Panchayati Raj Institutions (PRIs)*. The Constitutional provisions devolved administrative responsibility for the preparation of plans and programmes for economic development to the PRIs.⁸ It also recommended fiscal decentralization, in the form of both expenditure decentralization and revenue decentralization. PRIs were to be given control over the expenditure of funds provided by central and state governments in the areas under their control. Further, each state was required to set up a State Finance Commission which was to recommend how to make the PRIs financially viable. Specifically, the State Finance Commissions were to recommend the assignment of taxes across the different tiers, the sharing of revenue proceeds, and transfers from one level of government to another.

A recent survey by the World Bank (2000) of six states (Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh), however, found the extent of fiscal decentralization to be extremely limited. The survey revealed that the total share of revenues and expenditures that accrue to PRIs as a percentage of all state revenues and expenditures ranges from about 1% to 4%. Decentralization to village governments, known as *Gram Panchayats*, is particularly weak; the share of *Gram Panchayats* in total government expenditures in rural areas amounted to only 0.6% in Rajasthan, 0.7% in Maharashtra, 1.3% in Andhra Pradesh, and 1.5% in Uttar Pradesh. Similarly, expenditure at the *Gram Panchayat* level in Rs. per capita was as low as Rs. 33 in Rajasthan and Rs. 42 in Maharashtra. The best performance was recorded by Kerala, but even these figures were low (7.6% of total government expenditures, and Rs. 505 per capita).

⁷ The *Sarva Shiksha Abhiyan*, described in more detail later in this section.

⁸ Specifically, PRIs were given authority over 29 subjects listed in the Eleventh Schedule. These included poverty alleviation programmes, primary and secondary schools, health and sanitation (including hospitals, primary health centres and dispensaries), family welfare, women and child development, the Public Distribution System, Welfare of the weaker sections and in particular of the scheduled castes and tribes, rural housing, drinking water, local infrastructure.

Similarly, revenue decentralization remains low. Panchayats raise only a very small share of their total income from their own resources (varying from 6% in Rajasthan to 19% in Madhya Pradesh). PRI's tax and non-tax own income per capita of rural population ranges from Rs. 6 per head in UP, to Rs. 50 to 60 per head in Maharashtra, Madhya Pradesh and Andhra Pradesh, and Rs. 110 per head in Kerala.

PRIs remain primarily dependent for income on grants from the central government and sometimes from the state government. One such source of income is transfers prescribed the Central Government's Finance Commission. The 11th Finance Commission, in 2000-01, recommended grants from the central government to supplement the resources of PRIs. Grants under this scheme are, however, restricted in their use: they are to be utilized for provision of primary education, primary health care, safe drinking water, street lighting, sanitation (including drainage and scavenging facilities), maintenance of cremation and burial grounds, public conveniences and other common property resources. The 12th Finance Commission has continued this scheme, recommending grants of Rs. 324 crores for the period 2005-10, to supplement the resources of PRIs

In addition to transfers from the Central Government authorized by the Finance Commission, village *Panchayats* also receive a large part of their income from what are known as Centrally Sponsored Schemes (CSS). Most of these funds, too, are subject to central mandates which either dictate who the beneficiaries are to be, or the use to which such funds are to be put. In the paragraphs below, we review the details of the major centrally sponsored schemes in operation in villages in Punjab, highlighting the role they envisage for local village governments

Education - Sarva Shiksha Abhiyan

In 2000, the Central Government combined its various education initiatives under an umbrella scheme, the *Sarva Shiksha Abhiyan (SSA)*, with the objective of ensuring universal enrollment of all elementary school-age children by the year 2010. Financial assistance provided under SSA was on the basis of an 85:15 sharing arrangement between the Central and State Government for the last year of the 9th Plan (2001) and on a 75:25 basis during the 10th Plan. Thereafter, it was envisaged that state governments would increase their contribution, moving to a 50:50 sharing rule. All State Governments were required to maintain their level of investment in elementary education as in 1999-2000; their contribution to SSA has to be over and above this base-line investment.

The SSA substantially increased the resources for elementary schools in the country. State governments were provided with funds, which were subsequently to be devolved to lower levels of administration at the district, block and cluster level. A significant component of these funds remained at these three levels, since they were ear-marked for purposes such as teacher training, upgradation and construction of block and cluster resource centres, and overall administration. However, some component of these funds directly reached individual schools, in the way of allocations for the appointment of teachers, construction of classrooms and school buildings, maintenance and repair of school buildings, the replacement of school equipment, and for teaching-learning equipment.

The allocation of funds to schools was based on well-specified targets for critical inputs. SSA required one teacher to be provided for every 40 children in Primary and Upper Primary Schools, and required every school to have a minimum of two teachers. The provision of Central Government funds for teacher recruitment was based on *district level* pupil teacher ratios (PTR); additional teachers were allowed under SSA only in the case where the PTR in the District was above 40:1, though an additional allowance was available to satisfy the requirement that there be a minimum of 2 teachers in primary and 3 in upper primary schools. Similarly, each school was to have a classroom for every teacher in primary and upper primary school, and a room for a head master in upper primary schools. The distribution of these funds across schools thus varied with their existing infrastructure, as of 2002. In addition, each elementary school (regardless of its enrollment) was provided with a "School Improvement Grant" of Rs. 2000 per year for the replacement of non-functional school equipment. And, there was an additional annual allowance for the purposes of maintenance and repair of school buildings. As of 2004-05, a maximum of Rs. 4,000 was available for schools with up to three classrooms, while schools with more than 3 classrooms would receive a maintenance grant up to a maximum of Rs. 7,500 per year, subject to the condition that the overall eligibility for the district would be Rs. 5,000 per schools. However, this last allowance required a specific proposal by the school committee, as well as the contribution of some funds by the community.

Additionally, SSA also provided funds for civil works, up to a ceiling of 33% of the entire project cost. While these funds could be used for the construction of Branch and Cluster Resource Centres, they were also to provide for the improvement of school facilities. Specifically, SSA envisaged that every primary school would have drinking water and toilet facilities. For those which did not, facilities were to be constructed using the budget for civil works (with the average cost being fixed at Rs. 15,000 and Rs. 20,000 for toilets and drinking water facilities respectively). The items which could be financed under the civil works budget were, however, delineated, and comprised: new school buildings, additional classrooms, rooms for headmaster, toilets, drinking water facilities, boundary wall in "extreme cases", separation wall, electrification, child friendly elements, BRC, CRC. It also stated which civil works would not be covered: playgrounds, etc.

To ensure the involvement of the community and to enhance administrative decentralization, all SSA funds which were to be spent at the level of the school - such as funds for the upgradation, maintenance, and repair of schools, and for teaching learning equipment - were placed in the hands of the Village Education Committee or the equivalent organization, the School Management Committee. Additionally, any construction under the Civil Works budget was to be carried out by these institutions.

While this suggests some measure of control by village residents over schooling funds, in practice funds are provided to VECs only for specific purposes, such as for the construction of a specified number of classrooms or toilets. As such, VECs serve only as the vehicle to disburse funds for schooling investments specified by the central government.

The policy of entrusting SSA funds to VECs suggests some separation from the Village Government. However, such separation does not exist in practice. The VEC normally comprises

8 members, of which two must be from the Village Panchayat.⁹ Though the Chairman of the VEC is to be elected from the members (excluding the headmaster), in practice this position almost invariably accrues to the head of the village government, the Sarpanch. The Sarpanch thus oversees the spending of central (and state) government funds on schooling. And, though the village Panchayat is not required to provide funds for schools, SSA documents maintain that the Panchayat can contribute to the costs of any project, should the community feel that SSA funds are insufficient. For example, the Panchayat could choose to provide additional funds for school maintenance and repairs, over and above the maximum of Rs. 5000 per year permissible under SSA rules.

Rural Employment Programmes – the Sampoorna Grameen Rozgar Yojana

The *Sampoorna Grameen Rozgar Yojana (SGRY)* is an umbrella scheme with the goals of ensuring rural employment, food security and the development of community assets and infrastructure. Initiated in September 2001, it merged the existing employment scheme, the Employment Assurance Scheme with the prevailing scheme for the development of village infrastructure, the Jawahar Gram Samridhi Yojana (JGSY). SGRY is a Centrally Sponsored Scheme, with the Central and State governments sharing its cash component on a 75:25 basis. Foodgrains, to be used for wage payments in kind, are provided by the Centre to the states free of cost.

Under the programme, 10% of total funds are retained in the Centre to meet emergency needs arising from severe weather and other conditions. The remaining 90% of funds are allocated to the states on the basis of the proportion of the rural population in a state to the total rural poor in the country. This same rule is used to determine the allocation of foodgrains. The state quota is then divided across districts, on the basis of two equally-weighted criteria, the proportion of SC/ST population in the district and the inverse of agricultural production per agricultural worker.

Initially, SGRY was implemented in two “streams.” The First Stream represented that part of the programme implemented by the District and Intermediate Panchayats. 50% of the state allocation of funds and foodgrains were provided under the First Stream, to be distributed between the Zilla (district) Parishad and the Panchayat Samiti (Intermediate or block Panchayat) in the ratio of 40:60. Funds provided to the Zilla (district) Parishad were reserved for use at the District level. It was expected that district governments would use these funds preferentially in areas suffering from endemic labour exodus/areas of distress. The 60% of first stream funds provided to the intermediate level Panchayat (Panchayat Samitis) were to be allocated across these panchayats on the basis of their share of the rural population in the district, and the proportion of the SC/ST population. Panchayat Samitis were free to select the work to be taken up, with preference being given to areas that are backward, calamity prone or characterized by significant out-migration of labour.

However, the guidelines required 22.5% of the annual allocation of the District and Intermediate Level Panchayats to be spent on individual schemes for SC/ST households living

⁹ In Punjab, in addition to the 2 Panchayat members, two members are from the Parent Teacher Association, one is an Ex-serviceman, one is a retired headmaster and the last is a donor or NRI. In addition, the headmaster or mistress of the school serves as the Secretary.

below the poverty line. Moreover, the Government issued a list of “suitable” projects¹⁰, as well as a priority list for the projects which could be financed out of SGRY funds. Priority was to be given to water and sanitation projects, such as projects for soil and moisture conservation, minor irrigation, rejuvenation of drinking water sources and augmentation of ground water, traditional water harvesting structures, and other watershed development schemes. Projects financed under SGRY had to be labour intensive, and had to be such that they could be completed within a two year period. .

Village Panchayats only had control over the remaining 50% of funds and foodgrains, the “second stream” of the SGRY. These funds were distributed to Village Panchayats through DRDAs/Zilla Parishads. From 2002-03 onwards, total funds were to be uniformly distributed across panchayats, with the initial recommendation that each panchayat should receive a minimum of Rs. 50,000.

Village Panchayats were free to choose investment projects, as long as the cost stayed within the allocated budget. As for higher level governments, village governments were issued a priority list which emphasized the need for investment in water and sanitation projects, and in community infrastructure such as primary schools, health centres, and link roads. Discretion in the choice of investments was further limited by the stipulation that only labour-intensive projects, which did not require any technical expertise beyond that available in the village, and which could be completed within a two year time-frame, were to be selected. The role of the village Panchayat, then, was essentially to monitor the use of funds provided under the programme.

In addition to restrictions on the types of projects, which could be taken up, SGRY funds provided to village governments also came with a mandate requiring a certain minimum level of expenditure on scheduled caste households. Of funds distributed directly to village governments, a minimum of 50% was to be ear-marked for the creation of need based village infrastructure in SC/ST habitations.

From 2004-05 onwards, the programme was changed to an integrated scheme, rather than being implemented as two separate components, as represented by the first and second stream. However, the division of funds between the three levels of the Panchayati Raj Institutions remained the same: 50% of funds were supplied to the Gram Panchayats, 30% to the Panchayat Samitis on the basis of population (SC/ST and total population), and 20% to the Zilla Parishad on the basis of priority of works.

Rural Housing: Indira Awaas Yojana (IAY)

The Indira Awaas Yojana (IAY) is a centrally sponsored scheme, initiated in 1985-86, initially as a sub-scheme of the infrastructure development programme, the Jawahar Rozgar Yojana. Since 1996, it has operated as an independent scheme.

¹⁰ These included: the development of allotted government land; social forestry; agric-horticulture, floriculture, etc on private lands belonging to SCs/STs’ work sheds or infrastructure for any self-employment programme; open irrigation wells; pond excavation; other sustainable income generating assets. Construction of religious buildings, bridges, higher secondary schools and colleges were not allowed.

The IAY is a completely “tied” scheme, in that the funds it provides are to be utilized only for the construction or improvement of homes by members of scheduled castes/tribes, freed bonded labourers and also non-SC/ST rural poor with consumption levels below the poverty line. The scheme heavily favours scheduled castes, in that it imposes the requirement that at least 60% of the total IAY allocation during a financial year must be utilized for the construction of dwelling units by members of scheduled castes and tribes. Apart from stipulating the purposes for which funds can be used, and setting quotas for intended beneficiaries, the scheme also specifies the amounts to be provided to each beneficiary: Rs. 25,000 is provided for the construction of a new house, while Rs. 12,500 is available for the upgradation of temporary (“semi-kutchra”) to permanent (“pucca”) structures.

Funds for the scheme are jointly provided by the central and state government in the ratio of 75:25. Allocation of funds under the IAY to the states is made based on the basis of two criteria, which are given equal weightage: poverty ratios, as determined by the Planning Commission, and the extent of a housing shortage in rural areas as revealed in the Census. State-level funds are subsequently distributed to the districts on the basis of the proportion of the SC/ST population in the district. The identification of beneficiaries of the scheme is to be conducted by the Gram Sabha from the list of eligible households according to the IAY guidelines. The construction of the house is the responsibility of the beneficiary.

Member of Parliament Local Area Development Funds (MPLADF):

This scheme constitutes an important source of funds for village governments. It was initiated in 1993 to enable members of Parliaments to directly invest in villages within their constituencies. Under the scheme, each elected member of the Lok Sabha can suggest developmental works to be executed in his constituency, with the restriction that expenditure on each project not exceed Rs. 25 lakhs (as of May 2000), up to a total expenditure of Rs. 2 crores each year. Elected members of the Rajya Sabha can choose one or more districts for this purpose from the state from which they were elected, and recommend projects for investment.

While these funds provide an important source of income to village Panchayats, the projects which they finance are chosen by the concerned Member of Parliament; village Panchayats have no discretion at all over the use of these funds. They are, as with other central government schemes, given the responsibility for monitoring the progress of the project, in that the funds are placed under their control and they are given responsibility for ensuring the completion of the project.

The Situation in Punjab:

The state of Punjab enjoys the distinction of being amongst the most prosperous states of India; in 2000-2001, its per capita state domestic product was Rs. 25,048, the highest amongst India’s major states, and far higher than the national average (Rs. 16,707). Despite this high level of income, Punjab’s record in the area of human development and social welfare is weak. Of India’s states and union territories, Punjab ranked 12th (1991) in the value of its Human Development Index.¹¹ In access to rural health sub-centres, Punjab was ranked last amongst the

¹¹ These data are Centre for Research in Rural and Industrial Development, 2002.

major states. Literacy levels in the state (2001) are close to the national average (69.9%, relative to a national average literacy rate of 65.4%), and enrollment of children between the ages of 6 to 14 is *below* the national average (73.42%, versus an average of 81.58% in 2001). Punjab's low achievement in social sectors comes despite the fact that it spends more on social sectors than do most other comparable states, a clear indication of the low productivity of these expenditures.¹²

Fiscal decentralization

Fiscal decentralization of social sectors is considered by many to be necessary for improving social sector productivity. The Punjab Government has stated its commitment to implement the 73rd Constitutional Amendment, and has initiated the move towards decentralization with changes in the social sectors.¹³ Towards this end, the Government has convened two State Finance Commissions, which have made recommendations regarding the requirements to enhance the financial autonomy of PRIs. The First Punjab Finance Commission recommended that 20% of the net proceeds of five taxes (stamp duty, Punjab motor vehicles tax, electricity duty, entertainment tax and cinematograph tax) be transferred to Panchayati Raj Institutions (PRIs), a recommendation which the State Government adopted, with effect from 1 January 1997.

However, the Government's ability to invest in social sectors, and to finance PRIs, has been severely restricted by its poor fiscal condition. The state fiscal deficit,¹⁴ at 5.8% of SDP in 2001-02, has averaged 5.25% between the years 1985-86 to 2001-02, reflecting the slow growth of tax receipts. With sluggish receipts, capital investments have been reduced, falling from 6% of GSDP in 1985-86 to as low as 0.23% in 1996-97. Currently, capital expenditures amount to approximately 2.29% of GSDP (2000-01). As a consequence of its poor financial position, the state, since 1996-97, has failed to maintain its commitment to devolve a certain percentage of its tax revenues to PRIs. PRIs have therefore accumulated a shortfall of Rs. 380.81 crores over a 5year period.

Local Governments could, of course, raise revenue through local taxes. At present, the only tax being collected by the Gram Panchayat is a tax on residential buildings (commonly referred to as the House Tax). While village governments in many of India's other states earn revenue from taxes on land and non-residential buildings, from taxes on professionals, and from stamp duties (for the sale or registration of property), none of these local taxes or duties exist in Punjab. Similarly, the intermediate level Panchayats, the Panchayat Samitis, are not levying any tolls, fees or rates, except for a toll in respect of ferries. The Zilla Parishads have not been authorized to levy any tax, duty, toll or cess etc., by the State Government.¹⁵

Village or Gram Panchayats currently derive revenue from the following sources: House Tax (0.58% of total revenues in 1999-2000), from their share of taxes as per recommendations of the State Finance Commission (9.39%), from Centrally Sponsored Schemes (47%), and from the

¹² In 1999-2000, Punjab's per capita expenditure on education was Rs. 639, compared to Rs. 353 in AP, Rs. 521 in Karnataka, Rs. 580 in Tamil Nadu. Per capita expenditures on health were Rs. 263, compared to Rs. 170 in AP, Rs. 171 in Karnataka and Rs. 184 in Tamil Nadu.

¹³ Specifically, the Government has stated that it will initially entrust PRIs with responsibility in four areas: health; education; welfare of scheduled castes and tribes; and social security, women and child development.

¹⁴ Here defined as revenue receipts, minus the sum of revenue expenditure, capital outlay and net loans and advances by the state government. All figures are from Government of Punjab (2002).

¹⁵ Government of Punjab, Department of Finance, Memorandum to the Twelfth Finance Commission, 2003.

Member of Parliament Area Development Fund (3.95%). Unique to Punjab and to Haryana, a primary source of the funds of village governments are income from Common Property Resources, primarily Panchayat land referred to as *Shamlat deh*. The genesis of *Shamlat deh*, is the Punjab Village Common Lands (Regulation) Act of 1953, the Pepsu Village Common Land (Regulation) Act of 1954, and the Punjab Village Common Land (Regulation) Act of 1961.¹⁶ These acts legislate the authority of village *Panchayats* to manage common property resources, including *Shamlat deh*, and to derive income from them to be used for the welfare of the community as a whole.

In 1999-2000, for the state as a whole, income from Panchayat land (30%) and from other Panchayat assets (fish ponds, shops), accounted for 37% of the revenue of the Gram Panchayat. Because the State and Central Governments place no restriction on the use of funds earned from Panchayat assets, they comprise a completely “untied” source of funding. In contrast, most of the funds obtained from Centrally Sponsored schemes are tied: the Panchayat can freely determine the use of only those funds obtained from the second stream of the SGRY. Here, too, investment has to be constrained to labour-intensive projects which can be completed within two years.

Administrative decentralization

In terms of administrative decentralization, the Punjab Government enacted the Punjab Panchayati Raj Act, in 1994, in accordance with the recommendations of the 73rd Constitutional Amendment (1992), establishing a three tier Panchayati Raj system with elected bodies at the village, block and district levels. Initially, the state government declared the transfer of 6 departments to the PRIs. These included the following departments: social security, women and child development; welfare of scheduled castes and backward classes; public health; rural development and panchayati raj; health and family welfare; and (elementary) school education. In most of these areas, however, the government has minimal control over the actual allocation of funds; its authority is generally restricted to a monitoring position. For example, Government documents describe the responsibilities of the Gram Panchayat as regards the SGRY as follows: “Preparation of Annual Plan and Implementation of scheme under stream 2 guideline.” Similarly, for schooling, the duties of the GP are described as follows: “checking the presence of teacher and ensure their presence in gram sabha meeting.” In actual practice, the Government perceives the main role of the GP in the administration of poverty alleviation programmes to be the selection of beneficiaries for individual-based programmes, such as the Indira Awaas Yojana, and other programmes such as the Old Age Pension scheme and the Balika Samridhi Yojana.

Private provision of public goods

As noted in the previous section, a primary concern regarding fiscal decentralization is that any productivity gains may be more than offset by adverse effects on equity, if decentralization provides local elites with the opportunity to divert funds away from public goods and welfare programmes which primarily benefit the poor. Such concerns are particularly acute in Punjab,

¹⁶ The latter is commonly referred to as the *Shamlat law*.

because of the considerable privatization of social services, which the state has witnessed in recent years.¹⁷

By 1994, Punjab (20%) ranked second only to Uttar Pradesh (27%) in terms of the proportion of students in the 6 to 14 age group enrolled in private schools. Data from the Directorate of Education reveal a steady increase in enrollments in recognized and unrecognized private schools, with the fastest growth occurring in unrecognized schools. By 2000, 25% of enrollment at the primary level was in unrecognized private schools, 9% in recognized private schools, and only 66% in government schools. The rapid growth in private schooling is apparent in the fact that enrollments in government schools fell from 72% in 1996 to 66% in just five years. It is widely believed that the rapid growth in private schooling reflects the poor quality of government schools.¹⁸

Reflecting the high incidence of private schooling, Punjabi households spend more than double the national average on school education. The average expenditure per child in general education by Punjab is Rs. 1,394 (NSSO 52nd round, 1995-96) in rural areas, as compared to only Rs. 570 in India. In urban areas, Punjab spends Rs. 2,786 per child as compared to Rs. 1,686 at the all-India level.

Central and State Government Programmes, and Expenditure priorities

All the Central Sponsored Schemes described above are being implemented in the state. In addition to these schemes, the state government is also implementing other schemes, of which some are also shared with the Central Government. These include the Rural Sanitation Programme, a Centrally Sponsored Scheme shared between the Government of India and the State Government, for the construction of rural sanitary latrines by beneficiaries through the supervision of Panchayats. In fact, the state government has made rural sanitation a priority, and is implementing several other projects for this purpose. These include the following schemes: Environmental improvement of SC basties/villages with stress on sanitation (ACA); Disposal of sullage water in village abadi and improvement of villages; Construction of toilets in rural areas; and a scheme for Rural Sanitation for Scheduled Castes.

As is evident from the titles of these schemes, many of them involve investments specifically in scheduled caste localities, or on members of scheduled castes. The implementation of the state level schemes is generally the responsibility of the village government. And, in many cases, the scheme requires expenditures from the Panchayat. For example, under the scheme for Rural Sanitation for Scheduled Castes, sanitary latrines are to be provided to individuals from scheduled caste communities. The total cost of one unit is to be limited to Rs. 3,500, of which Rs. 3,000 will be provided by the State Government and the "beneficiary's share) of Rs. 500 is to be borne by the Gram Panchayat. Similarly, for the scheme for construction of toilets in rural areas, Gram Panchayats whose income exceeds Rs. 1,00,000 are to contribute to the extent of Rs. 1,000 per latrine.

¹⁷ The following paragraphs give details of the privatization of education. Though the health sector in Punjab is also known to be extensively privatized, amazingly, the state government has no data on the number of private hospitals and clinics. No records are kept, because registration is not required for starting a hospital, a nursing home, or a private practice!

¹⁸ For example, the Punjab Development Report, (Centre for Research in Industrial and Rural Development, 2002), p. 464, states that the growth in private schooling "reflects the diminishing confidence of the public in government-run schools, which not only lack such basic infrastructure as buildings and furniture, but also motivation and commitment of the teachers. Hence households with comparatively higher income prefer to send their children to private schools, which they perceive as imparting qualitatively better education."

CHAPTER 4.

SURVEY DATA: CHARACTERISTICS OF VILLAGES AND OF VILLAGE PANCHAYATS

In January 2006, we initiated a survey of 300 villages covering the entire state, gathering data on Panchayat income and expenditure, so as to address the objectives of this research, primarily the determinants of expenditure allocations in the villages. Our sample villages were selected from all of Punjab's 17 districts, on the basis of proportional representation, with the distribution of sample villages across districts reflecting the population distribution. Within each district, the selection of sample villages was randomly done.

Our survey comprised two modules. First, we canvassed a village module, which provided information on general socio-economic characteristics in the village, as well as detailed panchayat expenditure and income accounts. We also fielded a school survey, providing information on schooling enrollments in private and government schools, so that we could assess the effect of the growing privatization of social services on the involvement of village Panchayats in the delivery of social services. In this chapter, we report the data from the village module, providing a general description of socio-economic conditions in our survey villages. The next chapter does the same for schooling conditions, using data from our school survey.

Socio-economic characteristics of sample villages

Table 1 provides summary statistics on village socio-economic characteristics. The average population size of the villages is 1421, with village population ranging from 38 to 6314. . On average scheduled caste population comprises 35% of the total village population. However in 25% of the villages the SC population comprises over 50% of the village population. In addition, in another 25% of the villages the SC population comprises less than 20% of the overall population.

Approximately two-thirds of the villages have a separate SC locality, referred to as a *vehra*. Typically, the SC *vehra* is located close to the village. Table 2 provides information on the conditions of SC households living in SC *vehras*. The data reveal that few of the households in the SC *Vehra* own land. In addition on average 30% of the households living in the SC *Vehra* are below the poverty line. The SC *vehra* comprises no more than 1% of the total land in all villages surveyed.

Total village land averages 1031 acres, and ranges from 20 to 8400 acres. The amount of common property resources varies across villages. Villages on average have 22 acres of *Shamlat* land. Other types of common property resource include shared fishing ponds and shops on village land from which the panchayat derives rental income. Only 12% of the villages surveyed have access to shared fishing ponds and few villages, (7%) in our sample derived income from shops on village land.

Data on the socio-economic conditions of households in sample villages are presented in table 2. On average about half of the village households in a given village own no land. Only 1.5% of households own more than 10 hectares of land. Self-employment in agriculture provides the major source of income for the majority of households (47%). After agricultural self-

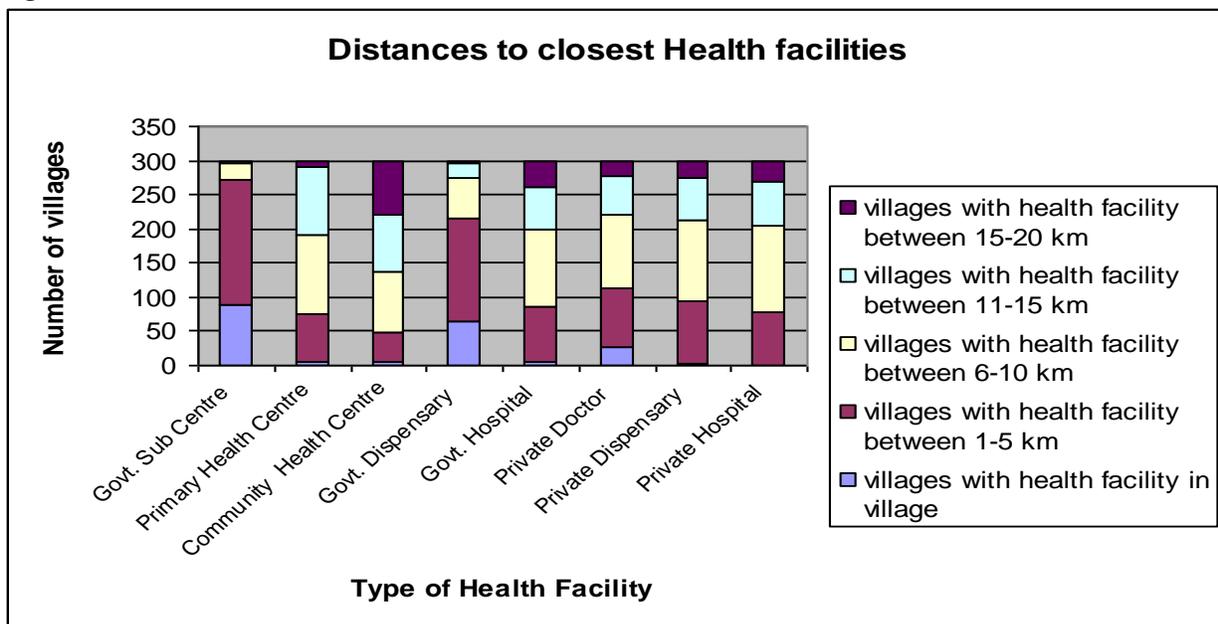
employment, casual agricultural work generates the most income, with 21% of households reporting that such work constitutes their major source of income. The growing importance of non-agricultural work is seen in the relatively high percentage of people who report that their major source of income is casual non-agricultural employment (16%). However, only 6% of households report non-agricultural self-employment as their major source of income, and only 8% earn income primarily from a salaried job. The percentage of households with a non-resident Indian (NRI) member in our sample villages is 7%.

Households also receive social-security payments from the Government, and details of such income is also provided in table 2. The most common pension received is the old age pension. On average 51 people per village receive old age pensions. When taken as a percentage of village population, on average 4% of a village is receiving old age pensions. Less commonly people receive other types of pensions. On average 4 people per village are receiving disability pensions, 8 people receive widow/widower pensions and 2 people receive destitute pensions. When looking at the percentage of a village receiving disability pensions on average less than one percent of a village receive these pensions. The same is true for widow/widower pensions and destitute person pensions.

Health Facilities

Figure 1 graphically describes the availability of health facilities in sample villages, while table 3 describes household use of government and private health facilities.

Figure 1.



Most villages have access to a Government sub-centre within 5 km of the village. Government facilities are far more readily available than private facilities: only 1/3 of villages have private facilities available within a 5 km. radius. However, 75% of villages report some form of private health facility within 10 km. of their village. Government health facilities also charge substantially less than do private facilities. For example, the consultancy fee in a Community

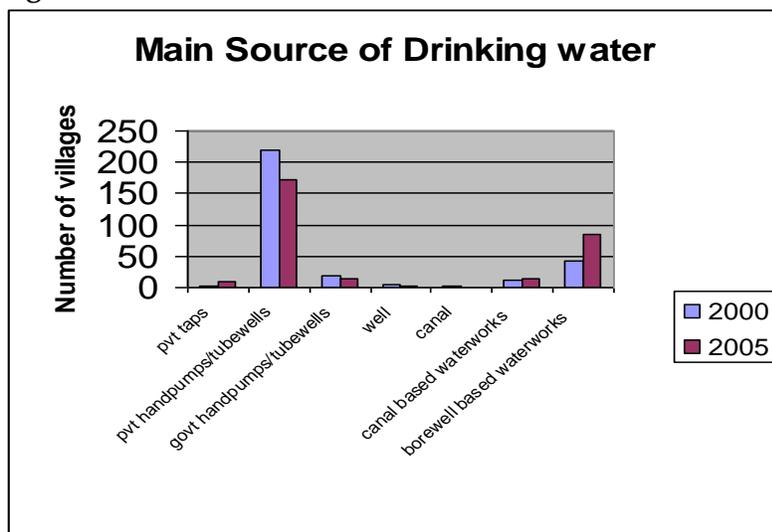
Health Centre (CHC) is only Rs. 1.5, in contrast to Rs. 54 in a private hospital. Similarly, the cost of a delivery in a CHC is Rs. 1,593, in contrast to Rs. 4,311 in a private hospital. Despite this difference in accessibility and cost, the use of private health facilities is pervasive. As many as 69% of households report using private services for common illnesses and for emergency care. Private services are also commonly used for the delivery of a child. However, very few households use private services for routine checkups, or pre/ post natal care.

Water, drinking water and Electricity

In about 57% of the villages surveyed the ground water is safe, and in about 60% of the villages the quantity of ground water is sufficient. 75% of the villages have 24 hours of electricity, and in 60% of the villages the community raised funds to obtain electricity. Of the communities which raised money for electricity, 85% of them have raised these funds in the last 10 years.

The main sources of drinking water in the village, in 2000 and in 2005, are graphically represented in figure 2.

Figure 2



Over the past 5 years there has been little change in the main source of drinking water in the villages surveyed. Most villages still rely on private hand pumps and tube wells as their main source of drinking water. Borewell based waterworks have become more common in recent years. The most common switch in the main source of drinking water in the villages surveyed between 2000 and 2005 was between private hand pumps and tube wells to bore well based waterworks. 37 villages made this switch during the five year time period.

Over 65% of the villages surveyed had a waterworks project in the village. Of these villages over half of these waterworks programs began functioning in the last 10 years. In addition most of projects were multiple village projects (80% of projects) and the water is available not only for the main village but also for the SC vohra (80% of projects). Only three villages had water works programs which were Swajaldhara projects.

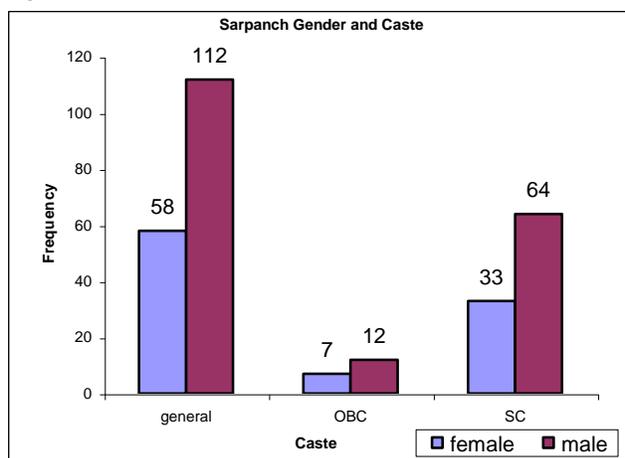
Village Governments and local level democracy

Most villages surveyed have a single panchayat serving the village. Four of the villages surveyed had multiple panchayats serving a single village, while 9 villages shared a panchayat with a neighboring village.

We collected data on the gender and caste characteristics of the Sarpanch for the past three elections, held in 2003, 1998 and 1993. In 1993, the system of reservation of the position of Sarpanch for women and members of scheduled castes was not yet in place. The consequence of reservations is clearly revealed in figure 3. In 1993, of our sample of 300 villages, over 250 reported a Sarpanch from general castes. This number fell dramatically, in both the 1998 and 1993 elections. In 2003, 47% of the Sarpanch posts were reserved for members of general castes. In around 24% of the villages the Sarpanch post was reserved for general caste females. The Sarpanch post was reserved for scheduled castes in 19% of the villages and for scheduled caste females in 9 % of villages.

Figure 3 displays the actual gender and caste of village Sarpanches. It is obvious that the system of reservation determines these characteristics. For example, in the 137 “unreserved” Panchayats, as many as 123 (90% of the Sarpanches were other caste men. Similarly, of the 64 other caste women and 64 scheduled caste males who served as Sarpanch, as many as 61 and 54 respectively were elected in villages reserved for general caste women and for scheduled caste men.

Figure 3



In 25% of the villages the sarpanch has less than primary level education. Only 15% had greater than 10th grade education. Most sarpanches are self employed. The occupation of most women sarpanches is domestic work. Very few Sarpanches engage in casual labor or have salaried positions.

While the characteristics of the Sarpanch have changed as a consequence of the system of reservation, there has been little change in the number of candidates running for Sarpanch in the elections. Our data

reveal that most villages have 2 candidates for sarpanch in each of the three election years. In addition, on average the winner of the election received 60% of the votes while the runner up received around 30% of the votes. This trend is also invariant over time.

We also collected information on the number of pachayat and Gram Sabha meetings, to measure the extent of local democracy. These data suggest that Panchayats are holding regular meetings, with villages reporting an average of 12 panchayat meetings per year. Gram Sabha meetings also appear to be regularly held, with villages reporting an average of two Gram Sabha meetings per year. However, participation in these meetings is limited, with only 28% of the Gram Sabha members participating.

Panchayat Income and Expenditure:

Table 4 provides data on the income of surveyed Panchayats, for the year 2004-05 and for 2005-06. The data reveal the complete lack of local taxation. The only tax being collected, the house tax, generates less than 1/100th of the total Panchayat income (0.0004 and 0.0006 percentage of the total, in 2004-05 and 2005-06 respectively). In contrast, income from Shamlat land is considerable. Indeed, averaging across the villages in our sample, income from this source constitutes the single most important source of income for the Panchayat, accounting for 26% of income in 2004-05 and 34% in 2005-06.

Other significant sources of income are the SGRY (21% of income in 2004-05 and 17% in 2005-06), state government grants and transfers (16% and 22% in each of the two years), and grants from the Member of Parliament Local Area Development Scheme (MPLADS) which generated 21% of average Panchayat income in 2004-05 and 15% in 2005-06

The data reveal that the funds that the Panchayat has full discretion over are limited, reflecting primarily income from Shamlat land. Panchayats have no choice over the types of investments they can finance out of IAY funds. Similarly, money from the MPLADF and from other Central Government grants comes “tied”, in that the funding is made available for a pre-specified investment. While Panchayats do have control over some proportion of SGRY funds, this is restricted to those received directly from the village, as opposed to those that are passed on from the district and block level governments. The latter come for investments which are specified by these higher level governments. The amount of “unrestricted” SGRY funds made available directly to the Panchayat for use according to their own preferences amounted to approximately 5% of total village income in the two years for which we gathered data.

Table 5 provides data on Panchayat expenditures for 2004-05 and 2005-05. Data are provided for total Panchayat expenditures and, separately, for investments in SC vehras, for the sample of 223 villages which reported an SC vehra. In other villages, because of the lack of residential separation between SC and other caste households, we did not attempt to collect data separately for investments in SC localities.

The data reveal that the most important item of investment, for total expenditure and for expenditure in SC Vehras, is sanitation projects. The share of sanitation projects in total expenditure was as high as 48% in 2004-05, and 51% in 2005-06. Sanitation projects constitute an even larger share of expenditures in SC vehras, accounting for 66% of such expenditures in 2004-05 and 53% in 2005-06. This is not surprising, given the emphasis of the State government in sanitation projects, as previously described. Many of the sanitation schemes being implemented by the State Government (such as Environmental Improvement of SC basties/villages with Stress on Sanitation, and Rural Sanitation for Scheduled Castes) provide funds to village Panchayats only for investments in sanitation in Scheduled caste habitations.

Other than sanitation, other important investments in terms of the magnitude of expenditure include local roads (14% of total expenditures in 2004-05, and 16% in 2005-06), and schools (10% and 8% of expenditures in the two years respectively). Balancing the relatively larger share of expenditure on sanitation projects, there is relatively less expenditure on roads out of the total expenditures on SC vehras. A small component of expenditures on SC vehras is for schooling,

representing primarily transfers of subsidies to members of the scheduled caste. There is almost no investment in irrigation in these localities, due to the very few members of scheduled castes who own agricultural land and are engaged in own cultivation.

To assess how much of total expenditure occurs on SC vehras, we restrict our attention to villages in which such vehras exist. These tend to be relatively more prosperous, with average expenditure of Rs. 179,155.9 and Rs. 228,330.3 in 2004-05 and 2005-06 respectively. As a percentage of these totals, investment in SC vehras amounts to 44% and 31% of total expenditures in these two years, similar to the average 35% share of scheduled castes in village population. It is not possible to infer whether Central Government mandates requiring a stipulated level of investment in SC localities, or the programmes which completely restrict investment to such localities, bind the allocative decisions of Panchayats, because these mandates apply only to some part of total village income. For example, the percentage expenditure in SC localities is, of course, less than the Central Government mandate that 50% of SGRY funds provided directly to the village be spent on scheduled castes. However, as noted above, SGRY funds constitute only about 20% of total Panchayat income.

In addition to the amounts, which are spent on each of these items, it is also worth examining the incidence of expenditure. These data are provided in table 6, which records the proportion of village Panchayats reporting investment in each of the different types of projects, separately for total expenditures and for expenditures in SC vehras (in the case of villages where they exist). In this table, we have combined expenditures reported over the two years, so that the data record whether any expenditure was reported in this item over this two year period.

Not surprisingly, almost all Panchayats (87%) report investments in sanitation projects. In terms of incidence, other important projects are schools, roads and drinking water. Even though the amount of expenditure on drinking water projects is small (approximately 3 to 5% of total expenditure), 31% of village Panchayats report such investments. The same is true for investments on electricity projects and irrigation, both of which amounted to only 2-3% of total expenditures. 17% of villages report expenditures on electricity projects, and 12% report investment on irrigation, which almost exclusively benefits other caste households. 35% of Panchayats report investments in Panchayat buildings.

CHAPTER 5

SURVEY DATA: SCHOOLING CONDITIONS

Overview of Village schools

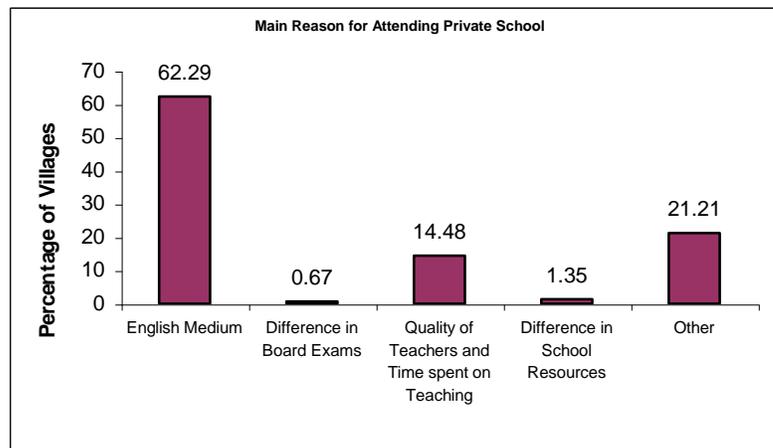
In this chapter, we provide an overview of schooling conditions in our sample villages, drawing on the data we collected in the school module of our survey.

A primary government school exists in 277 of the 300 sample villages. Additionally, 122 had a government middle school (grades 6-8). As noted in the introduction, Punjab has witnessed a substantial growth in the private schooling sector. Reflecting this growth, about 1/3 of the villages surveyed had at least one private school, either primary or elementary (grades 1 through 8). 44 villages had at least one private primary school, while 85 villages had at least one elementary school. Of the 110 villages with a private school around 65 of these villages have only one private school in the village. Another 35 have 2 schools in the village while the rest have more than 2 private schools in the village.

Enrollment in private schools however, is not restricted to private schools in the survey village: there is considerable enrollment in private schools outside the village. It was estimated that approximately 22% of the students currently enrolled in elementary school attended private school outside the village.

Figure 4

Figure 4 provides a histogram of the main reasons why students attend private schools. It is clear from this figure that the predominant reason is that private schools generally use English as the medium of instruction. In addition, villagers cited the poor quality of teachers in government schools, and the amount of time that they are required to spend on non-teaching activities.



Details of private schools in survey villages

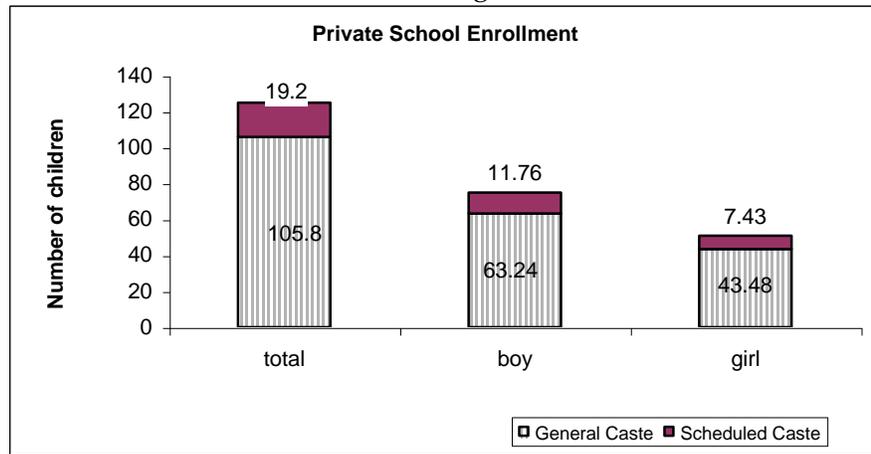
As mentioned before 110 villages have private schools in their villages. In these villages there are a total of 174 private primary and elementary schools. Only 15% of the private schools in the villages surveyed are recognized. Approximately 30% of the private schools were English medium. An oft-cited additional reason for the popularity of private schools is that they offer lower (LKG) and upper Kindergarten (UKG) classes. In fact, most of the private schools cover the grades LKG/UKG through grade 8.

The number of scheduled caste students enrolled in private schools is very low, as evident in figure 5 below. Thus, private schools are characterized by a predominantly general caste

student body. Private schools are also characterized by relatively low pupil teacher ratios (PTR). In contrast to the 40:1 ratio targeted by the government in government schools, the average PTR in our sample of private schools is 18.

Most private schools have both an annual admission fee and a monthly fee. The Annual admission fee ranges from Rs. 25-2500, while the monthly fee ranges from Rs.10 to Rs. 350 per month. The average annual fee is Rs. 315 and the average monthly fee is Rs. 85.

Figure 5



Details of Government Schools in Survey Villages:

Figures 6 and 7 below graphically illustrate the composition of the student body in government schools, by caste and by gender. On average over 50% of students enrolled in the government schools are scheduled castes. The data also reveal that the gender gap in schooling is relatively low: Boys on average comprise 53% of total student enrollment. Average total enrollment is 150 students per school.

Figure 6

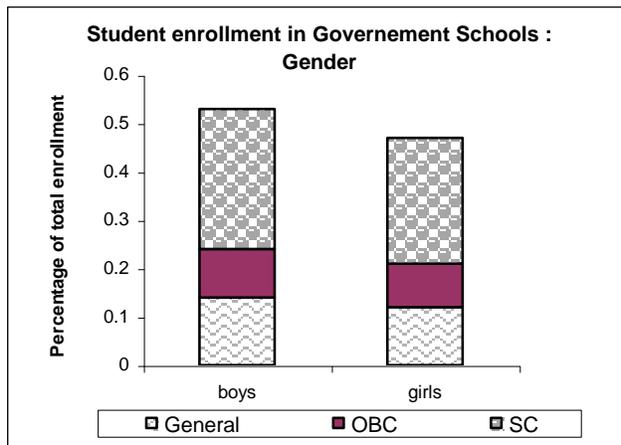
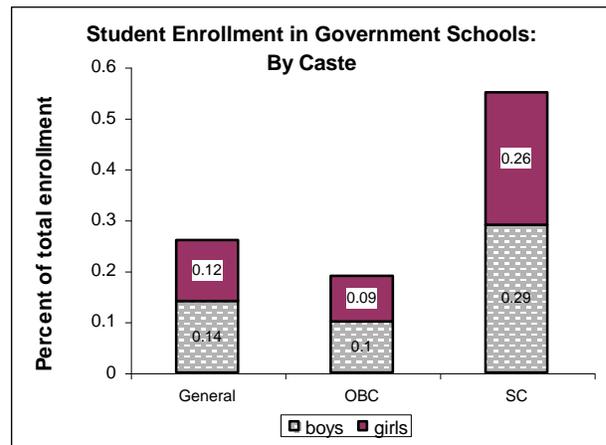
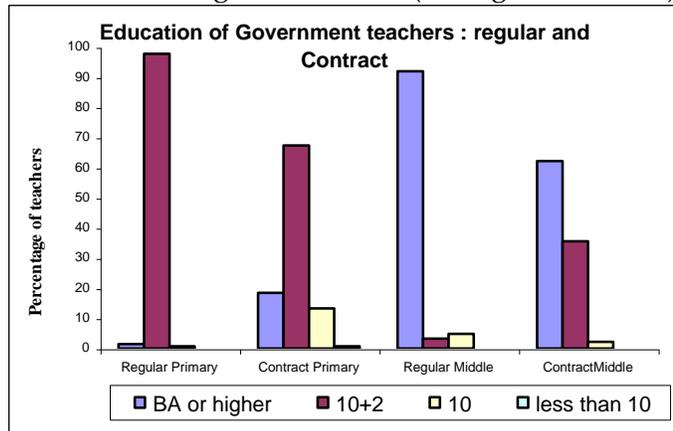


Figure 7



Around 45% of primary schools and 40% of middle schools employ at least one contract teacher. Contract teachers make substantially less than the regular teachers in salary and typically have less education. In contrast to regular teachers, a higher percentage is female. In primary schools, a higher percentage of contract teachers are members of scheduled castes. However, this is not the case in middle schools, where the proportion of scheduled caste teachers amongst contract teachers exceeds that of regular teachers.

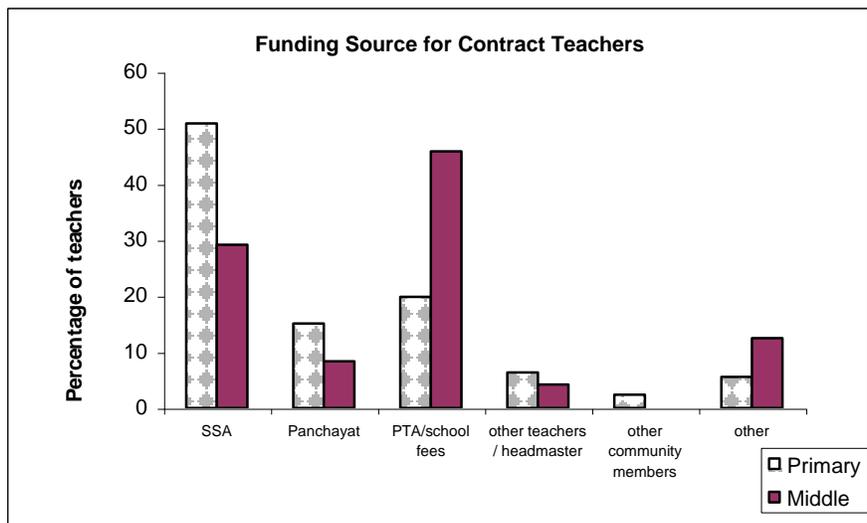
Contract teachers generally have lower education than regular teachers (see figure 8 below). They are also paid far less. The average monthly starting salary for a contract teacher in primary schools in our sample is Rs. 1775, in contrast to a starting salary of Rs. 6,825 for regular primary school teachers. Similarly, in middle schools, a contract teacher starts on a salary of Rs. 2051, while a regular teacher's starting salary is Rs. 8220. Additionally, regular teachers get additional benefits such as Dearness Allowance, averaging Rs. 2400 in primary schools and Rs. 2900 in middle schools. (Figure 8)



SSA, PTA or school fees most commonly provide funding to hire contract teachers. SSA funds over 50% of contract teachers at the primary level. At the middle school level PTA and school fees provide funding for over 40% of contract teachers. The panchayat also funds many contract teachers especially at the primary school level.

Figure 9

Data on Village Education Committees (VEC) and on Parent Teacher Association (PTAs) reveal that in over 50% of the survey villages, the Sarpanch serves as the VEC Chairman and as the head of the PTA. Schools reported regular VEC and PTA meetings, with over 70% of VECs reporting meetings in the past month, for both primary and middle schools. A PTA meeting was held in the previous month in 57% of villages with primary schools, while in over 71% of villages with a middle school there was a PTA meeting in the last month. On average 50% of parents attend PTA meetings. Parent involvement in PTA meetings varies substantially across villages. Some villages have very few parents attending while in other villages most parents attend PTA meetings.



Around 1/2 of all primary schools and over 90% of all middle schools surveyed collect fees from students on a regular basis. These fees are much lower than in private schools. The average annual amount asked for per student in primary schools is Rs. 12. Middle schools on average ask for Rs. 72. The maximum amount requested from students in any government school surveyed was Rs. 240 per year. Most students attending government schools contribute these

fees when requested. Around 10% of school PTAs both at the middle school and primary school level, have collected additional fees for special purposes in the last two years.

School funding

Funds from Sarva Shiksha Abhiyan constitute by far the most important source of funding for both primary and middle schools (table 7) . For primary schools, SSA funds accounted for as much as 89% of total school funding in 2004-05 and 85% in 2005-06. For middle schools, significant funding is also provided by PTAs, reducing the proportionate importance of SSA funds at this level to approximately 65-75%, even though the SSA provided approximately equal amounts of funds for primary and middle schools. For middle schools, PTA funds accounted for 25% of total school funding in 2004-05, and 10% in 2005-06. Panchayat funds account for only about 3% of total funding, at both the primary and middle levels. Schools receive few funds from other sources, such as from state governments or through the MPLADF. State funding for schools comes primarily in the form of payment for the salaries of regular teachers.

SSA funds were primarily provided for construction purposes. As much as 50% of SSA funds for primary schools in 2005-06, and 47% of funds provided to middle schools in the same year were for the purposes of classroom construction. An additional 16% of SSA funds at the primary level and 19% at the middle school level were used for the construction of toilets.

CHAPTER 6

THEORETICAL FRAMEWORK

The empirical work of this project draws on a variant of the Downsian (1957) model of political outcomes, developed by Grossman and Hart and extended by Bardhan and Mookherjee (2000, 2006). Using this framework, we consider the expenditure decisions of village Panchayats. We view the head of the village government, the Sarpanch, as having control over the government and hence over expenditure decisions. We explicitly allow, however, for residential segregation within the village between scheduled and other castes. This segregation implies that many public goods, such as roads, public water and sanitation projects, and other infrastructure, are determined at the level of sub-habitations of a village, rather than at the level of the village.

We start by assuming that there are two groups of households in the village economy, indexed by k , representing scheduled castes ($k=s$) and other caste ($k=o$) households. The proportion of scheduled castes in village i is given by π_i . In the Downsian tradition, we assume that each party can credibly commit to a set of policies. The objective of each candidate is to maximize the probability of winning the election.

Following Bardhan and Mookherjee, we assume that a fraction of each class, (α_s, α_o) is “informed” and votes on the basis of the policy platform of the party (here the Sarpanch), as reflected in expenditure allocations. The proportion of informed voters amongst other castes is assumed to exceed that amongst scheduled castes ($\alpha_o > \alpha_s$).

A certain fraction of upper caste households provide financial support to political candidates, based on the policies they espouse. This fraction will depend on how well these households are organized and their perceived need to influence the policies of the Panchayat. It is natural, then, to think of the financial contributions of upper caste households varying with the amount of aid provided by the government to scheduled castes. Increased welfare payments to scheduled castes are likely to increase the cohesiveness of other caste households, and their willingness to organize to influence the policies of the village government.

The votes of uninformed voters are based not on party platforms, but on election spending by the candidates. The extent to which their votes are influenced by campaign spending is represented by the parameter χ . This parameter can be expected to vary with the characteristics of the candidate, such as his or her gender and caste.

Voting behaviour additionally depends on intrinsic preferences of the voters to each of the candidates, and the parties (policies) they represent. Preferences are randomly distributed across the population. Informed voters trade off their candidate preferences against the utility difference resulting from the platforms of the candidates. Uninformed voters trade off their preferences against the difference in campaign spending. The randomness in voter loyalties implies that it is not possible to predict which candidate will eventually win the election. However, one candidate is *ex ante* favoured to win the election, if the two candidates choose the same set of policies. This asymmetry implies that chosen policies will differ, depending on the candidate who wins. That is, the characteristics of the candidate will have an effect on policies.

Using this framework, Bardhan and Mookherjee show that, in equilibrium, each candidate assigns a greater welfare weight to the utility of the non-poor, in exchange for higher financial contributions from this segment of the population. Specifically, candidate l in elections to local government in village i , selects a set of policies (here, expenditure allocations amongst the various goods over which the village government has control), to maximize the following welfare function:

$$(1) \quad \pi_i U_{si}(\cdot) + (1 - \pi_i) \delta_i^l U_{oi}(\cdot)$$

where U_{si} and U_{oi} represent the utilities of scheduled and other caste households, respectively, in village i , and δ_i^l denotes the premium placed on the welfare of other castes, relative to members of scheduled castes, and hence reflects the extent to which the local village government is “captured” by the preferences of upper caste citizens. As previously mentioned, we expect this to be a function of the amount of government funds, which are specifically targeted to scheduled castes households.

We now turn to the specification of the utility functions of scheduled and other caste households. Households’ indirect utility is a function of prices, their income, and a set of public goods provided by the village Government, the Panchayat. There are several kinds of public goods. One set of public goods are provided at the level of habitations within the village. This category includes goods such as local roads, public water and sanitation projects, for which the village government must decide which habitation to locate them in. We represent these goods by the vector \mathbf{y}_j , indexed by the habitation of location, $j=s, o$ for scheduled caste and other caste habitations respectively. For simplicity in the theoretical analysis, we assume that there are two such goods, y_{1j} and y_{2j} , though the empirical analysis will extend this to additional categories. The cost of investment, per unit of each good is given by the vector \mathbf{w}_j .

A second set of public goods (z) are local to the village, shared by residents of both scheduled caste and other caste habitations. This set includes investments in government schools,¹⁹ health centres, Panchayat buildings, and power generators. Suppressing the dependence of utility on prices, common to all households in the village, the indirect utility function of a member of group k is: $u(y_{1k}, y_{2k}, z, I_k)$.

The village government faces a budget constraint, which requires total expenditure to equal total income, with income including income from own resources, such as common property resources and other properties (G), as well as income provided by the state government and transfers from the Central government for Centrally Sponsored Schemes. Funds received from higher level governments include funds for infrastructural programmes as well as for programmes which transfer income or assets to beneficiaries, such as the Central Government Programme *IAY*, as well as welfare payments under the state government’s programmes for widows, destitutes, the elderly and the disabled. Our empirical work focuses on the effects of the *SGRY*²⁰ For this reason, we neglect other government programmes, and assume that

¹⁹ Unlike other states, most Punjabi villages have only one primary school. In other states, the national school location policy which determines school location on the basis of habitation size rather than village size frequently results in several elementary schools within any given village.

²⁰ This is because of our ability to identify the effects of *SGRY*, based on the two-stage fund allocation process followed by the Government, which first allocates funds to the district level government, which are then divided amongst Panchayats within the

Government income is the sum of own income (G) and funds received from higher level governments for infrastructural investments (I_y). Because the extent of local taxation in the Punjab economy is trivial, we ignore this potential source of income

Government maximization is subject to the expenditure constraints which accompany funds received from higher level governments. SGRY funds, in particular, come with the restriction that a certain minimum must be spent on infrastructural investments in SC localities. This minimum amount varies across villages. While each village must allocate half of the funds which come directly to the village Panchayat (the component of SGRY formerly referred to as Stream 2) for SC investments, the amount of SGRY funds received by the village from higher level block and district governments earmarked for investments in SC localities is specified by the government in question, on the basis of village socio-economic conditions. Thus, while the minimum level of investment in SC communities is exogenously fixed for each village Panchayat, it varies across them with village socio-economic conditions. We therefore allow the minimum investment in SC localities, \bar{I}_y , to be a function of total village SGRY funds and relevant village socio-economic conditions, x , yielding $\bar{I}_y = f(SGRY, x)$. As previously noted, we expect \bar{I}_y to influence the extent of “capture” of the village government by other castes ($\delta_i^l = \delta_i^l(\bar{I}_y)$).

The expenditure decisions of the village government reflect the maximization of the following equation:

$$(2) \quad \pi_i U_{si}(y_{1s}, y_{2s}, z, I_s) + (1 - \pi_i) \delta_i^l(\bar{I}_y) U_{oi}(y_{1o}, y_{2o}, z, I_o)$$

subject to the budget constraint:

$$(3) \quad w_1(y_{1s} + y_{1o}) + w_2(y_{2s} + y_{2o}) + z = G + I_{y_t}$$

the constraints stipulating the minimum share of expenditure in SC habitations out of SGRY grants:

$$(4) \quad w_1 y_{1s} + w_2 y_{2s} \geq f(I_y, x)$$

and non-negativity constraints on investments in other caste habitations:

$$(5) \quad y_{1o}, y_{2o} \geq 0$$

We assume that the non-negativity constraints on investments in other caste habitations are never binding, so that they play no role in the solution for government expenditures.

In practice, there may be additional constraints on government allocations arising from other government programmes; for example, many of the state government sanitation programmes

district. Our inability to control for the endogeneity of other programme funds (such as those provided under IAY), limit our ability to conduct a credible empirical evaluation of the effects of such funding, though we provide details of other government programmes in our chapters on descriptive statistics. The empirical model is detailed in the next chapter.

provide funds for investment in scheduled caste localities only. As stated above, we focus on the consequences of constraints imposed by the SGRY programme, since this is the subject of our empirical study.

The solution to this maximization problem generates the following first order conditions for infrastructural investments in SC habitations and other caste habitations ($y_{1s}, y_{2s}, y_{1o}, y_{2o}$) and for public goods z :

$$(6a) \quad \pi_i \frac{\partial U}{\partial y_{js}}(y_{1s}, y_{2s}, z, I_s) - \lambda w_k + \mu_y \leq 0 \quad j=1,2$$

$$(6b) \quad (1 - \pi_i) \delta_i^l(\bar{I}_y) \frac{\partial U}{\partial y_{jo}}(y_{1o}, y_{2o}, z, I_o) - \lambda w_k \leq 0 \quad j=1,2$$

$$(6c) \quad \pi_i \frac{\partial U}{\partial z}(y_{1s}, y_{2s}, z, I_s) + (1 - \pi_i) \delta_i^l(\bar{I}_y) \frac{\partial U}{\partial z}(y_{1o}, y_{2o}, z, I_o) - \lambda \leq 0$$

In these equations, λ is the Lagrange multiplier on the budget constraint (3), while μ_y is the multiplier on the expenditure constraint (4).

Analysis of expenditure decisions if the constraints on expenditure (4) are not binding:

If the constraints which require local governments to allocate a specified percentage of their expenditures on schedule caste locations or households are not binding, then the Lagrange multiplier, μ_y , in the first order conditions (6a) will equal zero. Assuming that the budget constraint, (3), binds, the set of first order conditions will then take the following forms:

$$(7a) \quad \pi_i \frac{\partial U}{\partial y_{js}}(y_{1s}, y_{2s}, z, I_{ss}) - \lambda w_k = 0 \quad j=1,2$$

$$(7b) \quad (1 - \pi_i) \delta_i^l(\bar{I}_y) \frac{\partial U}{\partial y_{jo}}(y_{1o}, y_{2o}, z, I_o) - \lambda w_k = 0 \quad j=1,2$$

$$(7c) \quad \pi_i \frac{\partial U}{\partial z}(y_{1s}, y_{2s}, z, I_s) + (1 - \pi_i) \delta_i^l(\bar{I}_y) \frac{\partial U}{\partial z}(y_{1o}, y_{2o}, z, I_o) - \lambda = 0$$

These conditions reveal that investments for scheduled castes will be efficiently determined. However, local governments will over-provide infrastructural investments in other caste localities, and transfers to other caste households, as a consequence of the “elite capture” coefficient, δ_i^l .

If central governments mandates which require a certain proportion of central government funds to accrue to scheduled castes are not binding, this implies that village government optimally chose expenditures on scheduled caste locations which exceed the required minimum, even in the absence of central government mandates. The central prediction of this “unconstrained” model, as revealed in the first order condition (7a), is that the “tied” income

received by the village government for investments in scheduled caste habitations will have no independent affect on investments in SC habitations, once total income is controlled for.

Analysis if the constraint on expenditure (4) is binding:

If the constraint on expenditure on scheduled castes is binding, then the village government's optimization problem can be written as follows:

$$(8) \max \quad \pi_i U_{si}(y_{1s}, y_{2s}, z, I_s) + (1 - \pi_i) \delta_i^l(\bar{I}_y) U_{oi}(y_{1o}, y_{2o}, z, I_o)$$

subject to the following budget constraints:

$$(9) \quad w_1 y_{1s} + w_2 y_{2s} = \bar{I}_y \quad (= f(SGRY, x))$$

$$(10) \quad w_1 y_{1o} + w_2 y_{2o} + z = G + I_y - \bar{I}_y$$

This generates the following set of first order conditions:

$$(11a) \quad \pi_i \frac{\partial U}{\partial y_{js}}(y_{1s}, y_{2s}, z, I_s) - \lambda_s w_j = 0 \quad j=1,2$$

$$(11b) \quad (1 - \pi_i) \delta_i^l(\bar{I}_y) \frac{\partial U}{\partial y_{jo}}(y_{1o}, y_{2o}, z, I_o) - \lambda_o w_j = 0 \quad j=1,2$$

$$(11c) \quad \pi_i \frac{\partial U}{\partial z}(y_{1s}, y_{2s}, z, I_s) + (1 - \pi_i) \delta_i^l(\bar{I}_y) \frac{\partial U}{\partial z}(y_{1o}, y_{2o}, z, I_o) - \lambda_o = 0$$

In these equations, λ_s is the multiplier on the budget constraint (9) which determines total location specific investments in SC localities, while λ_o is the corresponding multiplier for constraint (10). While λ_s is a function only of village SGRY income, λ_o reflects total village income net of funds which must be spent on SC communities. Essentially, then, the income relevant for the determination of investments in SC and other caste habitations differs.

The "constrained" model carries several implications for investment decisions within the village. First, total investment in scheduled caste localities will be determined by this expenditure constraint (9). It will therefore reflect SGRY income, and other income from central and state governments which is specified for investment in scheduled caste localities, rather than "untied" local government income, such as that which accrues from common property resources. Correspondingly, the division of total funds allocated for SC localities ($\bar{I}_y = f(SGRY, x)$) across specific investments (such as roads, sanitation projects and drinking water outlets) will reflect \bar{I}_y rather than total government funds which include own income from common property resources. In contrast, the relevant income measure which determines

investments in other caste localities, as well as investments in public goods shared by both scheduled and other castes, is total government income $(G + I_y - \bar{I}_y)$.

However, investments in other caste localities and in public goods local to the village such as schools will reflect government income $(G + I_y - \bar{I}_y)$ but also, independently, SGRY income. This is for two reasons. First, we have argued that tied income which accrues primarily to scheduled castes is also likely to increase the welfare weight placed on the utility of other caste households. From (11b), this will increase investments in other caste habitations, and in village public goods, z .

Additionally, unless investments in infrastructure are separable from those in public goods, z , increased investment in scheduled caste communities will cause changes in z , with the nature of the change depending on whether z and infrastructural investments are complements or substitutes. If substitutes, increased infrastructural investments in SC habitations will cause reductions in expenditure on government schools. This, in turn, will cause increased investment in infrastructure in other caste communities. However, unless these substitution/complementary effects are strong, we expect the effect of SGRY investments on other caste localities to primarily reflect their effect on the welfare weight placed on the utility of other caste households.

The constrained model also carries implications about the sensitivity of investments to local conditions, and to political factors. In the unconstrained model, investments in scheduled caste localities will reflect local conditions as well as measures of local needs which determine the utility that households get from any set of investments. In contrast, in the constrained model, *total* investments in scheduled caste localities will be determined by the budget constraint (9), and will therefore show little sensitivity to local economic factors or to the operation of village-level democracy. Other than the set of variables, x , used by higher level governments to determine allocations to villages, village characteristics such as wage rates, literacy rates and other factors which determine preferences, will have no role in the determination of total expenditure in SC localities. Nor will attributes of the village Sarpanch, which may otherwise affect the distribution of funds through the elite capture coefficient.

However, from (11a), local conditions will affect the *distribution* of the total funds available for SC investments across specific investments, because village governments can decide this allocation, for at least that component of SGRY funds controlled by them. And, local conditions and the determinants of elite capture will determine the total allocation of location specific investments in other caste communities, the distribution of this total across different types of investment, and allocations in public goods z .

Introducing local public goods with private alternatives and with direct government funding

Our analysis so far has assumed that there is no alternative to public goods. This is clearly not true for goods such as schools and health services, where private alternatives abound, particularly in the Punjab economy. It has also ignored the role of funds from higher level governments which directly finance investments in such goods, bypassing the village Panchayat. In this section, we therefore extend our analysis to allow for both these factors. We

ask how government funds provided directly to schools affect local government investments in schools, and how both higher and local government funds affect the choice of private goods. We also investigate how the consumption of private goods in turn affects government investment choices. To fix ideas, we elaborate this framework using schooling as an example, though the same framework can be extended to health services and other public goods (such as drinking water) for which private alternatives are available.

Given private alternatives, local governments make expenditure decisions, based not just on the division of households by caste, but also by the division of households into those who use government services and those who use the private sector. These decisions take into account the effect of investment allocations on households' choice between the government and private sector. The government's decision making can be modeled as a two-stage process. In the first stage, we solve for households' choice between the private and the public sector, conditional on government investment allocations. In the second stage, the government makes its investment decisions, taking into account their effect on households' choice between the two sectors.

For simplicity, in this section we assume that, in addition to investments in schools, governments can invest in one additional location-specific infrastructural good (y_s, y_o) , which affects households through their income. Income of a household of caste k is therefore written as $I(y_k)$.

Households gain utility from the human capital, h , of their children, and from the consumption of a private good such as food, c . Parents can choose to send their child to a government or a private school, indexed by g and p respectively. Human capital is produced by the financial resources available to the school in question (S_g, S_p) , by a set of institutional factors specific to the school (X_g, X_p) , and by household specific inputs, l , yielding $h=h(S_j, X_j, l)$, $j=g, p$.

These institutional factors include curriculum differences, such as the ability of private schools to provide English medium instruction, as well as their freedom to choose teachers without regard to caste composition. Government elementary schools, in contrast, cannot use English as the medium of instruction (even though they can and do offer English as a subject), and their recruitment of teachers is subject to quotas for members of scheduled castes. While the financial resources that the government provides to schools is a choice variable (so that, in principle, S_g could exceed S_p), we assume that institutional factors are exogenous. We further assume that private schools have "superior" institutional factors in the sense that the marginal effect of X_p on h exceeds that of X_g ($\partial h / \partial X_p > \partial h / \partial X_g$), and that the marginal effect of household provided inputs (l) on h is also higher at $X=X_p$.

Enrollment in private schools involves the payment of a significant fee, C_p . Government schooling is free. Government schools receive funds provided directly by higher level governments, denoted as S_g^c . These represent funds received by schools through the Central Government's premier schooling programme, *Sarva Shiksha Abhiyan*. The village government, however, has the option of providing additional funds, E_g , so that $S_g = E_g + S_g^c$.

Modelling Households' choice between the private and public sector, conditional on government expenditure allocations

In this section, we briefly sketch a model of choice between private and public sectors. Since this model is well developed in the literature, we do not provide a detailed analysis.²¹

Households choose between government and private schools on the basis of the utility they get under each of these options. Utility, in turn, reflects the households' optimal choices of l and c under each type of school. Optimal consumption levels (under each school type) are chosen by maximizing utility, $u = u(h(S_j, X_j, l_j), c_j)$, $j = g, p$, subject to the household budget constraint which constrains total expenditure to equal household income net of any costs of schooling. For a member of caste k , this generates utility from private schools equal to $u(S_p, X_p, I(y_k) - C_p)$, while utility from government schools is $u(S_g, X_g, I(y_k))$.

This comparison of utility between private and government schools implies that school choice will be a function of resources available in each of the two types of schools, their institutional features, costs, and household income net of any school fees. While, for any given level of school resource availability (S), private schools offer improved institutional features (X), households balance this against the loss of income (and hence lower c and l) due to high private school fees. Variation in income across households generates a set of households who choose private schools. We allow this set to include some members of scheduled castes, even though the high costs of private schooling will generally render a distribution of private schooling students which favour wealthier other caste households. We denote the proportion of scheduled caste and other caste households who choose government schools by γ_s and γ_o respectively, with $\gamma_k = \gamma(S_g, S_p, X_g, X_p, I(y_k), C_p)$, $k = s, o$.

The primary predictions of this model of school choice are as follows. First, increased government investment in schools will enhance the value of government schools relative to private schools, resulting in an increase in the proportion of students enrolled in government schools.

A second prediction relates to the effect of household income on school choice. Increases in household income will increase household investments in schooling, l , regardless of the school type. However, the extent to which it will do so varies across government and private schools, due to differences in institutional features, X . Under the assumption that $\partial h / \partial l$ is increasing in X , the advantage of private schools in this regard implies that increases in income will increase household investment in private schools more than they will those in government schools. Correspondingly, higher incomes increase the probability of enrollment in private schools.

This second prediction implies that different types of government investments may differ in their effect on *school choice*, even though their effects on the absolute level of enrollment in government schools (and on total levels of schooling) may be similar. Government schooling expenditures, because they increase the value of government schools relative to private schools, will generally increase the proportion of students enrolled in government schools. In contrast, other government expenditures which effect households primarily through their effect on

²¹ See, for example, Alderman, Orazem and Paterno (2001) and Gertler and Glewwe (1990).

household incomes may cause a relative *decrease* in the proportion of students who choose government schools, if an increase in income causes the relative valuation of private schools to increase. This is true, too, of “tied” funds which must be spent only on scheduled castes. As argued in the previous section, since such funds are likely to increase the welfare weight on the utility of other caste households, they will generate increases in investments specific to other castes, and hence in their incomes.

What does this imply for the effect of tied and untied government income on school choice? This will depend on how they affect schooling expenditures and household income. If their effect is primarily to increase the Panchayat’s financial support for village schools, then increases in income will increase the proportion of children enrolled in government schools. If, conversely, their effect on schooling resources is small relative to their effect on household income, then increases in government income will increase private school attendance. In general, we would expect funds that are tied for investment in scheduled caste habitations to have little effect on the financial support of *Panchayat’s* for government schools, while untied funds should increase in such support. If this is the case, then tied and untied income will differ in their effects on school choice. The next section examines the determinants of school funding, in the presence of the option of private schools, and provides the theoretical justification for this argument.

While policy makers and analysts frequently confine their analysis of the effect of government on school choice to that of government schooling expenditures, our analysis emphasizes that the choice of government versus private schools may be as importantly affected by government investments in other public goods. This effect may, indeed, counter-balance the direct positive effect of government schooling expenditures.

Government decision making

The objective function of the government (equation 2) is now modified to incorporate the division of households into those who choose government and private schools. We assume that mandates imposed by higher level governments requiring a minimum level of investment in SC habitations are binding, so that the income of scheduled castes households is $I(\bar{I}_y)$. This implies that local governments divide untied funds between investments in schools and investments in goods which increase the incomes of other caste households. For ease in exposition, we suppress other determinants of the caste-specific probability of choosing government schools over private schools, retaining only those that are chosen by village governments. Thus, the proportion of households of caste k who choose government schools is: $\gamma_k(E_g + S_g^c, I(y_k))$, $y_s = \bar{I}_y$. The Government’s maximization problem is:

$$(12) \quad \max \quad \pi [\gamma_s(.) U_s(E_g + S_g^c, X_g, I(\bar{I}_y)) + (1 - \gamma_s(.)) U_s(S_p, X_p, I(\bar{I}_y))]$$

$$(1 - \pi) \delta^l (\bar{I}_y) [\gamma_o(.) U_o(E_g + S_g^c, I(y_o)) + (1 - \gamma_o(.)) U_o(S_p, X_p, I(y_o))]$$

subject to the budget constraint:

$$(13) \quad E_g + wy_o = G + S_g^c + I_y - \bar{I}_y$$

And to a non-negativity constraint on investments in government schools:

$$(14) \quad E_g \geq 0$$

This maximization yields the following first order condition for schooling investments by the local government:

$$(15) \quad \pi \gamma_s(\cdot) \frac{\partial U_s}{\partial E_g}(E_g + S_g^c, X_g, I(\bar{I}_y)) + (1 - \pi_i) \delta_i^l(\bar{I}_y) \gamma_o \frac{\partial U_o}{\partial E_g}(E_g + S_g^c, X_g, I(y_o)) \\ + \pi U_s(\cdot) \frac{\partial \gamma_s(\cdot)}{\partial E_g} + (1 - \pi) \delta_i^l(\bar{I}_y) U_o(\cdot) \frac{\partial \gamma_o(\cdot)}{\partial E_g} - \lambda + \mu_g \leq 0$$

In equation (15), μ_g is the multiplier on the non-negativity constraint (14). In making allocations to government schools, the government takes into account the effect of such investments on utility (through the human capital of children). However, this effect exists only for households who choose government schools. The Government also takes into account the effect of investments on the choice between private and government schools, with this effect being weighted by the utility of scheduled and upper caste households respectively.

Comparing (15) with government allocations to schooling in the absence of a private sector (equation 11(c)), makes clear the effect of school choice on government allocations. Because it is only the welfare of households who choose government schools that affect government schooling expenditures, these expenditures will necessarily be lower than in an economy marked by the presence of a significant private sector. Put differently, variations in private schooling, caused by (for example) institutional factors specific to private schools or to the cost of private schooling, will result in corresponding differences in government allocations to schools, with government allocations varying inversely with the extent of private schooling.

A second implication of the analysis of this section is that government schooling expenditures will be differentially affected by caste-specific school choice probabilities. This is because the probability of members of scheduled caste households choosing private schools differs from that of other caste households, because of differences in household variables such as income. If the weight placed by the village government on the welfare of other castes exceeds that placed on the welfare of scheduled castes, this will correspondingly imply that the school choice decisions of other castes will have a larger effect on government allocations.

Expanding the model to include private school choices therefore explains some of the anomalies we observe in government investments. From our description of schooling conditions in Chapter (5), we know that the proportion of village governments, which provide funds for school, is low. Since government funding patterns reflect local priorities, this would normally be taken to imply a low demand for school in survey villages. This statement, however, is contradicted by the observation that parents are willing to pay very high amounts for private schooling, suggesting a very high demand for schools.

With such a high demand, why do households choose private schooling, rather than staying within the government schooling system and using their “voice” to cause village governments to substantially increase their financing for these schools? Our analysis suggests that the explanation for this relates to differences in exogenous institutional features of the two types of schools. This generates a preference for private schooling, at any level of income. Given this, parents exit the government schooling system. Thus, the demand for *government* schools is low, even though the overall demand for schooling may be very high.

What does our theoretical analysis imply for the effect of tied and untied funds on schooling expenditures? These effects come from three sources. First, there is a traditional income effect from government income $(G + S_c^g + I_y - \bar{I}_y)$, which has the effect of increasing the *Panchayat's* expenditure on schools. Second, SGRY income, as before, will independently affect schooling expenditure through its effect on the welfare weight on the utility of other castes. However, because it is only the welfare of those households who choose government schools that matters, this independent effect of SGRY income on government expenditures is likely to be low. Finally, both SGRY and untied funds are likely to decrease the proportion in govt schools, through their effect on household incomes, thereby reducing village government support for government schools.

The primary effect of untied government funds is likely to be through the traditional income effect, generating a positive effect of total government income on schooling expenditures. However, the independent effect of SGRY income on schooling expenditures is likely to be low (perhaps even negative), because it is only the welfare of households who choose government schools that matters in determining allocations to these schools.

With these predictions of the effect of different types of government income on (village government) financial support for schools, we return to our analysis of school choice. Recall that the effect of tied and untied funds on school choice depend on their relative effects on schooling expenditures and on household income. By the analysis of this section, we expect government income to increase schooling expenditures. However, the independent effect of SGRY schooling on government financial support for schools is likely to be low. Therefore, we expect government income to have a larger positive effect on school choice than SGRY income.

CHAPTER 7

EMPIRICAL ANALYSIS OF INFRASTRUCTURAL INVESTMENTS IN SC AND OTHER CASTE LOCALITIES

Empirical Framework for testing the effectiveness of central mandates

The first goal of this project is to test whether central mandates which determine a specific level of infrastructural investments in SC localities bind the allocative decisions of village governments. If so, this suggests that central mandates are required to ensure the desired level of investment in SC localities, and to redress existing social inequities.

Our test of this hypothesis stems from the discussion of the theoretical model in the previous section. As discussed, in an unconstrained model, investments in SC localities can be represented by the following function:

$$(16) \quad y_{ks} = y_{ks}(w_1, w_2, \pi_i, \delta_i', G + SGRY + IAY) \quad k=1,2; \quad j=s,o;$$

From equation (7a), SGRY will have no independent effect on allocations in scheduled caste habitations, in regressions which also control for total income village income.

The regression equations we estimate are based on a linearization of (16), as follows:

$$(17) \quad y_{ksi} = \alpha_0 Y_i + \alpha_1 SGRY_i + X_i' \alpha_2 + u_i$$

where u_i is a random error term, which incorporates the effect of other unobserved variables which may also determine investments in any given locality. X_i includes other (observed) determinants, such as the share of SC households in the village population, and measures of village wealth, such as the distribution of landholdings within the village. Y_i is total village government income, equal to $G+SGRY+IAY$. Our test for whether central mandates bind is based on the coefficient, α_1 . Under the null hypothesis that central mandates have no effect implies that, in regressions which control for total village income, Y_i , $\alpha_1=0$.

This test is made possible by the unique socio-economic characteristics of Punjabi villages. As earlier described, Punjab villages are characterized by a significant amount of common property resources in the form of agricultural land, which provide a source of revenue to village governments. Thus, transfers from central and state governments comprise only a component of the total income of the village. This allows us to control for total income, and to separately test for the effect of government transfers targeted to scheduled caste localities.

While central government mandates may increase the absolute level of investment in scheduled caste communities, their effect on the *relative* welfare of scheduled and other castes depends on how local village governments determine investments in other caste communities. If the availability of government transfers completely determines funds in a village, then the restriction that some proportion of these funds be spent on scheduled caste communities will automatically carry implications for the level of expenditure in other caste communities, and

hence for the distribution of funds. In this case, if we also run regression (17) for location-specific investments in other caste communities, we should also find a significant (negative) coefficient on total SGRY funds provided to the village. This will not be the case if village governments have substantial amounts of revenues from other sources, including own resources. With additional resources, village governments may very well respond by increasing investments (out of own income) in other caste communities, thereby maintaining the relative distribution of expenditure. To examine these issues, we run equation (17), for investments in both scheduled caste and other caste localities.

Finally, we also examine investments in village public goods, specifically in elementary schools and in electricity supply. As noted in the theoretical analysis, we expect such investments to reflect total village income. They may, however, also vary with SGRY funds, because the level of such investments will be determined by the marginal utility they provide to both scheduled caste and other caste households, and that of scheduled caste households may reflect SGRY expenditures. The testable prediction of the data is that, if decentralization results in a greater sensitivity to local needs but also to political capture, this is more likely to affect investments in village public goods than in location-specific investments.

We therefore also examine the determinants of investments in village public goods, specifically schools and electricity supply. We test the sensitivity of these investments to local conditions and to political capture by including village wages amongst the regressors, in addition to dummy variables for the caste and gender of the village Sarpanch. Because wages vary across villages and this information is not readily available to central planners, it serves as a good measure of local conditions and needs.

The socio-economic profile of the village Sarpanch would normally be endogenously chosen by villagers, and hence reflective of village needs. If this were the case, inclusion of these characteristics in any regression on village level outcomes would suffer from their potential endogeneity, generating biased coefficients. This is not the case for villages in India. As previously described, the 73rd Constitutional Amendment required the reservation of 1/3rd of the seats for Panchayat for women, and also required reservation for scheduled castes on the basis of their proportion in the population. This reservation is being carried out in Punjab, since the 1998 Panchayat elections. For the 1998 election, reservations were randomly determined. That is, villages were listed, with their ranking randomly determined. From this list, every third village was earmarked for a female Panchayat, and of this, an additional reservation was made for Scheduled caste women. A similar procedure was implemented for the reservation of posts for members of the scheduled caste. For the 2003 election, a rotation system was followed, so that villages which had previously not been reserved were now subject to reservations, while those that had been reserved were unreserved. Because the assignment of Sarpanches follows this system, the determination of the gender and the caste of the Sarpanch can reliably be treated as exogenous. Rather than include the actual sex and caste of the Sarpanch, we include dummy variables for whether the position was reserved for women or for members of the scheduled caste in the village (in the 2003 election). As seen from our description of the data, the reservation system is an excellent predictor of the actual caste and gender of the Sarpanch.

A primary concern in this empirical analysis is measurement error in total village income. If any measurement error is related to SGRY income, then the coefficient α_1 could be significant, even

if central government mandates do not effectively constrain village governments. To control for this possibility, we instrument total village income, using income from common property resources and the amount of common property land as instruments.

SGRY income may, however, also be correlated with unobserved village characteristics. Even though that component of SGRY funds which comes directly to the village is meant to be uniformly distributed across panchayats, the component which is passed on to village governments from district and block level governments may be targeted to specific villages on the basis of their socio-economic conditions. If these conditions directly affect investment choices, then this may also bias the coefficient on SGRY income.

To overcome this possibility, we also instrument SGRY income, basing our instrument set on the total SGRY funds provided to the district government (Zilla Parishad), for transfer to village governments. As previously discussed, SGRY funds are first allocated to districts. District governments in turn pass on the share of SGRY funds allocated to lower level governments to them, and make decisions regarding the allocation of funds under their control. In this latter task, they are asked to look primarily at conditions in the labour market, which determine outcomes such as migration. As instruments, then, we use the total availability of SGRY funds at the level of the district, the per panchayat availability (total divided by the number of panchayats in the district), and interactions of the per panchayat availability with the village male wage (we use the harvest wage in the Rabi season) and the amount of Panchayat land.

Testing sensitivity of investment decisions to local and political conditions in the village:

Centralized decision making is commonly criticized on the basis of its failure to account for local conditions. Thus, centralization involves a trade-off between equity objectives, and the inability to use local knowledge. We test this, by examining the sensitivity of investment decisions to local conditions, using survey data on local wages. If total investment in scheduled caste communities is determined by the availability of government funds (primarily SGRY, but also tied funds from other government sources, including Member of Parliament funds), then the totality of such investments should be little affected by local wage rates. Conversely, investments over which local governments have some measure of control should be sensitive to wage rates.

We similarly test the sensitivity of investments to political conditions, primarily the characteristics of the head of the village government, the Sarpanch. As previously discussed, the 1992 & 3rd Amendment mandates reservations for women and for members of scheduled castes aimed to increase their voice in local governments and to give them some influence on the allocation of investments. The implicit assumption is that giving traditionally under-represented or weak sections of society greater voice would increase the involvement of these groups in village governments. But, if decisions regarding investments are determined by central mandates, the effect of reservations may be minimized.

We test this by including dummy variables for whether the position of Sarpanch in the village is reserved for women or for scheduled castes. The reservation of the Sarpanch post for different categories is randomly assigned across villages. That is, at the time of the 1998 village elections, of the list of villages, one-third were randomly chosen for reservation for a woman sarpanch. Similarly, villages reserved for scheduled caste sarpanches were also randomly chosen, with the

total number of villages so selected being determined by the proportion of scheduled caste households in the district population. This random assignment eliminates concerns regarding the endogenous selection of villages assigned to women or to scheduled caste households on the basis of characteristics which may also determine investment outcomes in the village.

Results of regressions on caste-specific investments

In this section, we present results from our analysis of the determinants of investments in locality-specific infrastructure in SC vehras, defined as the sum of investments in roads, drinking water and sanitation projects. The regressions are run only on villages in which there is a SC vehra. As discussed above, we present results from instrumental variable regressions, which instrument both for total village income and for village SGRY funds, though OLS results are also provided for comparative purposes.

Before discussing the main results, it is useful to consider the first stage regressions of the determinants of village income and SGRY funds. The results from these regressions are reported in Table 8. We report two sets of results. The first set presents results from regressions based on the sample of villages with SC vehras. The second set of regressions uses data from all our sample villages. The results are broadly similar across these two samples, so we confine our discussion to those for villages with SC vehras.

As expected, village income varies significantly and positively with income from Shamlat lands (specified as CPR income in the table). Total village income (which includes income from central government programmes, state government transfers as well as funds received from other programmes such as MPLADF) does not, however, depend on political factors, such as whether the village is reserved for women or for scheduled castes.

This may, however, be because these variables have offsetting effects on different components of income. This is suggested by the second regression, which explains the determinants of village SGRY funds. From regression (2) in the table, village SGRY funds vary with the availability of funds in the district, and with its interaction with village factors (wage rates and shamlat land). However, SGRY income also varies with local political conditions: it is lower if the village is reserved for a female Sarpanch, suggesting that male Sarpanches may be better placed to extract funds from higher level governments. The effect of political reservations on village income from higher level governments may provide one explanation for the finding of other researchers that political reservation affects the Panchayat's expenditure allocations (Chattopadhyay and Duflo 2004).

These first stage regressions provide the basis for our instrumental variable regressions on investments in SC vehras, reported in table 9. We start with an OLS regression of SC infrastructural investment on total income, SGRY funds, and on other socio-economic characteristics of the village. These include the total number of households, as well as the proportion of households in different socio-economic categories (below the poverty line, scheduled caste, and landless). Also included are the village male and female literacy rate, village area, SC area, and the proportion of SC households with land. This OLS regression does not instrument for total income or for SGRY funds. The results (reported in the first regression

in this table) suggest a positive effect of SGRY funds, even controlling for total income, which also significantly determines SC investments.

The instrumental variable results reported in the subsequent regressions control for the possible endogeneity of both total income and SGRY funds. The first stage regressions reported in the previous table suggest that this is important, given that village SGRY funds do appear to depend on village conditions.

The results suggest that the OLS regression coefficients were biased downwards, implying that both total income and SGRY income are correlated with unobserved village variables which lower investments in SC localities. Controlling for this correlation, the effect of full village income and SGRY income on SC investments is substantially larger and significant.

The significant coefficient on SGRY funds, after controlling for the effect of full village income, suggests that central government mandates which require that a certain proportion of SGRY funds be allocated to SC localities bind the expenditure decisions of local governments. That is, in the absence of such mandates, expenditures in SC localities would be significantly lower. The results suggest, then, that such centralized mandates are necessary to achieve equity objectives of the Government, which aim at improving the relative position of scheduled castes. In the absence of such mandates, that is, if local governments had full control over their funds as in a fully decentralized regime, investments in SC localities would be significantly lower.

Our theoretical analysis suggested, however, that any benefits of enhanced central government controls in terms of equity objectives may come at the cost of sensitivity to local conditions, and to the relevance of local democracy. The third regression in the table tests this hypothesis, expanding the set of regressors to include village wage rates and indicators for whether the village is reserved for woman or scheduled caste Sarpanch. The regression results reveal that, indeed, these variables have no effect on the amount of investment in SC localities..

For contrast, we present, in the fourth regression in the table, results from the determinants of infrastructural investments in other caste localities. For the sake of comparability with the other regressions in this table, this regression, too, is run on the sample of villages with a SC vehra. From the discussion of the previous section, we expect village SGRY funds to have a much smaller effect, if any, on investments in other-caste localities: controlling for total income, any effects would only occur through potential complementarity or substitutability with other village level public goods, and the effect of SGRY income on these goods. This hypothesis is confirmed in the regression. SGRY funds have no additional explanatory power in regressions on infrastructural investments in SC localities, once the effect of total income is controlled for. Total village income does, however, have a large effect on other-caste investments. Surprisingly, infrastructural investments, even in other caste localities, seem to be little influenced by local conditions, including wage rates and the system of political reservation.

Results from regressions on specific infrastructural investments, in SC and other caste localities

In addition to examining the determinants of total infrastructural investments in SC and other caste localities, we also examine the determinants of specific infrastructural investments. We

should expect the same broad patterns of dependence on full income and SGRY income to be repeated in these regressions, though allocative decisions amongst different infrastructural investments may be more sensitive to local conditions. Given the Government of Punjab's emphasis on sanitation projects, we provide results for investments in sanitation, distinguishing between investments in SC and other caste localities. We also examine the determinants of investments in drinking water, again separately for SC and other castes. Because only 21% and 31% of villages report investments in drinking water in SC villages and other caste locations respectively (table 6), for this investment we run probit regressions, which take into account the large number of villages who report no investments under this head. This is not necessary for investments in sanitation, given the high incidence of such investments. In both cases, we report results from instrumental variable regressions, which instrument for total income and SGRY funds, using the variables previously described.

The results from these regressions are presented in Table 9. They reveal that sanitation investments in scheduled caste localities are a function of total village income, and do not appear to be additionally affected by SGRY funds. This result is not unexpected, given the emphasis of the state government on sanitation. It is likely that a large component of the state government funds, as also central government funds, are specifically intended for sanitation projects. Because, as discussed in Chapter 3, many of these sanitation projects require the funds they provide to be spent on SC localities, this renders additional mandates imposed by SGRY as unnecessary.

This is not true of drinking water projects, whose determinants mirror those of total infrastructural projects in SC and other caste localities. SGRY funds are a significant determinant of drinking water investments in SC localities, even after controlling for total income (which has an insignificant effect). This suggests, again, that in the absence of such mandates, we would be unlikely to see drinking water investments in SC habitations. In contrast, SGRY income does not constrain sanitation and drinking water investments in other caste localities, which are determined, rather, by total village income. Surprisingly, however, and again mirroring the results from total infrastructural investments, investments in both drinking water and in sanitation projects vary little with socio-economic or political characteristics of the village.

The last column in the table provides regression estimates of the effect of total and SGRY income on irrigation investments undertaken in other caste habitations. These are investments which are likely to strongly augment the incomes of other caste households. And, they differ from government investments in both sanitation and drinking water, in that private alternatives to government irrigation, though they exist, are relatively costly. For irrigation investments, we find that SGRY income has a strong positive and independent effect, even after controlling for total village income. This suggests that SGRY income, in addition to increasing infrastructural investments in SC localities, also increases investments in other caste localities.

Results from investments in village public goods

Finally, we turn to investments in village public goods, namely in schools and in electricity projects. As with investments in general caste communities, it is possible that SGRY incomes could affect schooling investments, not because the provision of SGRY funds require

investments in schools, but because SGRY funds affect the welfare of SC households, and, through, this the allocative decisions of village Panchayats. We expect such effects to be small. We also expect investments in village public goods to be more sensitive to local conditions. Regression results are reported in table 11. For both schooling and electricity investments, we report results from instrumental probit regressions, which take into account the large number of villages which report no investments in these investments, and instrument for both total government income and for SGRY income. The set of instruments remains unchanged from that previously described. As before, the standard errors are corrected to allow for clustering at the district level.

We find that both types of investment increase significantly with village income, but not with SGRY funding. Further, in strong contrast to the infrastructural investments which are specific to SC and other caste localities, investments in village public goods appear to be far more sensitive to local conditions. In addition to the effect of rural wages (on both investment types), the gender and caste of the Sarpanch also affects investments: investments in schools falls if the village is reserved for a female Sarpanch, while investments in electricity projects increase under reservations for members of the Scheduled caste. These results suggest that village governments are able to influence spending patterns when it comes to village public goods, but not when it comes to investments which are specific to scheduled castes or to members of other castes.

CHAPTER 8

EMPIRICAL ANALYSIS OF DECENTRALIZED FUNDING FOR SCHOOLS AND PRIVATE SCHOOLING

In this section we turn to our analysis of the inter-relationship between government funds and the growth of the private sector. Our first goal is to test whether tied and untied funds, with the latter representing funds under the control of village governments, differ in their implications for the growth of the private sector. This issue is important, because the existence of a sizeable private sector may in turn affect the expenditure decisions of village governments, thereby generating an indirect mechanism by which the different types of government funds affect expenditure allocations and hence equity objectives. The second objective of the analysis of this chapter is to test the “reverse” effect of the private sector on government investments in schooling.

Empirical Framework for analyzing the determinants of school choice

Our analysis of the effect of government income on school choice differs from the literature on school finance in that we consider the implications of the tied and untied funds at the disposal of the village government, rather than tied and untied *schooling* funds.²² This mirrors the objectives of our current study of assessing the impact of central mandates which restrict the use of funds at the disposal of the Panchayat on government allocations.

As revealed in our theoretical analysis, government allocation decisions will reflect the proportion of other caste and scheduled caste households enrolled in government schools. Accordingly, we focus our empirical work on the estimation of these probabilities, assessing the extent to which they are affected by different types of government income.

The proportion of children (of any given caste) enrolled in a government school reflects two different margins of choice. The first is the choice between enrolling in any school (enrollment versus non-enrollment), while the second is the choice between government and private schools. Since we are only interested in the (net) effect of government income on the proportion of children of a given caste enrolled in government schools, we make no attempt to separately identify the determinants of the school enrollment decision and that of the school choice decision. We recognize, however, that the equations we estimate confound the effect of the enrollment decision with that of the school choice decision.

For scheduled caste households, we expect enrollments in government schools to more closely reflect the decision to enroll in a school, rather than the choice between private and government schools. That is, we expect that the relevant margin of choice is between enrolling in a school or not, rather than choosing between the government and private sector. Conversely, we expect the enrollment of other caste households in government schools to more closely reflect the choice between government and private schools, and hence to reflect private school characteristics.

²² We intend to extend our analysis to this topic in the future.

For this purpose, we use our data on enrollments in village government schools, by caste. Few village children attend government schools outside the village. As previously discussed, this is not the case for private schooling, where enrollments outside the village are extensive. However, we also collected data on the number of students enrolled in private elementary schools outside the village, so that our estimates of private school enrollments include enrollments in village private schools and in schools external to the village economy.

As suggested by the theoretical analysis, government expenditure allocations may be differentially affected by the schooling choices made by scheduled and other castes. We therefore estimate the proportion of children, separately for scheduled and other castes, enrolled in government schools, as a function of total village income and of SGRY funds, instrumenting these income variables to control for their endogeneity, using the same set of instruments described in the previous section.

In addition to income variables, we also allow schooling choices to be affected by private school fees, by institutional features of government schools, and by the interaction of private sector fees with these institutional features. The fees charged by private schools *within* the village are likely to be correlated with village socio-economic conditions, such as the demand for schooling. This would generate biased estimates of their effect on schooling. Recognizing that the schooling decisions of households in this economy are affected by private schooling options outside the village, we use district average private school fees for this analysis.

The most commonly cited institutional feature which is offered by village residents to explain the popularity of private schools is their use of English as the medium of instruction. Unfortunately, the limited variation in this variable across our sample, and the endogeneity of the choice of language of instruction, renders infeasible an analysis of its effect.

Instead, we examine the consequences of the caste of the headmaster of the primary school in the village. Employment in the government sector is guided by a policy of reservations which “reserves” a specified quota of positions for members of scheduled and other backward castes. This has had the effect of increasing the proportion of government school teachers who are members of scheduled castes. Because teachers and headmasters are assigned to village schools on a rotating basis by district level authorities, we can credibly argue that the presence of a scheduled caste headmaster is exogenously determined.

The regressions we run, for school choice in village i and caste k , are of the following form:

$$(18) \quad \text{prop_gov}_{ik} = \alpha_0 + \alpha_1 I_i + \alpha_2 \text{SGRY}_i + \alpha_3 (\text{fees_pvt})_i + \alpha_4 (\text{hm_sc})_i \\ + \alpha_5 (\text{hm_sc}_i * \text{fees_pvt}_i) + X' \alpha_6 + u_{ik}$$

In this equation, prop_gov_{ik} represents the proportion of caste k ($k=s,o$) in village i enrolled in government schools. I_i is total village income, while SGRY represent funds received under this programme only. We represent district private school fees by fees_pvt , and let hm_sc be a dummy variable which takes the value 1 if the headmaster in the primary school is a member of the scheduled caste. In addition to the interaction of these two variables ($\text{hm_sc} * \text{fees_pvt}$), the

regression also includes the following regressors: number of children in the village between the ages of 6-10 and, separately, 11-14, total population of the village, scheduled caste population, village male wages, dummy variables for whether the village is reserved for a woman or for a scheduled caste sarpanch, and the proportion of village households who are below the poverty line, members of scheduled castes, and landless.

As before, we correct the standard errors of the regression for the presence of common district level factors, which cause correlated regression errors for villages within a district. We also control for heteroscedasticity generated by the aggregation of enrollment probabilities at the level of the village, reporting results from regressions weighted by the (caste-specific) village child population.

Testing the reverse effect of school choice on village government schooling allocations

Our analysis of this issue returns to the estimates, of the previous section, of the probability of the village government providing funds to village schools. Guided by our theoretical analysis of the effect of school choice on government allocations, we extend our previous analysis to examine how the proportion of other caste households enrolled in government schools affects the decision of the Panchayat to provide funds for schools.

Our theoretical analysis of the previous section suggests that the decisions of both scheduled and other caste households will affect the expenditure decisions of the village governments. It also suggests that the effect of these caste specific schooling choices is likely to vary, with the schooling choices of other castes carrying larger weight.

This creates empirical difficulties because of the endogeneity of school choice. To control for this endogeneity, we need instruments for the schooling choices of both other caste and scheduled caste households. Ideal instruments would be caste-specific variables. But, measures such as caste-specific incomes or wealth are not suitable instruments, since the distribution of wealth by caste will independently affect schooling outcomes.

Our procedure builds on the assumption that the relevant margin of choice for other caste households is between government and private schools, while that for scheduled caste households is between enrollment in government schools or not. As discussed earlier in this section, this suggests that the proportion of other caste students enrolled in government schools will depend on the characteristics of private schools, such as their fees, but that this will not be the case for scheduled caste enrollments. This is a testable assumption: we test it in our prior analysis of the determinants of caste-based enrollments in government schools.

To anticipate our discussion of the results, we are able to confirm this hypothesis. We therefore restrict our analysis to the effect of the proportion of other caste students enrolled in government schools on schooling allocations, instrumenting this by the (district) private school fees and the interaction of private fees with the dummy variable for the caste of the headmaster. We ignore the effect of SC enrollments in government schools, since it is difficult to find instruments which credibly control for the endogeneity of this choice. If the characteristics of private schools, such as school fees, affect the schooling choices only of other caste households,

then they remain valid instruments for the proportion of other castes enrolled in government schools, even in regressions which omit the proportion of scheduled castes in these schools.

Define the indicator variable $SF_i=1$ if the Panchayat in village i provides funds for government schools, 0 otherwise. The regression we run is of the following form:

$$(19) \quad SF_i = \alpha_0 + \alpha_1 I_i + \alpha_2 SGRY_i + \alpha_3 (prop_gov)_{oi} + X_i' \alpha_4 + u_i$$

The set of auxiliary regressors in this regression, X , is as previously described, while $prop_gov_{oi}$ represents the proportion of other caste households enrolled in government schools in village i .

We compare the results of this regression with an “unconditional” on school choice regression which eliminates $prop_gov_o$ from the set of regressors. This allows us to compare the effects of government financing in village economies with private schooling (the coefficient on the income variable in the unconditional regression) with what it would be in the absence of private schooling.

We also consider the effect of different types of government income on alternative sources of village level school funding, specifically, funds collected by school level PTAs. We restrict our analysis to the voluntary funds collected by PTAs, ignoring the required PTA fees. As noted in our discussion of the schooling data, PTAs, particularly at the middle school level, collect a significant amount of funds for schools. We estimate a similar regression to (19) above, replacing SF_i with a dummy indicator of whether the PTA collects voluntary funds.

Results from regressions on school choice

We first discuss our regression estimates of the determinants of school choice (table 12). The first two columns in the table report the determinants of enrollments in government schools by other caste and scheduled caste households respectively, while the third column reports results from the estimation of private school enrollments.

Our results confirm that increases in government income *do* increase the proportion of other caste students in government schools. We expect that this is primarily because of their positive effect on schooling expenditures, though we do not test this hypothesis directly.²³ In contrast, SGRY funds, which constrain the village government’s ability to freely choose its investments, have no significant effect on the schooling choices of other caste households.

As expected, enrollment in government schools is higher in regions where private school fees are higher, though this positive effect is reduced when the village primary school headmaster is from the scheduled castes. That is, a SC headmaster reduces the effect of private school fees on school choice. Our results therefore confirm the importance of institutional features of schools in the determination of school choice.

Neither government income nor private school fees influence the proportion of scheduled caste students enrolled in government schools. This confirms our hypothesis that the proportion of

²³ We will turn to this subject in our follow-up reports.

SC children enrolled in government schools primarily reflects the choice to attend a school (rather than the choice between government and private schools). This choice may reflect household level determinants much more than it does schooling expenditures and other characteristics of schools.

The third column examines enrollments in private schools. If enrollments of other caste households in government schools primarily reflects their choice between government and private schools, we would expect the coefficient on the regressors in this regression to be opposite in sign to those in the first column (the regression of the proportion of other caste students enrolled in government schools). In general, this is the case: increases in government income and in private school fees, for example, decrease private school enrollments. Increases in SGRY income, however, significantly increases private schooling, suggesting again that the effect of SGRY income on school choices primarily reflects its effect on household income, rather than any direct effect on schooling expenditure.

The growth in private schools (the last column of results in table 12), as reflected in a dummy variable for whether the village has a school, also falls with government income and increases with SGRY income. Higher private schooling fees in the district increase the probability that there will be a private school in a village, as one would expect.

Results from regressions on Panchayat financial support for schools, controlling for the proportion of other caste children enrolled in government schools

Regressions reported in Table 13 return to the analysis of the determinants of village government expenditures on elementary schools, but now, unlike our previous analysis, including the proportion of other caste children enrolled in government school as a regressor. Recognizing the endogeneity of this choice, we instrument this variable, using as instruments (district average) private school fees and its interaction with an indicator variable for whether the primary school headmaster is a member of the scheduled castes. The headmaster's caste is not used as an instrument, since institutional features of government schools may directly influence government support for schools. Thus, this indicator variables is included in the set of regressors (but not in the set of instruments). The regression estimates of the proportion of other caste children enrolled in government schools from the previous table represents the "first stage" regression for our current analysis of the effect of school choice on government schooling expenditures.

Our dependent variable, as before, is an indicator variable which takes the value 1 if the village government provides funds to government schools. The first column in table 13 reports regression results which do *not* condition on the proportion of other caste children enrolled in government schools. This regression is very similar to that previously reported in table 11; the difference stems from the inclusion of several variables which are likely to be relevant for the determination of schooling decisions (number of children in the age groups 6-10 and 11-14, and the caste of the primary school headmaster).

We compare these results to those in the second column, which *do* condition on school choice. This regression reveals that the proportion of other caste households enrolled in government schools has a large positive effect on the government's willingness to allocate funds to village schools. These results suggest that the lack of support for government schools by village

Panchayats is partly the consequence of the high incidence of private schooling in the Punjab economy.

Because government income increases the proportion of students enrolled in government schools, thereby complementing any direct income effect on government financial investments in schools, the coefficient on government income in regressions which do not condition on school choice exceeds that in regressions which do. Put differently, part of the large observed effect of government income on financial support for schools reflects its positive effect on enrollments in government schools. In contrast, controlling for school choice, the effect of SGRY income on government financial support for schools is positive and significant. This implies that SGRY income *does* increase government support for schools, but only in the absence of private schools. Allowing for private schools, its overall effect on *Panchayat* support for schools, as indicated in the (unconditional) regression results in the first column, is insignificant, since this overall effect combines its positive direct effect with a negative effect through school choice.

In conclusion, our results suggest that high levels of government schooling explain the limited financial support extended by village *Panchayats* for government schools. This suggests the need to re-evaluate government policies, which support the growth of private schools: their increase significantly reduces local support for government schools. This, in turn, differentially affects scheduled caste households, the majority of whom cannot afford to exit the government schooling system in favour of the private sector.

CHAPTER 9

CONCLUSION

This study, the preliminary study in our programme of research on the decision making of village *Panchayats*, has focused on two issues: First, the effect of central mandates, which dictate how funds allocated to village governments are to be spent, on the expenditure decisions of *Panchayats*; and, second, the effect of the private sector on these decisions.

We summarize the main results of our analysis below. We find support for the hypothesis that central mandates requiring a proportion of SGRY funds to be invested in SC localities *do* increase these investments. However, we also find that SGRY funds increase *Panchayat* support for other goods, specifically irrigation, which directly benefit non-scheduled castes, even in regressions which control for total village income. This in turn suggests that central mandates may be ineffective in reducing socio-economic inequality across castes in village economies. We caution, however, that this hypothesis can only be conclusively confirmed through an analysis which uses household income to examine the relative effects of these different infrastructural investments on the welfare of scheduled and other castes.

Our results on the determinants of infrastructural investments also reveal the insignificance of political reservations in the Punjab economy. This result, is true for the investment of funds which are controlled by central government mandates, specifically, for infrastructural investments in SC localities. It is, surprisingly, also true for investments in other public goods which are not similarly subject to central mandates. We find, however, that the gender of the Sarpanch does explain the total SGRY funds received by the village, suggesting that investment allocations by higher level block and district governments are sensitive to the identity of the Sarpanch.

We then extended our analysis of the determinants of village government investment decisions to examine how the existence of a sizeable private sector for some public goods influence these choices. In the context of schooling, we provide strong empirical support for the hypothesis that *Panchayat* support for government schools falls with an increase in private schooling. This confirms our intuition: village elites should not be counted on to support public goods from which they receive few benefits. Our results suggest that policies which decentralize control over government schools will be less effective in improving the quality of these schools in economies, such as that of Punjab, which are characterized by a significant private schooling sector.

What, then, can be done to improve the quality of government schools? Our results reveal that increases in the incomes of village governments do increase their financial support for government schools. This suggests two alternative policies which may benefit government schools. First, it suggests the desirability of mandates which require that funds be spent on village public goods, such as schools, rather than on those which channels funds to sub-groups within the village population. Indeed, the second implication of our results is that reductions in the extent to which village governments are required to finance investments which exclusively benefit scheduled castes will *increase* investments in government schools, because they increase the untied funds available to village governments.

Our results also show that reductions in SGRY income will additionally increase the funds village governments devote to government schools, because reductions in SGRY funds *reduce* the number of children enrolled in private schools, correspondingly increasing the proportion in government schools. This effect on school choice is an important one to keep in mind, when evaluating the case for different types of central mandates. Our descriptive statistics reveal the significant degree of schooling segregation, by caste, which exists in the villages of Punjab: Scheduled caste households are represented in government schools, while private schools cater primarily to children of other castes. Such schooling segregation generates heterogeneity in the demand for government schools in the village economy. While the overall demand for schooling may be high, that for *government* schools may be low.

It is an empirical question whether scheduled caste households benefit more from the infrastructural investments in drinking water (which increase with SGRY funds) or from investments in schools. This question can only be answered through an empirical analysis based on household data. While both types of investment undoubtedly generate welfare improvements for scheduled castes, one would suspect that improvements in their long-term wealth may be more closely correlated with the quality of government schools.

In conclusion, though our results need to be confirmed through further analysis, our study questions the equity benefits of central mandates which are intended to benefit only scheduled caste households. This does not mean that we support fully decentralized systems. Under full decentralization, inter-village inequality is bound to increase, because of the significant effects of government income on almost every type of investment. Wealthier villages which are able to generate greater amounts of own revenue, either from common property resources or from local taxation, will, then, pull away from their poorer counterparts. While concerns regarding inter-village inequality *do* suggest the need for targeted interventions from the central government, our analysis suggests that it would be better to target funds towards investments which benefit all households in the village (through programmes like SSA which provide funding for schools). These programmes benefit schools directly, but also have the additional benefit of reducing the extent of private schooling and, therefore, the extent of socio-economic segregation within the village.

REFERENCES

- Alderman, Harold, Peter F. Orazem and Elizabeth M. Paterno. 2001. "School Quality, School Cost, and the Public/Private School Choices of Low-Income Households in Pakistan." *Journal of Human Resources* 36(Spring): 304-326.
- Alesina, Alberto, Reza Baqir and William Easterly. 1999. "Public Goods and Ethnic Divisions." *Quarterly Journal of Economics* 114: 1243-84.
- Annamalai, V. 2000. "The Role of Gram Panchayats in Managing Common Property Resources for the Benefit of Rural Poor: A Study in Karnataka and Haryana." Manuscript.
- Bardhan, Pranab and Dilip Mookherjee. 2000. "Capture and Governance at Local and National Levels." *American Economic Review* 90(2):135-39.
- Bardhan, Pranab and Dilip Mookherjee. 2006 "Decentralization and Accountability in Infrastructure Delivery in Developing Countries." *Economic Journal* 116(508):101-127.
- Bénabou, Roland. 1996. "Equity and Efficiency in Human Capital Investment: The Local Connection." *Review of Economic Studies* 63:237-264.
- Centre for Research in Rural and Industrial Development. 2002. *State Development Report of Punjab*. Report prepared for the Government of India, Planning Commission.
- Chattopadhyay, Raghavendra and Esther Duflo. 2004. "Women as Policy Makers: Evidence from an India-wide Randomized Policy Experiment." *Econometrica* 72(5): 1409-1443.
- Chattopadhyay, Raghavendra and Esther Duflo. 2004. "Efficiency and Rent Seeking in Local Government." Manuscript.
- Drèze, Jean and Amartya Sen. 1995. *India: Economic Development and Social Opportunity*. Oxford: Clarendon Press.
- Eskeland, Gunnar S., and Deon Filmer. 2000. "Does Decentralization Improve Learning? Autonomy and Parental Participation in Argentine Schools." Manuscript. Washington, D.C.: The World Bank.
- Fiske, Edward B. and Helen F. Ladd. 2003. "Balancing Public and Private Resources for Basic Education: School Fees in Post-Apartheid South Africa." Manuscript.
- Foster, Andrew and Mark Rosenzweig. 2002. "Democratization, Decentralization and the Distribution of Local Public Goods in a Poor Rural Economy." Manuscript.
- Galiani, Sebastian and Ernesto Schargrotsky. 2002. "Evaluating the Impact of School Decentralization on Educational Quality." *Economia* (Spring):275-302.

Gertler, Paul and Paul Glewwe. 1990. "The Willingness to Pay for Education in Developing Countries: Evidence from Rural Peru." *Journal of Public Economics* 43:251-275.

Government of Punjab. 2002. "Report of the Public Expenditure Reforms Commission, Punjab."

Hoxby, Caroline M. 2000. "Does Competition among Public Schools Benefit Students and Taxpayers?" *American Economic Review* 90(5):1209-38.

Jimenez, Emmanuel and Yasuyuki Sawada. 1999. "Do Community-Managed Schools Work? An Evaluation of El Salvador's EDUCO Program." *World Bank Economic Review* 13(3):415-41.

King, Elizabeth M., and Berk Ozler. 2000. "What's Decentralization Got to Do with Learning? Endogenous School Quality and Student Performance in Nicaragua." Washington: World Bank, Development Research Group.

King, Elizabeth M., Peter F. Orazem and Victoria Gunnarsson. 2003. "Decentralization and Student Achievement: International Evidence on the Roles of School Autonomy and Community Participation." Manuscript.

Malaviya, H.D. 1956. *Village Panchayats in India*. New Delhi: All India Congress Committee.

McKinnon, Ronald I. and Thomas Nechyba. 1997. "Competition in Federal Systems: The Role of Political and Financial Constraints," in J. Ferejohn and B. Weingast, eds. *The New Federalism: Can the States be Trusted?* Stanford: Hoover University Press, pp. 3-64.

Rani, P. Geetha. 2004. "Financing Elementary Education and Sarva Shiksha Abhiyan." Manuscript.

Singh, Nirvikar. 1997. "On Federalism and Reform in India." Manuscript.

Thomas A. Downes. 1992. "Evaluating the Impact of School Finance Reform on the Provision of Public Education: The California Case." *National Tax Journal* 45(4): 405-19.

Wade, Robert. 1997. "How Infrastructure Agencies Motivate Staff: Canal Irrigation in India and the Republic of Korea." In Ashoka Mody, ed., *Infrastructure Strategies in East Asia*. Washington, D.C.: The World Bank.

World Bank. 2000. *Overview of Rural Decentralization in India*. Manuscript.

World Bank. 2004. *World Development Report 2004: Making Services Work for Poor People*. Washington, D.C.: The World Bank.

TABLES

Table 1. Socio-economic Characteristics of Sample Villages

Variable	Obs	Mean	Std. Dev.	Min	Max
Total population of village	300	1421.31	1277.80	38	6314
General caste population of village	300	651.61	701.15	0	4049
OBC population of village	300	250.87	404.93	0	2725
SC population of village	300	518.76	531.80	0	2923
Total households in village	300	248.79	228.62	4	1360
General Caste households in village	300	114.02	127.09	0	810
OBC households in village	300	44.07	70.34	0	477
SC households in village	300	90.71	92.60	0	465
<i>Characteristics of SC Vehra</i>					
Land area of SC Vehra	259	4.81	5.34	0	30
Distance to main village of SC Vehra	259	0.04	0.23	0	2
% of households who own land in SC Vehra	259	6.41	16.88	0	100
% of BPL households in SC vehra	259	27.39	29.21	0	100
<i>Village assets</i>					
Land area of village	300	1031.01	1162.85	20	8400
Shamlat land (in acres)	300	22.00	48.67	0	500
Any shared fishing ponds?	300	0.12	0.33	0	1
If yes, area of ponds (in acres)	300	0.48	1.62	0	13
Any rental income from shops on village land?	300	0.06	0.24	0	1
If yes, from how many shops?	300	0.34	1.82	0	22

Table 2. – Socio-economic characteristics of households in sample villages

Variable	Mean	Std. Dev	Minimum	Maximum
<i>Land distribution</i>				
% hholds with no land	45.73	20.11	0	100
% hholds with > 10 ha.	1.50	2.78	0	25
<i>Income -- % of hholds whose major income source is:</i>				
Self-employment, ag	47.24	17.53	0	98
Self-employment, non-ag	6.28	5.47	0	45
Casual ag. labour	21.34	15.43	0	75
Casual non-ag labour	16.31	14.05	0	74
Salaried job	8.52	9.10	0	50
<i>% of hholds with NRI member</i>	6.67	11.89	0	70
<i>% of people receiving social security</i>				
Number of people receiving Old-age pension	51.47	56.62	0	383
Number of people receiving Disability pension	4.33	6.25	0	40
Number of people receiving Widow/widower pension	8.66	9.72	0	68
Number of people receiving Destitute pension	2.04	3.27	0	24

Table 3. Use of Health Services

Variable	Mean	Std. Dev.	Min	Max
<i>% of households using prv services for:</i>				
routine check-ups	2.68	6.35	0	50
common illnesses	69.31	18.77	5	100
emergency care	69.58	20.53	10	100
delivery/birth	66.16	18.97	10	100
pre & post-natal care	10.62	11.25	0	100
immunization	1.88	3.01	0	20
<i>Cost of govt and prv services</i>				
consultancy fee in private hospital	53.62	18.13	20	100
consultancy fee in CHC	1.46	0.54	1	5
delivery/birth in private hospital	4311.33	1596.40	1000	10000
delivery/birth in CHC	1593.00	697.51	250	3000
hospital stay in private hospital	245.45	89.74	25	500
hospital stay in CHC	5.32	1.68	0	20

Table 4. – Panchayat Income, 2004-05 and 2005-06, Survey Villages

Income source	2004-05		2005-06	
	Mean	Std. Dev	Mean	Std. Dev
House tax	110.07 (0.0004)	767.55	119.81 (0.0006)	899.79
Shamlat land	60,579.25 (25.61)	138,991.70	64,496.98 (33.96)	151,555.3
Other rental income from own property	4,512.17 (1.91)	20,181.22	4,774.34 (2.51)	22,140.02
SGRY (total)	50,521.87 (21.36)	63,615.00	33,092.51 (17.42)	46,496.43
Of which, SGRY direct to Panchayat	13,094.48 (5.53)	24,023.29	8,613.05 (4.53)	21,258.74
Other Central Govt. grants	10,746.1 (4.54)	55,607.64	5,498.88 (2.90)	32,155.88
MPLADF	50,606.78 (21.39)	246,217.7	28,366.1 (14.94)	69,928.84
State Govt. grants	36,868.47 (15.58)	145,422.40	42,444.07 (22.35)	117,266.9
Total Income	236,578.0 (100.00)	358,416.2	189,923.0 (100.00)	220,636.1
Sample size	295		295	

Note: Figures in brackets are percentages to total income. All amounts are in Rupees.

Table 5. – Panchayat Expenditure, 2004-05 and 2005-06, Survey Villages, by location

Item	2004-05		2005-06	
	Total	In SC Vehra	Total	In SC Vehra
Electricity projects	2,321.57 (20,240.39) 1.48%	--	1,814.05 (10,735.5) 0.92%	--
Irrigation	4,471.19 (18,317.82) 2.85%	--	3,135.59 (15,311.85) 1.59%	134.53 (2,008.95) 0.22%
Drinking water	4,944.89 (18,958.19) 3.15%	2,145.29 (7,938.73) 3.11%	8,914.58 (54,617.18) 4.51%	5,402.24 (34,015.46) 8.73%
Sanitation projects	75,971.9 (149,596.5) 48.39%	45,514.33 (143,439.9) 66.04%	101,372.6 (400,660.1) 51.28%	32,511.26 (53,725.46) 52.53%
Local roads	21,297.63 (77,257.56) 13.56%	3,117.94 (14,283.42) 4.52%	31,562.46 (119,878.1) 15.97%	7,673.77 (31,347.75) 12.40%
Schools & schooling items	15,152.54 (47,522.65) 9.65%	721.97 (6064.51) 1.05%	15,233.66 (46,258.74) 7.71%	753.36 (6540.74) 1.22%
Health centres	2,671.19 (40,882.99) 1.70%	--	1,545.09 (11,459.63) 0.78%	--
Street lighting	1,953.73 (14,665.9) 1.24%	713.00 (5,619.96) 1.03%	575.25 (6,579.92) 0.29%	165.92 (1,460.23) 0.27%
Panchayat Building	10,685.76 (36,262.94) 9.34%	--	13,762.27 (34,659.68) 6.96%	--
Other projects	17,540.43 (40,101.31) 11.17%	16,708.52 (49,816.75) (24.24)	19,778.87 (47,685.3) 10.0%	15,252.91 (36,779.79) 24.64%
Total Expenditure	157,010.4 (215,521.5) 100.00%	68,921.06 (153,239.4) 100.00%	197,694.4 (450,527.5) 100.00%	61,894.00 (83,020.8) 100.00%
Sample size	295	223	295	223

Note: Figures in brackets are standard deviations. Percentages reported are percentages to total expenditure in the respective column. All amounts are in Rupees.

Table 6. – Proportion of Village Panchayats Reporting Expenditure by Item, 2004-05 and 2005-06 combined.

Item	Total		SC Vehra	
	Mean	Std. Dev	Mean	Std. dev
Electricity projects	0.17	0.18	-	-
Irrigation	0.12	0.33	0.005	0.07
Drinking water	0.31	0.46	0.21	0.41
Sanitation projects	0.87	0.34	0.82	0.39
Local roads	0.29	0.45	0.16	0.36
Schools & schooling items	0.31	0.46	0.03	0.18
Health centres	0.07	0.27	-	-
Street lighting	0.07	0.25	0.04	0.18
Panchayat Building	0.35	0.48	-	-
Sample size	295		223	

Table 7. – Sources of funding for primary and middle government schools, 2004-05 and 2005-06, Survey Villages

Source of funds	Primary schools		Middle schools	
	2004-05	2005-06	2004-05	2005-06
SSA	35,759.15 (58,473.74)	38,367.22 (104,801.1)	38,900.74 (57,739.74)	81,314.67 (23,4364.1)
Panchayat	1,457.78 (11,185.54)	1,278.18 (7787.01)	2,312.93 (23,212.52)	2,598.70 (27,057.3)
PTA	1,195.43 (5,927.52)	1,273.24 (6169.64)	15,146.54 (36,081.03)	11,183.94 (16,236.74)
MPLADF	672.73 (7173.69)	727.27 (12,060.45)	-	2,439.02 (27,050.09)
State Government	-	363.63 (6030.23)	-	8,130.08 (90,166.96)
Other	1,283.55 (11,328.19)	2,874.17 (31,107.29)	3,378.69 (17,343.8)	1,653.37 (10,415.84)
Total	40,368.66	44,883.71		107,309.78
Sample size	275		123	

Note: Figures in brackets are standard errors. All amounts are in Rupees.

Table 8. – Reduced form regressions on Panchayat Income and SGRY funds

Variable	In villages w/SC Vehra		All Villages	
	Full Income	SGRY	Full Income	SGRY
CPR income	0.4074* (0.1299)	-0.0030 (0.0191)	0.4524* (0.0881)	0.0013 (0.0196)
Distr. SGRY per Panchayat	-691495+ (394878)	92508 (58066)	-424638* (194829)	79483* (36033)
Distr. SGRY* wage	1661.08 (2714.67)	-899.47* (399.19)	1466.08 (1301.82)	-689.66* (285.29)
Distr. SGRY* land CPR	2568.50 (2372.69)	1048.70* (348.90)	846.74 (1458.41)	866.61* (331.58)
CPR land	-2517.34 (2886.73)	-862.34* (424.49)	-720.93 (1504.20)	-739.05* (255.30)
Distr # Panchayats	-197.79 (124.47)	12.52 (18.30)	-192.19* (59.22)	-0.4908 (21.00)
Wage	-1627.37 (2839.02)	1357.23 (417.47)	-1563.40 (1362.19)	1062.52* (474.37)
Village reserved- fem	117473 (83097.94)	-23264* (12219)	106378 (89205)	-5779.08 (10193.67)
Village reserved-SC	24705.71 (86180.25)	-17200 (12673)	7383.58 (54611.3)	-12623.4 (10724.8)
Hholds	74.22 (235.05)	69.12* (34.56)	263.89 (223.70)	73.15* (30.59)
Prop. BPL	647273* (255837)	77050* (37620)	484229+ (265713)	35152.52 (33270.99)
Prop. SC	-63976 (236078)	54933 (34715)	-10307 (103338)	-12615.55 (20181.77)
Prop. Landless	1344.48 (2893.78)	-699.62+ (425.53)	82.55 (1763.21)	14.14 (343.57)
Village male literacy rate	-3260.10 (7636.12)	-297.13 (1122.88)	-3462.16 (4381.35)	-665.59 (727.52)
Village female literacy rate	2253.67 (7268.48)	386.53 (1068.82)	3302.68 (2715.04)	303.18 (881.33)
Village area	109.02* (51.35)	.2109 (7.5513)	51.49 (65.93)	-5.33 (6.38)
SC area	3604.13 (8619.84)	-491.76 (1267.54)	2870.80 (7736.44)	-365.51 (966.43)
Prop SC w/land	-2492.0 (2270.45)	-376.03 (333.87)	-2005.72+ (1226.71)	-17.72 (316.60)
Sample size	213	213	293	293

Table 9. – Determinants of Infrastructural Investment in SC Vehras and in other caste localities
(Sample: villages with SC Vehras)

Variable	Total infrastructural Investments in SC Vehras			In other caste habitations
	OLS	IV	IV	IV
Total income	0.077* (0.020)	0.142* (0.034)	0.144* (0.035)	0.4263* (0.1636)
SGRY	0.128* (0.036)	0.580* (0.237)	0.391* (0.110)	-0.8841 (0.6059)
Wage	-	-	66.258 (117.36)	108.32 (393.96)
Village Reserve-fem	-	-	13818.8 (12944.5)	-22792.7 (38036.01)
Village Reserved -SC	-	-	6920.1 (17932.9)	7124.33 (35173.27)
# households	43.72+ (22.96)	2.12 (51.40)	14.8645 (38.4370)	120.30+ (72.27)
Prop BPL	-5390.78 (38253.67)	-62284.68* (30260.45)	-53213.22+ (28076)	263918+ (156546)
Prop SC	74107.38* (29602.63)	52090.79* (19927.7)	57174.2* (19438.1)	-62459 (62657)
Prop landless	15.46 (386.87)	79.97 (365.48)	1.8475 (358.95)	-967.52 (912.83)
Village male literacy rate	-87.92 (1081.31)	358.73 (1343.73)	184.47 (1345)	1742.95 (2662.59)
Village female literary rate	-19.13 (1058.40)	-210.88 (1156.28)	20.24 (1102.06)	1479.84 (2691.21)
Village area	4.44 (11.50)	-3.88 (13.43)	-5.84 (11.67)	10.06 (30.24)
SC area	-229.73 (1760.54)	-266.71 (1902.54)	-69.02 (1809.60)	-2549.24 (2322.71)
Prop SC w/ land	-190.19 (168.21)	142.28 (201.70)	98.14 (204.41)	-313.58 (618.70)
Sample size	213	213	213	213
Regression. F.	15.31	27.96	29.40	75.41

Note: All standard errors are clustered at the district level. Dependent variable is equal to 1 if investment in SC vehra, 0 otherwise. Instruments for IV probits are described in the text.

*Significant at the 5% level

+ Significant at the 10% levels.

Table 10. – Determinants of Specific Infrastructural Investment for Scheduled and Other Castes
(Sample: villages with SC Vehras)

Variable	Investments in SC Vehras		Investments in other caste localities		
	Sanitation	Drinking water	Sanitation	Drinking water	Irrigation
Total income	0.1106* (0.0520)	4.79 e-07 (5.18 e-07)	0.3654* (0.1895)	7.73 e-07* (3.99 e-07)	7.68 e-07* (2.88 e-07)
SGRY	0.0915 (0.4548)	9.73 e-06* (4.31 e-06)	-0.8670 (0.5767)	8.21 e-06 (8.16 e-06)	0.00001* (2.41 e-06)
Wage	215.09 (351.34)	-0.001 (0.005)	410.63 (377.17)	-0.003 (0.005)	-0.003 (0.002)
Village Reserve-fem	-21262 (34615)	0.275 (0.178)	35331.2 (57570)	0.154 (0.202)	0.433* (0.141)
Village Reserved -SC	27406 (25544)	0.156 (0.169)	-37167 (53918)	-0.018 (0.303)	-0.016 (0.155)
# households	18.12 (40.57)	-0.001 (0.001)	73.53 (61.56)	-0.001 (0.001)	0.0002 (0.0002)
Prop BPL	-34674 (88870)	-0.972 (0.739)	298380+ (179691)	-0.585 (1.013)	-0.001* (0.0005)
Prop SC	103176 (88834)	0.425 (0.853)	-8093.61 (89302)	-0.706 (0.586)	0.607 (0.667)
Prop landless	-640.55 (961.46)	0.001 (0.007)	2.54 (921.32)	0.004 (0.010)	-0.037+ (0.023)
Village male literacy rate	1129.03 (1740.60)	-0.004 (0.017)	-1490.44 (3314.43)	-0.005 (0.019)	0.012 (0.021)
Village female literary rate	-1310.38 (1358.76)	-0.004 (0.017)	1397.72 (2050.42)	0.0003 (0.016)	-0.011 (0.017)
Village area	8.01 (30.42)	0.0001 (0.0001)	-1.77 (29.06)	0.0001 (0.0003)	0.0001 (0.0002)
SC area	3109.85 (2338.81)	0.005 (0.021)	-971.03 (3403.89)	0.023 (0.027)	0.021 (0.019)
Prop SC w/ land	-599.79 (381.90)	-0.007 (0.010)	-261.12 (947.64)	0.001 (0.006)	-0.037 (0.023)+
Sample size	213	213	213	213	213
Regression. F.	228.78	-5906.10 ^a	12.89	-5922.46 ^a	-5899.44 ^a

Note: All standard errors are clustered at the district level. Regressions for sanitation are instrumental variable regressions. Regressions for drinking water are instrumental variable probit regressions. Instruments are described in the text.

*Significant at the 5% level

+ Significant at the 10% levels

^a value of the Log Likelihood function

Table 11. – Determinants of Infrastructural Investment in village public goods, and in goods which benefit other castes
(Sample: all villages)

Variable	Govt. schools	Electricity
Total income	1.59 e-06* (4.10 e-07)	1.54 e-06* (5.25 e-07)
SGRY	3.35 e-06 (4.21 e-06)	-6.58 e-06 (5.58 e-06)
Wage	-0.004+ (0.002)	0.007* (0.002)
Village Reserve-fem	-0.229 (0.163)	-0.073 (0.186)
Village Reserved –SC	0.181 (0.251)	0.320 (0.228)
# households	0.0008+ (0.0004)	0.001* (0.0004)
Prop BPL	-0.080 (0.549)	0.832 (0.752)
Prop SC	0.936* (0.499)	-0.371 (0.733)
Prop landless	0.006* (0.0025)	0.006 (0.007)
Village male literacy rate	0.001 (0.008)	-0.012 (0.014)
Village female literary rate	-0.001 (0.008)	0.011 (0.012)
Village area	0.0003* (0.0001)	0.0001 (0.0001)
SC area	-0.024 (0.021)	-0.017 (0.019)
Prop SC w/ land	-0.011 (0.007)	-0.008 (0.008)
Sample size	295	295
Log likelihood	-8101.85	-7985.89
Wald χ^2 (2) test for exogeneity	15.28	13.57

Note: All standard errors are clustered at the district level. Regressions are instrumental variable probits, which treat total income and SGRY income as endogenous, using the instruments described in the text.

*Significant at the 5% level

+ Significant at the 10% levels

^a value of the Log Likelihood function

Table 12 – Effect of school choice on Government funding for elementary schools (Sample: villages with government schools)

Variable	Prop. Enrolled in govt. schools		Prop. Enrolled in private schools	Private school in village
	Other castes	Scheduled castes		
Total income	6.32 e-08*	-2.95 e-09	-4.47 e-08	-3.19 e-07
	(2.53 e-08)	(7.08 e-08)	(4.85 e-08)	(3.08 e-07)
SGRY	3.02 e-07	-8.82 e-07	4.69 e-07+	0.00001*
	(2.17 e-07)	(6.46 e-07)	(2.46 e-07)	(2.61 e-06)
District mean pvt school fees	0.002*	-0.0004	-0.001+	0.004+
	(0.0008)	(0.001)	(0.0008)	(0.002)
Private fees * Govt headmaster SC	-0.002*	0.001	0.001	-0.003
	(0.001)	(0.001)	(0.001)	(0.003)
Govt (primary) headmaster SC	0.192*	-0.075	-0.145	0.055
	(0.086)	(0.162)	(0.118)	(0.425)
Village reserved - female	0.059	0.091+	-0.065*	0.220
	(0.039)	(0.053)	(0.025)	(0.201)
Village reserved - SC	0.028	0.040	0.017	0.274*
	(0.041)	(0.052)	(0.037)	(0.121)
Village harvest wage, males	0.0002	0.001	-0.0001	-0.007*
	(0.0004)	(0.001)	(0.0004)	(0.002)
Number of children, 6-10	-0.0012*	-0.001*	0.0009*	0.004
	(0.00017)	(0.0004)	(0.0002)	(0.003)
Number of children, 11-14	0.001*	0.0006*	-0.0006*	-0.002
	(0.0002)	(0.0002)	(0.0002)	(0.002)
Population	0.0001+	0.0003	-0.0001	0.0008+
	(0.00007)	(0.0002)	(0.0001)	(0.0004)
SC population	-0.0001	-0.0007	0.0001	-0.002+
	(0.0002)	(0.0005)	(0.0002)	(0.001)
Proportion below poverty line	0.171	0.191+	-0.260	-0.691
	(0.110)	(0.104)	(0.088)	(0.623)
Proportion SC hholds	-0.057	-1.315*	0.152	0.948*
	(0.148)	(0.191)	(0.148)	(0.472)
Proportion landless	0.0007	0.002	-0.002	0.006
	(0.0016)	(0.002)	(0.001)	(0.004)
Village male literacy rate	0.0011	0.002	-0.002	-0.003
	(0.0033)	(0.005)	(0.003)	(0.011)
Village female literacy rate	-0.0029	-0.001	0.004	0.006
	(0.0026)	(0.005)	(0.003)	(0.015)
Sample size	277	277	277	277

Note: All standard errors are clustered at the district level. Regressions for sanitation are instrumental variable regressions. Regressions for drinking water are instrumental variable probit regressions. Instruments are described in the text.

* Significant at the 5% level

+ Significant at the 10% levels

^a value of the Log Likelihood function

Table 12 – IV Probit regressions on village government expenditures on schools, controlling for proportion other castes in government schools

Variable	Regression 1	Regression 2
Total income	1.76 e-06* (4.40 e-07)	1.27 e-06 * (4.95 e-07)
SGRY	3.61 e-06 (2.95 e-06)	6.91 e-06+ (3.94 e-06)
Prop. other castes in govt schools		2.446* (0.994)
Govt (primary) head master SC	-0.172 (0.171)	-0.210 (0.154)
Children ages 6-10	0.0005 (0.002)	0.003 (0.002)
Children ages 11-14	-0.003 (0.002)	-0.006* (0.003)
Village harvest wage, males	-0.004+ (0.002)	-0.006* (0.003)
Village reserved - females	-0.296* (0.139)	-0.396* (0.179)
Village reserved - SC	0.183 (0.241)	0.186 (0.219)
Population	0.0004+ (0.0002)	0.0004+ (0.0002)
SC population	-0.001* (0.0005)	-0.002* (0.0005)
Proportion below poverty line	-0.138 (0.557)	-0.600 (0.602)
Proportion SC hholds	1.021* (0.509)	1.224* (0.505)
Proportion landless	0.004 (0.003)	0.001 (0.003)
Proportion SC hholds with land	-0.007 (0.005)	-0.008+ (0.005)
Village male literacy rate	0.007 (0.007)	0.002 (0.008)
Village female literacy rate	-0.005 (0.008)	0.004 (0.010)
Sample size	277	277
Log Likelihood	-7546.09	-7541.73
Wald χ^2 statistic	4.32	3.05

Note: All standard errors are clustered at the district level.

* Significant at the 5% level

+ Significant at the 10% levels

District-wise List of
Selected Villages

Sr. No	District / Villages
GURDASPUR:	
1.	Thara Jhikla
2.	Tharial
3.	Kingarian
4.	Ferozepur Kalan
5.	Phangarian
6.	Papial
7.	Malharwan
8.	Jaswan
9.	Alyal
10.	Bharath Qaji Chak
11.	Naurangpur
12.	Mirjanpur
13.	Jiojulahi
14.	Narwan
15.	Lole Nangal
16.	Maddowal
17.	Aujla
18.	Salimpur Araioan
19.	Badesh
20.	Rasulpur
21.	Dalla
22.	Bahian
23.	Faizullah Chak
24.	Jati sarai
25.	Bharo Harni
26.	Alman
27.	Dulowal
28.	Rahimabad
29.	Sultanpur
30.	Ammo Nangal
31.	Chahgill
32.	Harsian
33.	Suniyah
34.	Kot Majlas
35.	Ghanieke Bangar

Faridkot	
36.	Sukhanwala
37.	Arajanwala Kalan
38.	Bhana
39.	Malla Kalan
Mansa	
40.	Maghanian
41.	Piplian
42.	Chakerian
43.	Khiala Kalan
44.	Mirpur Khurd
45.	Karipur Dumb
Bhatinda	
46.	Balahar Mehma
47.	Jai Singa Wala
48.	Katar Singh Wala
49.	Dhunike
50.	Kararwala
51.	Jodhpur Bagga Singh alias Phalran
52.	Swaich
Moga	
53.	Veroke
54.	Ramuwala Kalan
55.	Datta
56.	Kahan Singh Wala
57.	Jalalabad
58.	Chak Bhaura
59.	Chirag Shahwala
60.	Dina
Amrtisar	
61.	Thoba
62.	Shahiwal
63.	Tur
64.	Tut
65.	Lodhi Gujar
66.	Hetampur
67.	Kakar
68.	Audor

69.	Veroke
70.	Joeke
71.	Beharwal
72.	Rakhey
73.	Sangatpura
74.	Nawanpind
75.	Baserke Gillan
76.	Athwal
77.	Khera Thanewal
78.	Khawaspur
79.	Alia
80.	Fazilpur
81.	Devianwal
82.	Theh Kalla
83.	Mori Megha
84.	Modar Mathra Bhagi
85.	Gadhaike
86.	Jindanwala
87.	Aima Khurd
88.	Tharu
89.	Manochahal
Fatehgarh Sahib	
90.	Salan Dulla Singh Wala
91.	Shergarh Bara
92.	Sikandarpur
93.	Wajirabad
94.	Mandaur
95.	Bibipur
96.	Baras
97.	Longo Majri
98.	Rajinder Nagar
99.	Dholewal
100.	Faraur
Ferozepur	
101.	Bhangar Khera
102.	Dodewala
103.	Ruranwala
104.	Walle Shah Uttar
105.	Kabir Bachha

106	Machhiwara
107	Kaliewala
108	Barabhai
109	Rukan Shah Wala
110	Bandala
111	Sultanwala
112	Nihalewala
113	Dulewala
114	Fatuwala
115	Said ke Nail
116	Dila Ram
117	Jhok Tehal Singh
118	Qutalgarh
119	Chak Saidoke
120	Roranwala Urf Tarewala
121	Lamochar Khurd
122	Bhupewala
123	Chak Maharana
124	Pandori Khatrian
Ludhiana	
125	Sangheh
126	Kariana Kalan
127	Khasi Kalan
128	Tibba
129	Sayan Khurd
130	Lohgarh
131	Bulara
132	Mohi
133	Bassowal
134	Sheikh Kutab
135	Bullepur
136	Kauri
137	Uksi
138	Kalahar
139	Tussa
140	Kalsan
141	Khanpur
142	Khera
143	Sarbatgarh
144	Jalah Majra
145	Ballion

146	Boundal
Muktsar	
147	Chibranwali
148	Saddarwala
149	Chak Baja Madahar
150	Chak Duhe wala
151	Hakuwala
152	Bhagu
153	Sarawan
154	Punjawa
Nawanshahr	
155	Sujjon
156	Dhah
157	Talwandi Jattan
158	Rasulpur
159	Sodhian
160	Jalwaha
161	Mandher
162	Tundewal
163	Garle Dhaha
164	Gulpur
165	Jitpur
Jullundhar	
166	Chak Jethpur
167	Mubarkpur
168	Chandpur
169	Rehmanpur
170	Kotla
171	Gill
172	Nangal Manaohar
173	Kala Bhian
174	Aema
175	Shivdaspur
176	Sandham
177	Khiwa
178	Mund
179	Budhi Pind
180	Singhpur
181	Raipur Araian
182	Gursian Nihal

183	Sagarpur
184	Pharwala
185	Bakapur
186	Gohawar
187	Gatti Raipur
188	Sadiqpur
Hoshiarpur	
189	Baich
190	Darya
191	Ibrahimpur
192	Lodhi Chak
193	Malakpur Badal
194	Sehjowal
195	Pandori Atwalon
196	Raghwal
197	Makoowal
198	Mahal
199	Kammowal
200	Jaitpur
201	Raipur gujron
202	Gaddiwal
203	Fatehpur
204	Kutab pur
205	Daulowal
206	Sainchan
207	Bassi Purani
208	Bassi Shah Mohamad
209	Bassi Kalan
210	Attalgarh
211	Bains Khurd
212	Khunkhun Khurd
213	Machhariwal
214	Dhah urf Ramnagar
215	Attawal
216	Phuglana
217	Ferozepur
218	Batala
219	Siri Pandain
220	Behdarga
221	Chattarpur
222	Sikri Urf Ramgarh

Patiala	
223	Bhagwasi
224	Hassanpur
225	Bhagwanpur
226	Rajo Majra
227	Rohti Chhanna
228	Duladi
229	Bishanpura
230	Jatiwal
231	Muradpur
232	Malo Majra
233	Khansan
234	Randhawa
235	Budhmore
236	Rurka
237	Dharamgarh
238	Bathaonain Kalan
239	Devinagar
240	Sarai Banjara
241	Sadhraur
242	Jhansli
243	Mamoli
244	Shadipur
245	Kakrala
246	Bhedpuri
247	Danipur
248	Miyal

Ropar	
249	Sukhsal
250	Jhangrian
251	Bhaini
252	Shahpur
253	Khatana
254	Bhagwala
255	Attari
256	Tira
257	Goslan
258	Ghataur
259	Chando Gobindgarh
260	Niamian
261	Singhpura
262	Chhota Daudpur
263	Talapur
264	Katlaur
265	Babani Khurd
266	Booth garh
267	Adhrera
268	Behlolpur
269	Siaun
Sangrur	
270	Rajia
271	Jaimal Singhwala
272	Jodhpur
273	Bari

274	Bhadalwadh
275	Dehliz Kalan
276	Dulwan
277	Badshahpur
278	Bhari Mansa
279	Mahorana
280	Rampura Jawaharwala
281	Aklia
282	Phulad
283	Rupaheri
284	Bagrol
285	Kauhrian
286	Chhajla
Kapurthala	
287	Nurpur Lubana
288	Khanqah
289	Chak Gopipur
290	Burewal
291	Sidhpur
292	Nadala
293	Bhatnura Kalan
294	Rampur Sunran
295	Dhandoli
296	Bohani
297	Saprove
298	Mauli
299	Talwandi Chaudhrian
300	Nasirewala