

# THE LAHORE JOURNAL OF ECONOMICS

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Papers presented at

The Ninth Annual Conference on

Management of the Pakistan Economy

*Human Capital Development for Sustained Economic Growth*

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Balancing Market and Government Failure in Service Delivery

*Masooma Habib*

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### **Editors' Introduction**

The Lahore School's Ninth Annual Conference on Management of the Pakistan Economy took place on 20 – 21 March, 2013 and the topic of this year's conference was: "Human Capital Development for Sustained Economic Growth". The conference participants ranged from leading economists and researchers in Pakistan, India, Sri Lanka, the United Kingdom, and the United States to leading Pakistani policy makers and NGO representatives. Over the course of two days, 14 research paper presentations were made on topics related to public service delivery, with a special emphasis on the education and health sectors as well and human development and social safety nets.

Even though an introduction cannot present the detailed results and depth of analysis in each paper, it is a useful way to summarize the themes in each session and report the key results of the speakers. We have grouped the discussions based on the main themes of each session though there are obvious overlaps in themes and analyses.

The keynote address was given by Jeffrey Hammer who spoke on governance and service delivery. The speaker outlined how market limitations in service delivery can be matched by appropriate government interventions, though the level of intervention has to be based on a careful analysis of the limitations of each sector as well as country circumstances. This paper outlines how limitations of the market can be matched to appropriate interventions by government as it actually performs, not as it is hoped to perform. This matching will, by necessity, vary with country circumstances. While pure public goods must be provided by government regardless of its weaknesses and pure private goods should generally be left to the market, most serious policies operate in between. The balance of the limitations of the sectors needs careful analysis. The welfare costs of private market failure are rarely measured and the difficulties of implementing different policies are rarely discussed let alone quantified. Policies that are sensitive to deviations from perfect implementation should be avoided in preference to those that are more robust to circumstances. Further, every policy will generate interest groups that will constrain future decisions through political pressure. Dr. Hammer also discussed examples from various sectors, including health, where interventions vary from nearly pure public goods through nearly pure private goods to the complicated set of issues raised by insurance market breakdowns and education (particularly in Pakistan) where the government should be challenged to question fundamental assumptions concerning its responsibility.

After the keynote address, the first session of the conference focused on the theme of educational opportunities and began with a paper by Masooma Habib that reviewed education outcomes and policies in Punjab. The speaker discussed the various educational reform initiatives undertaken in Punjab to improve education outcomes but noted that still about a quarter of school age children are still not attending school either because they never enrolled or because they dropped out early. The speaker also discussed how recent assessments have shown that students' knowledge and comprehension of basic subjects remains alarmingly low. The speaker then analyzed how patterns in learning achievement in Punjab indicate the importance of school level factors, implying that a good school could make up for other regional and socio-economic disparities. Finally the speaker reviewed the extent to which critical gaps in achievement levels and other educational outcomes have been addressed by past policies and current reform programs.

The second speaker in the session was Salman Asim who looked at the public school system in Sindh. The speaker showed how the schooling system in Sindh comprises 48,932 schools of which 47,000 are primary, middle and elementary schools making Sindh one of the densest public schooling systems in the world with almost 1.8 schools catering to each 1000 people in rural Sindh. The speaker went on to show how functional schooling capacity is low however with less than 15% of these schools having at least two teachers and access to basic facilities including a toilet, drinking water supply, electricity and boundary wall. Finally, the speaker examined key trends of education outcomes in Sindh and described how net enrollment rates (NERs) at primary, middle and secondary levels in Sindh have at best stagnated from 2007-2011 after a sharp increase registered in 2006, while gains in NERs vary significantly across districts with some districts performing exceptionally better than the others. Finally, the speaker cross-validated the statistics presented in the paper using independent household and school level census data of 300 communities for an ongoing impact evaluation study in three districts of rural Sindh.

The third speaker, Zeba Sathar, looked at access to secondary schooling for girls in Pakistan. The speaker discussed that while there has been improvement in schooling outcomes for girls in the decade 2001-2011, when it comes to access to secondary schooling rural girls lag far behind urban girls and progress across provinces is uneven which is a critical issue since transitioning to secondary schooling is critical for improving employability and reproductive health and other outcomes for girls. The speaker also pointed out that that question about the preference for public versus private schools and the actual choice of schools available to girls in most rural areas needs to be answered if secondary school enrollment rates



for schools are to be escalated. The speaker showed how access is the main driving force behind the transition to secondary level schooling - there is an almost total reliance on public schools for 10-14 year old girls - while the next major intervening factor is household income level. Public schools for girls are the only choice often even for the rich families. The speaker's analysis also shows that regional patterns reflect the expansion of private schools in Punjab and KP and less so in Sindh and Balochistan.

The second session focused on educational impacts across income and gender and the first speaker was Monazza Aslam who looked at education, training and labor market outcomes for women in Pakistan. The speaker looked at the economic (i.e. labor market) outcomes of 'training' separately for men and women in Pakistan. The paper was novel in that it investigated the role, if any, of acquiring 'training' - technical/vocational, apprenticeship or on-the-job - to look at both these channels of effect onto economic well-being. Using data from a unique purpose-designed survey of more than 1000 households in Pakistan, collected in 2007, the speaker analyzed how having undertaken training determines occupational choice and estimated the returns to schooling and to training. The speaker's results revealed that while acquiring training significantly improved women's chances of entering *self-employment* and *wage work* (also the more 'lucrative' occupations), only wage-working women benefited from improved earnings through vocational schooling.

The second speaker was Bisma Haseeb Khan who looked at the issue of whether tuition affected the learning gap between private and public schools in Punjab. The speaker used the Learning and Educational Achievement in Punjab Schools (LEAPS) data and analyzed the individuals who switch between taking and not taking private tuition, as well as looking at the shadow education market for private tuition. The speaker found a positive significant effect of private tuition on learning outcomes, specifically for public school students. The speaker also found that tuition is more of a private sector phenomenon with private school teachers more likely to supply such tuition, although the mainstream teachers that provide private tuition do not shirk during regular class hours, as is normally believed. Lastly, the speaker found that tuition is taken as a supplement to formal education rather than as a substitute for low quality formal schooling.

The final speaker on the first day was Fahd Rehman who looked at the differential economic impact of education across income groups and provinces in Pakistan. The speaker discussed how he used an Engel curve specification to infer the differential impact of education on measures of household well-being across income groups and provinces. The speaker's results showed that net primary and matriculation education

enrolment ratios may bring a significant improvement in the welfare of people and that there is a need to specifically redirect resources to Balochistan, Sindh and KPK. The speaker also found that the people who fell in the lowest two income groups were worse off in terms of access to educational opportunities from 2008 to 2011 and the speaker recommended that efforts should be stepped up to enhance the access to educational opportunities at primary and matriculation levels across these lowest income groups.

The second day of the conference focused on the critical issue of social service delivery and social safety nets. The first session looked at the role of institutions in social service delivery with the first speaker, Azam Chaudhry, looking at the impact of patronage in Punjab on rural access to public services. The paper found that households reported receiving active assistance both from local officials and provincial and national politicians in accessing state services and on a range of other measures and that vulnerable households, such as landless and female-headed households, appeared less likely to receive assistance from patrons, suggesting that patronage activity could increase inequality of outcomes. The speaker also found that shared 'biraderi', or clan based kinship, between the patron and client was not associated with an increased likelihood of reported assistance from patrons. Finally, the paper found that local officials and politicians tended to recommend candidates in the last election and rural households were strongly convinced that the patron knew for whom they had cast their votes for in the last election, and that clients from rural households meet local officials most frequently and politicians least frequently.

The second presentation was made by Ali Cheema who looked at intergenerational educational mobility in rural Punjab. The speaker showed that differences in class status institutionalized at the time of colonial village settlement lead to a sustained divergence in the rate of intergenerational educational mobility, with limited mobility for non-proprietary and marginalized groups compared to proprietary groups. In particular, the speaker found that inter-class differences in the rate of mobility were higher in proprietary landed estates where the colonial state concentrated land rights and governance in the hands of landlords compared to crown estates that had a more egalitarian arrangement of land rights and governance. The speakers also found that the divergence in inter-class mobility was a matter in concern since a significant portion of the current generation of marginalized households appeared to have fallen a generation behind in terms of educational attainment even though it physically resided in the same villages as the proprietary households.

The second session focused on health service delivery in Pakistan. The first speaker was Uzma Afzal who presented an overview of the state

of health in Pakistan. The speaker began by comparing Pakistan to other South Asian countries and found that it lags behind in immunization coverage, contraceptive usage and infant and child mortality rates. The speaker also discussed how an analysis of public health service delivery presents an uneven distribution of resources between rural and urban areas with the rural poor are at a clear disadvantage in terms of primary as well as tertiary health services. The speaker went on to discuss how there has been a massive increase in the role of the private sector in the provision of service delivery which has been precipitated by the poor state of public facilities. Finally the speaker discussed how the 18<sup>th</sup> Amendment of the Constitution has led to the devolution of health as a sector to the provinces, even though the distribution of responsibilities and sources of revenue generation between the tiers remains unclear.

The second presentation was by Ali Hasanain who looked at the opportunities for using information communication technology (ICT) to improve health worker performance in Punjab. The speaker began by describing the structure and management of primary healthcare facilities in Punjab followed by a description of selected results from a survey of a representative sample of Basic Health Units (BHUs). The speaker discussed how the results of the survey identify some key issues including officials' responses to the question of how services might be improved.

The third speaker in the session was Hadia Majid who looked at how increased rural connectivity affected health outcomes. The speaker analyzed how improved access to markets for rural areas through a widening (and/or upgraded) road network could have a positive impact on child nutritional status as measured by height-for-age and incidence of illness. The speaker's results suggested that as roads improve and rural markets become more integrated with urban ones, health outcomes witnessed a positive affect at the aggregate level with differences at the intra-household level, particularly those between the genders, declining.

The final session of the conference focused on vulnerability, social safety nets and human development. The first speaker was Ijaz Nabi who looked at the federal government's Benazir Income Support Program and Punjab's skill's development program. The speaker discussed how the Benazir Income Support Program had, at its core, an unconditional cash grant for the poorest households and how the federal government responded to the concern of creating a large pool of permanent government handouts by also launching an ambitious skills development program. The speaker also discussed how the government of Punjab was implementing skills development as social welfare in the four poorest Southern Punjab districts.

The second presentation was by Syed Rabab Mudakkar who looked at a new way of measuring human development and vulnerability. The speaker began by analyzing the pros and cons of the UNDP's Human Development Index (HDI) and how three additional indices were designed, the *Inequality-Adjusted* HDI, the *Gender Inequality Index*, and the *Multidimensional Poverty Index*. The speaker went on to argue that economic uncertainties need to be explicitly considered as another dimension (negative) of the human capabilities, and proposed an *Uncertainty-Adjusted* HDI (U-HDI). The speaker then presented a methodology for constructing such an index, taking time variability of income changes as a proxy for economic vulnerability. Finally the speaker presented results of an exploratory exercise in constructing such an index across countries and also presented a detailed analysis for Pakistan in the context of the uncertainties associated with the country's political and economic environment over time.

The final paper was presented by Theresa Thompson Chaudhry who looked at microinsurance in Pakistan. The speaker started by discussing how more than half of current microinsurance policies in Pakistan were being offered through the Benazir Income Support Program, with the remainder being offered in conjunction with microcredit services offered by microfinance institutions (MFIs), banks (MFBs), NGOs, and the rural support programs (RSPs). The speaker went on to discuss how small health insurance policies covering hospitalization were also being offered by some lenders and how some small pilots in agricultural microinsurance were being started. The speaker also discussed how microinsurance outreach could be extended in the short to medium term through offering health insurance coverage to the entire household of microcredit borrowers, and by offering microinsurance to all members of the rural support programs, rather than only its borrowers and spouses. Other options presented by the speaker were partnering with mobile phone operators for payments to the transaction costs and how provinces could use the existing database of households and poverty scorecards executed by BISP to target subsidized microinsurance policies to poor households above the BISP threshold.

The papers presented at the annual conference were aimed at academics and policy makers as well as representatives of NGOs and the general public. The editors hope that this Special Edition of the Lahore Journal of Economics will help in informing key policy debates taking place nationally and internationally regarding economic planning and development in Pakistan.

## **Balancing Market and Government Failure in Service Delivery**

**Jeffrey S. Hammer\***

### **Abstract**

*Whether to provide services by the public or the private sector has been at the center of debates within governments and those in the international aid industry for decades. Unfortunately, this debate has often been cast in terms of absolutes with the private sector either as savior or demon. Casting the issue in this light simply can't be correct. It cannot be the case that either is appropriate for every service and with every government regardless of its capability to the exclusion of the other. In every case, policy makers need to ask "how can the government improve the well-being of citizens with the constraints and tools at hand?" Those constraints include the ability to implement and monitor policy.*

*This paper outlines how limitations of the market can be matched to appropriate interventions by government as it actually performs, not as it is hoped to perform. This matching will, by necessity, vary with country circumstance. While pure public goods must be provided by government regardless of its weaknesses and pure private goods should generally be left to the market, most serious policies operate in between. The balance of the limitations of the sectors needs careful analysis. The welfare costs of private market failure are rarely measured and the difficulties of implementing different policies are rarely discussed let alone quantified. Policies that are sensitive to deviations from perfect implementation should be avoided in preference to those that are more robust to circumstances. Further, every policy will generate interest groups that will constrain future decisions through political pressure.*

**Keywords:** Social services delivery, governance, education, health delivery, Pakistan.

**JEL classification:** H11, L88.

### **1. Introduction**

I am honored to have been asked to give the introductory lecture to this conference on service delivery in Pakistan. I believe that improved

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\* Charles and Marie Robertson, Visiting Professor in Economic Development, Princeton University.

services in health and education, and the transfer of purchasing power to the poorest people of Pakistan are of great importance to their welfare. As a longstanding observer of Pakistan, South Asia, and the poorest countries of the world generally, this is a goal I have deeply at heart.

However, I think we have become intellectually lazy in searching for the means to achieve better wellbeing. We have looked for simple solutions, usually of the variety “spend more money on things in which I (as a health, education, or social protection expert) take a particular interest.” We have also become prone to wishful thinking that almost anything that is intended to improve welfare magically does so.

My argument here is that the design and implementation of effective policies in these sectors requires us to face hard realities of the constraints under which governments operate. These constraints are not solely—and I would argue, not primarily—limited funds. The government is further hampered by endemic problems of governance when the stage of implementation is reached. Ignoring this fact of life has led to enormous sums of wasted money.

The term “governance,” too, has been used with a certain degree of laziness. This essay argues that there are concrete, if difficult, choices that specific kinds of limitations to public performance force us to make—choices that make it necessary to think strategically about the type of spending that is most important. From a more practical point of view, no government has complete control over income, health status, or education. What governments can do is facilitate improvements in all three, recognizing that their ultimate drivers are individual peoples’ millions of actions.

This essay seeks to put the research carried out for this conference in a context that is useful for policymakers. What do we recommend policymakers do to favorably influence these millions of actions? The answers will differ both from sector to sector and from government to government. The essay reviews, briefly, the standard approach from public economics on policymaking, focusing on resource and market behavior constraints. It then augments the standard arguments for government intervention with concern for the administrative and, to some extent, the political constraints that governments face, and takes some tentative steps to show how appropriate policymaking can mix and match solutions, depending on the nature of the two sets of constraints.

## **2. The Standard Approach to Policy: Market Failure**

How would an ordinary analysis of alternative policies in any sector proceed on the basis of conventional, neoclassical public economics? The first step, of course, is to list the primary market failures that characterize the sector. The litany of such failures are familiar to any student of economics and include natural monopoly; the characteristics of a pure public good, that is, nonexcludability and nonrivalry such that private markets simply cannot exist; externalities; and failure of coordination due to transaction costs or asymmetric information. In addition, we all have (or profess to have) a concern for the poorest in society given that a completely amoral market mechanism may not result in a distribution of income and wellbeing that corresponds to anyone's conception of "fairness."<sup>1</sup> Many of these have clear policy implications such as antitrust or price controls for monopoly. Once the particular problems of a sector have been identified, it is then assumed that a perfectly efficient, fair-minded, and knowledgeable government simply steps in to fix whichever of these canonical problems seems to prevail.

The discipline of listing the specific problems of a particular market is valuable but rarely done with a critical eye. One thing that economists have done is to train sector specialists to invoke the words "market failure," which allows them to stop economic analyses right there as if that was all economics had to offer. In fact, that is where analysis should start. If the identification of specific areas of market imperfection was taken seriously, the direction of appropriate interventions could be clearer. In health and education, the fact that there are large private sectors rules out the possibility that these are "public goods" since no such markets would be possible. We might then try to measure the externalities associated with the sector—an exercise that is rarely done. We might also try to think through the most direct mechanisms to improve the functioning of the market before we assume that the government takes on the responsibility of direct provision.

Within education, are we concerned with achieving basic literacy and numeracy so that a modern labor force is available to employers? Are we concerned that children become better citizens and thus have civic engagement in the curriculum? Are we worried that parents are not well-

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<sup>1</sup> There are exceptions to this, such as Nozick's (1977) notion that, as long as the "rules of the game" are fair, the particular distribution of income as an outcome is also fair. Here, we will take a more traditionally utilitarian approach, supplemented by the very strong assumptions that people can be compared and that all have a diminishing marginal utility of consumption.

enough informed to judge differences in pedagogical technique?<sup>2</sup> Are we concerned that poor children would not be able to attend school and education is thus really one of many poverty alleviation schemes? In any of these cases, we should ask if public provision is the best way of solving the problem. A subsidy to private education or, perhaps, merely a minimum number of mandatory years of schooling may be sufficient for the first. A rule requiring that Pakistani history be taught may be sufficient for the second.<sup>3</sup> If the goal is poverty alleviation, then education has to prove its efficacy against all other antipoverty schemes, and, in any case, does not really require public provision. A more thoroughgoing inquiry into the real goals of policy in the sector may lead to major changes in the appropriate instruments to be used.

### 3. Market Failure and Government Failure

It is not sufficient to contrast the imperfect adjustments of unfettered private enterprise with the best adjustment that economists in their studies can imagine. For we cannot expect that any public authority will attain, or will even wholeheartedly seek that ideal. Such authorities are liable alike to ignorance, to sectional pressure and to personal corruption by private interest (Pigou, 1920).

With his book, *The Economics of Welfare* (1920), Pigou introduced the concept of externalities—the workhorse of policy-oriented economists to this day. Not only did he identify the nature of externalities where one person’s actions, primarily the production of a good or service, positively or negatively affect someone else through means not mediated by the market, he also identified the appropriate corrective mechanism: a subsidy or tax (respectively) to be put on those actions. This is the origin of the term “Pigouvian taxes” for negative externalities, applied most often to the example of pollution.

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<sup>2</sup> This is a commonly cited but entirely wrong application of the concept “asymmetric information” whereby a consumer (a parent) is simply not well informed, or at least not informed enough, to convince an educational expert that parents can be trusted to make decisions concerning their child’s schooling. However, the market failures associated with “asymmetric information” emerge when producers exploit consumers’ lack of information. In education, there may be some concern over this with regard to technical education post-secondary. It is unlikely that primary education has any such problem. See footnote 3.

<sup>3</sup> It is not clear that public schools have an advantage on this score. The extensive studies of Andrabi, Das, and Khwaja (2006) in their Learning and Educational Achievement in Punjab Schools (LEAPS) project ([www.leapsproject.org](http://www.leapsproject.org)) shows that cheap, rural private schools fare better than public schools in this dimension.



However, rather than unreservedly advocating his (admittedly brilliant) idea, he immediately saw its limitations. Putting words in his mouth that he most certainly did not use, his point is “Hey! I invented this idea—both the problem and the solution—and I think it is a really good one. But let’s not go overboard here. You don’t really think that actual governments are going to use these tools for the public good, do you? Governments have problems at least as bad.”

The real, practical, problem that governments face is how to improve welfare given that **both** “unfettered private enterprise” (the market) **and** “public authority” (the government) have their shortcomings. While we have developed the vocabulary of market failures, we do not know enough about all the ways in which the government can go awry.<sup>4</sup> Put another way, we do not have a standard view of the “technology” of policymaking. What contributes to better or worse implementation of a policy?<sup>5</sup> How badly wrong does implementation have to go before we decide it is not worth the trouble? Or, if there is a theoretically “best” way to intervene—say, insisting on marginal cost pricing for monopolists—but it is too hard to implement without vested interests (the monopolist, presumably) capturing the regulator or too expensive to collect information about the costs of production, it might be better if the government just takes over production itself. Or, if that is even harder to implement, perhaps we simply have to live with a regulated monopolist who makes more profit than the ideal policy would allow. In Pakistan, electricity generation went through a period with adequate, but excessively expensive, capacity. Now, capacity is woefully inadequate. Whether paying too much for reliable energy or paying too little for a creaky grid is the worse outcome is certainly debatable. It is just this sort of debate that needs clarity.

Much of public economics took Pigou’s diagnosis of markets on board but forgot his caution about government (see Bator, 1958). In reaction to the interventionism that the one-sided interpretation encouraged, there was a backlash by the “public choice” literature, which simply returned to the point that government officials were people too and responded to incentives just as private agents did (see especially Buchanan, 1967, 1986; Buchanan & Tullock, 1962; Olsen, 1965). In this view of the world, it is virtually impossible to expect anything like a “public interest”

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<sup>4</sup> There have been some attempts to catalogue “government failures” but these have not become standard in the literature. See Stern (1989) or Besley (2000) for such attempts.

<sup>5</sup> This, too, has been the subject of recent work; the United States Agency for International Development (USAID)’s concern for “implementation science” (2011) is one example.

to be pursued by the government and politics infects even seemingly technical interventions.

But it is not all that useful to be at either extreme. The “public choice” literature leans toward conclusions such as “the market can do no wrong (and the government can do no right) so stick to laissez-faire policies.” The standard public economics literature leans toward “markets do very particular wrongs and the government is wise and capable enough to fix them, so let the latter do what it deems necessary.” Of course, more extreme but common in the modern history of South Asia, is the idea that “the market can do no right and the government can do no wrong, so the latter should take the economic high ground and plan almost everything.” Nehruvian socialism of this sort has left an impoverishing legacy in South Asia and in the thinking of the first postwar generation of development economists and the rest of the developing world that subscribed to it.

Of course, we should be seeking the middle path. Thinking through policy alternatives with both failings in mind can take several forms. One is that, within a particular set of policy problems, some address market failures with very large welfare consequences and we should focus attention on the relative difficulty of implementing alternative approaches to correcting them. Sometimes the best and most practical things to do may seem odd or indirect only because the “optimal” policies are too hard.

An example is in the choice of basic tax collection. Pakistan, among many poor countries, still levies substantial import and export duties even though we know these are particularly inefficient. However, they are also easy to collect, particularly if there are only a few major ports or railheads. Broader-based taxes require a larger, widespread and, arguably, more easily corruptible tax system that is simply too hard to administer and monitor. The consequence may be to rely on trade taxes. Retaining them, though, means we should keep government spending and reach limited since all expenditure comes at a very high marginal welfare cost of the revenues they require. So, weighing the value of intervention against the difficulty of administration can help choose priorities for policy.

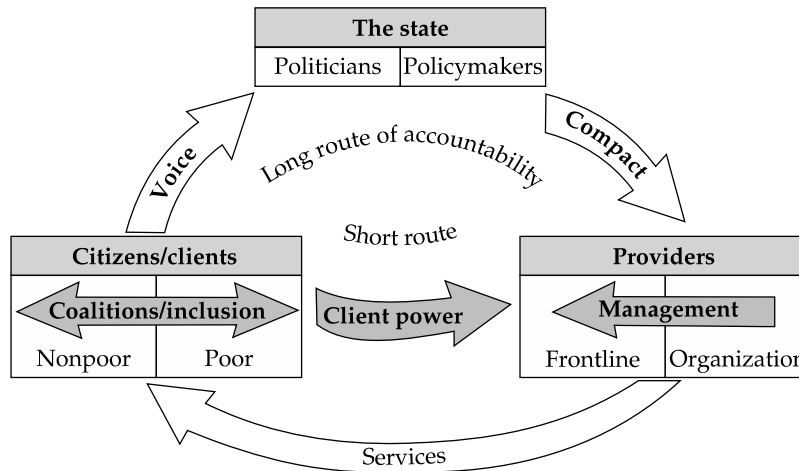
However, a second consequence of comparing market and government failures points to those administrative (or political) reforms that will yield the greatest benefits. In the tax example, the substantial damage that trade taxes impose means we should work steadily on improving other means of raising revenue—those that are currently too hard to do.

For primary education, we may be convinced that the market failures listed above are severe. The problem then becomes whether it is better<sup>6</sup> to run a school system publicly or to encourage private providers. This could go either way. Rich countries have found various means of educating all their citizens. If it is really hard or premature to put a complete, universal public system in place, a system of vouchers to private schools (even if staffed by teachers of dubious qualifications) may be better than waiting until a universal public school system is ready. If even vouchers are too difficult to administer, then at least bureaucratic barriers to private schools need to be lifted—private education is often treated with suspicion. Again, the best study of the reality of private and public schools is the LEAPS project. In this case, the pedagogical advantages and the lower costs of the private sector make many of our assumptions concerning the necessity of public provision, suspect.

#### 4. Dissecting Government Failures to Help Strike the Proper Balance: The Role of Accountability

One way of getting a handle on government failure is suggested by the World Bank's (2004) *World Development Report*, which puts accountability at the center of the problem. The essence of the argument is captured in Figure 1 below.

**Figure 1: The route to accountability**



Essentially, we are interested in channeling the right services at an appropriate level of quality to the public, as represented by the arrow at

<sup>6</sup> "Better" means cheaper, higher quality, or wider coverage.

the bottom. Places in which accountability is, or should be, exercised are shown as shaded arrows. For simplicity, we will focus on accountability between the main players: citizens, providers, and the state. As a starting point, we can look at how a market usually deals with the problem of accountability. This is illustrated as “client power.”

A market transaction is a little more complicated than it seems. When a person wants to buy a kilo of *atta* (flour), she asks the storekeeper for it, the storekeeper gives her the bag, and she gives the storekeeper the money. But the matter does not necessarily end there. If the customer finds that the *atta* is not the kind or quality for which she has asked, she might not go through with the transaction. If she is not allowed to inspect the *atta* before purchasing it and discovers that it contains stones or other impurities when she gets home, she might complain to the storekeeper and want to return the purchase. If the storekeeper does not agree to refund her money, the customer may threaten to never come back to the store or to tell her friends she has been cheated (or just complain that she is not happy with the quality). In a competitive market, the storekeeper has every incentive to satisfy the customer—if the quality is not good enough (for the price charged), if the customer does not return or tells her friends not to patronize the store—the storekeeper risks losing business, income, and the support of his family. He is clearly accountable to the customer.

For any number of reasons, such as market failures or poverty alleviation, the state may interpose itself between buyer and seller. This is fine as long as that same degree of accountability is maintained. The difficulty is that there are now two places where that accountability might fail. First, the state may not fully understand what it is the public (clients, citizens) wants—in the case above, this might be the right kind of *atta* to stock in ration shops. Second, high-level government officials may not have complete control over the direct service provider—in this case, the ration shop owner. For government services to work well, they must maintain the same degree of concern with satisfying the client as would be true in a competitive market.

#### 4.1. “Voice” or “Politics”

The first step, which the *World Development Report* has called “voice” but which most people think of as “politics,” is the subject of most analyses of political economy; it was also the main focus of the “public choice” literature. It deals with a government’s ability to represent or aggregate the preferences of the population. The literature is vast but one

aspect needs emphasizing in the social sectors, that is, the influence of unions or professional organizations among teachers and medical providers, primarily doctors.

A long-standing observation in the education literature is that far too many resources are spent on wages and too few on other inputs to education, such as pedagogical materials. Numerous reports by international consultants recommend that resources be reallocated to rectify this imbalance. These reports are naïve in that they assume the spending pattern is “exogenous” or directly under the control of the policymaker reading the recommendations (Filmer & Pritchett, 1999). Of course, this is untrue and the current “imbalance” of spending accurately reflects the relative bargaining power of Pigou’s “private interests.”

One result, reported in the LEAPS study, is that public teachers are paid several times more—even adjusting for qualifications—than private school teachers in the Punjab. Fixing this may not be easy. In Indian Madhya Pradesh, a reform was initiated to employ para-teachers in the schools at wages almost exactly one fifth of standard government pay. Performance was unaffected and costs fell. However, the para-teachers sued on the grounds that they were doing the same job as government workers and were, therefore, entitled to the same remuneration. They won in the courts, again raising the wage bill to unsustainable levels.

Doctors, of course, hold an even more influential place in society and politics than teachers. Similar criticisms have been leveled at the health sector as those in education: too much is spent on salaries (and perhaps buildings) and not enough on materials. Again, this is not a coincidence as one would expect politically influential people to apply pressure to maintain wages. While public salaries for doctors and other medical care providers are not usually as high as incomes in the private sector, many have jobs in both and the public salary is a much-appreciated floor on income. Without understanding the political economy of the allocation process, obvious constraints to more “rational” allocations are sometimes missed.

#### ***4.2. Implementation of the Compact***

The second step necessary for maintaining accountability in public provision is labeled “compact” in the diagram. It refers to the fact that, even if policymakers have their hearts in the right place and really want to educate children or improve public health instead of merely employing professionals, they may not have complete control over their staff. The secretary of education does not teach children; rather he or she oversees

hiring, makes decisions about curricula, manages transfers and so on. The proper incentives have to be put into place to make sure the direct provider—the individual teacher—puts in the appropriate effort and applies the requisite skills to get students to learn.

The need to delegate responsibilities to providers is the crux of the problem. Difficulty in delegating responsibilities to others is frequently framed as a “principal–agent” problem. The “principal” (in this case, the minister or secretary) wants particular tasks accomplished but can only do them through “agents” (in this case teachers, doctors or field workers for transfer programs). Making sure that staff members accomplish these tasks requires either a great deal of trust or a substantial amount of performance monitoring. While it is not necessary to formally solve such a problem, it is well worth keeping in mind the difficulties involved.<sup>7</sup>

Education and health (as well as transfer programs) are particularly difficult because of the degree of discretion and “transaction intensiveness” of staff operations (World Bank, 2004). Teachers are, in the best of worlds, expected to judge students’ educational needs, plan how to meet those needs, and conscientiously apply those plans so that children learn. While this is rarely done, it is one reason that a college education is claimed to be a requirement for teachers. Obviously, in curative care, each patient has different symptoms and the provider is expected to determine the appropriate treatment for each one. Both cases require considerable discretion over what gets done each day. In transfer programs, field workers are supposed to be able to identify people eligible for benefits under a particular program, which requires finding out a fair amount about the applicants’ circumstances. “Transaction intensiveness” refers to the fact that there are numerous individual interactions between providers and clients: many students and teachers, many patients and doctors, many poor people and assessors of eligibility.<sup>8</sup>

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<sup>7</sup> “Voice” or politics can also be considered a “principal–agent” problem with citizens being the principals and officials being the agents. Similarly, the direct purchases of services in private markets—“client power”—can also be considered as such. We concentrate on the “compact” side of the triangle because it is most directly concerned with the administrative difficulties of implementing well-meaning policies.

<sup>8</sup> The two characteristics do not always go together. Curative care is both highly discretionary and transaction-intensive. Immunization programs, however, are certainly transaction-intensive but since every child receives the identical service (a few drops in the mouth or a shot in the arm), there is no particular scope for discretion. Similarly, taking attendance at school is transaction-intensive but not discretionary, as is actual teaching. With transfer programs, filling out survey forms, while transaction-intensive, is not necessarily discretionary unless, of course, the assessors are supposed to use their judgment concerning the veracity of the survey responses.

Policies that are both discretionary and transaction-intensive are very expensive to implement successfully because of the amount of monitoring that is necessary to ensure good performance. Some actions are easily observable, such as whether a doctor or teacher has shown up for work at a hospital or school or if the person assessing eligibility for transfer programs has, in fact, visited a prospective beneficiary family. Other actions are much harder to assess, such as how conscientiously a service provider has applied effort in each case. Some of these can be monitored through a hierarchical administrative structure, for example, by carrying out random checks on staff attendance or re-interviewing families who have applied to transfer programs. Some cannot be monitored without incurring considerable extra expense. To check whether a diagnosis by a doctor was correct would require close supervision, which may be possible in hospitals but not in remote clinics.

The trick is to compare the degree of difficulty of implementing the policy itself to the improvement in service that the policy would make if implemented perfectly. Given our current, minimal state of knowledge of both the welfare effects of various market failures and the relative difficulty of implementing alternative policies, we are usually left with pure judgment calls based on instinct or ideology. This should be a fertile area for research in Pakistan since the only literature available is from rich countries, which is not going to provide much guidance. Particularly in the case of externalities, this should be a source of embarrassment because such information is virtually the only justification for many of the policies we implement. Research on the relative difficulty of implementation is still in its infancy.

### *4.3. Striking the Balance*

The right balance to strike between market and government failures is similar to finding the right “second-best” solution when there are simultaneous failures in multiple markets. Fixing one problem but not the other could make things worse. So, if there is a polluting monopolist, solving the monopoly problem will increase production. If production is accompanied by increased pollution, the welfare impact is ambiguous—more production of the good that a monopolist would generally restrict but increased pollution. If there was some reason that both problems could not be solved at the same time, say, if pollution measurement and control was impossible, then the appropriate policy could look quite odd from a market-by-market perspective: the right answer might be to do nothing.

If the problem is that some government policies are difficult to implement, appropriate decisions may seem peculiar, at least in the short run. Universal public education certainly avoids any failure of the market but if it demands too much of a policymaker's administrative or political resources to work well, it may be better to opt for a "second-best" by supporting private education. The ideal of a perfectly well run public system might not match realities.

### 5. An Example from Healthcare

How does this balancing act work in practice? To illustrate, we can take a look at the health sector, which is associated with several main market failures. First, many problems with health consequences are in the nature of pure public goods. Getting rid of mosquitoes is one—no one has an incentive to rid their land of mosquitoes because they can come from any neighbor's land. Mosquito control is, therefore, nonexcludable and nonrival. Logically, there cannot be private provision, so if it is to exist at all, it has to be by the government<sup>9</sup>. It is not simply that we might *want* the service to be publicly provided but that its very existence *requires* that it be publicly provided. Thus, swamp drainage is simply not undertaken by private markets.

Second, many health problems have large externalities. The very term "communicable disease" implies that one person's illness directly affects the probability that someone else will be infected. The best example is probably tuberculosis prevention (including secondary prevention or treatment). Infectious diseases, whether spread by pests or by humans, affect the poor heavily and disproportionately. India's National Family Health Surveys find that tuberculosis is seven times more prevalent in the poorest decile of wealth in the country, while malaria is four times and blindness (as representative of a chronic illness such as cataracts or diabetes) only one-and-a-half times as prevalent among the poor. Therefore, to the extent that a policy is to be redistributive, this also argues for attention to the control of infectious disease. The comparison with chronic disease is such that any reallocation from infectious to chronic illness is distinctly anti-poor.

The third kind of market failure associated with health is related to the phenomenon of "asymmetric information" associated with curative care. Doctors, by nature, know more about your illness than you do—that is why you go to one. It is possible that they might exploit this information

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<sup>9</sup> The government may not be necessary in all cases. Ostrom (1990) shows that collective action at the local level can be accomplished without state intervention.



imbalance to talk you into things you do not need. In rich countries, this phenomenon is known as “supplier-induced demand” and its existence is somewhat controversial. A consequence would be “too much” care and is most likely in contexts where there is “third-party payment,” meaning where an insurance company pays the bills, not the patient.

The fourth kind of market failure is also indicative of “asymmetric information” but its existence is less controversial. Private insurance markets for health fail everywhere, in rich countries and poor alike. This is because of both “adverse selection” (people who expect to be ill will disproportionately demand insurance, driving up the cost and driving out the healthiest buyers, leading to even higher costs and the possible unraveling of the whole market) as well as a form of “moral hazard” where an insurer can be over-billed and cannot check this without incurring large costs.

While the problems of the US healthcare system are widely known, every rich country has problems with the insurance function of the health system, even if it is wholly public. The consequence of insurance market failure is the existence of many people who are uncovered and, therefore, exposed to fear of catastrophic financial loss in the case of expensive illness. Many surveys of poor people show the fear of falling into irreversible poverty, including bonded labor, resulting from large health expenses in hospitals (Narayan, Patel, Schafft, Rademacher, & Koch-Schulte, 2000).

However, policies that can protect people from financial ruin induced by health expenses differ substantially in the difficulty of implementation. Against these market failures, we can assess the nature of their policy solutions: (i) preventive and promotive activities, (ii) primary health curative care, and (iii) hospital-based curative care. The boundaries between the three are blurred and somewhat arbitrary. However, the first category includes population-based, traditional (in the Western sense) public health interventions such as ensuring safe water supply, improving sanitation (including the reduction of open defecation), and controlling disease-spreading pests. These are often not done by a health ministry and do not require knowledge of, or even interest in, health per se. Also in this category are health education and immunization, which do involve people who are health-oriented but not necessarily particularly well trained.

The second category, primary curative care, has been variously defined (from “take this pill” to social revolution) and universally touted as something poor countries should emphasize. Here, all it means is patient-initiated (you go someplace when you feel sick), relatively cheap care that

can be given at a small clinic but does need someone with medical knowledge, usually a doctor.

The third category is a little more complicated but comes down to comparing public insurance to public hospital care for relatively expensive care. The care that is covered usually requires a capable medical doctor, and expensive materials and equipment. It can include expensive drug therapy that does not really require a hospital—the main characteristics are that it is both very effective and expensive.

Of course, we would like all three categories of care to be available to people and within reach of the poor. However, “being available” and “being provided by the public sector” are not the same thing. To improve welfare taking all constraints into account may mean making harsh choices.

As described, it is impossible to avoid the conclusion that basic public health remains a top priority. So much so that even a cursory examination of budgets in Pakistan indicates a bizarre underinvestment in sanitation (particularly in rapidly growing cities), vaccination, pest control, and programs to combat infectious disease.<sup>10</sup> Public health policies address massive market failures;<sup>11</sup> they disproportionately affect and are essential to the wellbeing of the poor. Further, while research is thin, they are not the most complicated policies to implement. Immunization campaigns have been effective in Pakistan, though currently running into difficult political problems, among many other countries. Water supply and sanitation infrastructure, while requiring periodic maintenance, do not require day-to-day supervision and monitoring. One-off investments, while less valuable than well-maintained investments, are still valuable and relatively easy to implement. For pure public health, the market failure is clear, the benefits to the poor are clear and (arguably) there are tried and true policies that are well within a government’s capacity to implement. Everything seems to argue strongly for finishing the 19<sup>th</sup> century public health agenda.

Also difficult to avoid is the need to address very large, “catastrophic” expenses that usually involve hospital care. But whether to handle this problem by running public hospitals or having a public insurance program is the big question.

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<sup>10</sup> Current political unrest, undoubtedly, makes some of these difficult to achieve.

<sup>11</sup> Recent demonstrations of the external effects of sanitation are given in Spears (2012) and Hammer and Spears (2013).

Running hospitals solves the insurance problem simply by providing care at subsidized prices, possibly zero. However, as they are currently run, few poor people are treated at hospital and often hospitals are used for services that are more readily and more cheaply available at smaller clinics. On the other hand, the monitoring and supervision of a public insurance program requires massive efforts to protect against fraud. Even Canada, often touted as a model for other countries to follow, has rates that overcharge by as much as 15 to 20 percent. When initiated in India, the insurance scheme ran out of money in one third of all districts in the first year of operation. While the insurance route is likely to be the long-run solution to the problem of catastrophic care, the decision whether to run public hospitals or run an insurance program is not an easy one.

Here is where a detailed analysis is needed of providers' incentives to carry out the program as originally intended. Is the government in any position to check on potentially fraudulent claims? Is it in any position to reform its current operations so that poor people can obtain care at hospitals and so that people will be treated only if properly referred? Without referrals, too many people will crowd the halls of heavily subsidized facilities—as happens now. Neither direct provision nor administering an insurance program is easy. Which is more likely to yield to policy reform needs to be sorted out. However, there is no doubt that one of the two options or a combination has to be in the government's hands because the market failure associated with insurance is so very large.

For hospitals versus insurance, the market failure is clear, the benefits to the poor depend entirely on how the policy is implemented (and the track record is not good), and one must decide which of the two modalities is easier to implement. Here, there are strong but opposing forces: major market and government failures simultaneously.

When we approach primary healthcare, which has been proposed as the solution to poor countries' health needs since the Alma Ata conference in 1977, things become much murkier. It is unclear what the market failure is. We know that the quality of care provided by private practitioners is low. However, it is also cheap so it is hard to say where the failure lies. However, despite the small number of relevant studies, we find that the quality of care in public primary care units is often very low, primarily due to a lack of conscientious effort (Das, Hammer, & Leonard, 2008; Das & Gertler, 2008; Das & Hammer, 2005, 2007). It is also unpredictable due to high absentee rates among medical personnel (Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006; Chaudhury & Hammer, 2004).

The government failures associated with maintaining a transaction-intensive and discretionary service such as medical care are enormous. Their source is not difficult to find. Public employment usually entails the following:

1. Providers on salary: Being conscientious or even present does not influence payment, advancement, or any other compensation. We are left to providers to be committed to their jobs but with no way of guaranteeing that commitment.
2. Lack of supervision: It is very hard to monitor a huge network of facilities, often in remote locations.
3. Lack of accountability mechanisms such that citizens' complaints are unable to influence doctor behavior. Usually, the most a village can expect is for a doctor to be transferred to some other village.
4. Large differences in the social status of providers and patients.
5. Substantial opportunity costs of time from having a private practice.

Given these incentives, it is a tribute to those public servants who show up at all. But given the difficulty of implementing universal healthcare for inexpensive treatment, it is unclear how high a priority primary care should be among all competing uses of public funds.

The above argument assumes that government capabilities are given and unchanging. The second use of the comparison of market and government failure points to high-priority areas of reform within the public sector. That can change the balance.

In Pakistan, the experience of Rahimyar Khan district in the Punjab is instructive. There, organizing travelling doctors to visit three or so clinics per week—at a higher salary—seems promising. Whether this is sustainable is yet to be seen. An alternative would be to allow villages to pay for the doctor if and when s/he shows up. This keeps the incentive, at least for attendance, in line with people's wishes—payment is a good mechanism for promoting accountability. Again, the modalities of provision need to be explored.

In contrast to hospitals, however, the balancing act of fixing a market failure and risking a government failure is not as clear. If the public pulls back, the private sector can make up some of the difference. If the public sector pulls back from either of the other major health sector policies—catastrophic care and pure public goods—there will be no private

response to fill the gap. Whether it is easier to fix the incentive problem in publicly provided medical care or to make sure that hospitals (and clean water) run is one major choice governments face. And, no, we may not have money for all three.

## **6. Conclusion**

In summary, it is not sufficient to say that we are going to address social sector problems by spending more money. Without carefully examining a government's ability to make good on its promises to the people, such money has been and will continue to be ill spent. Governments should learn to pick their targets carefully, understanding what the alternatives to public provision are and honestly assessing their own capacity to improve the status quo. All else is simply posturing.

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## **Education in Pakistan's Punjab: Outcomes and Interventions**

**Masooma Habib\***

### **Abstract**

*One of the most critical challenges Pakistan faces today is the need to improve and expand its education system. With important political and demographic changes taking place, greater devolution and strengthened democracy, this is an opportune moment to build a better system. Not only does the purpose of education have to be defined beyond what has been left over from colonial administrative objectives, but a much greater effort has to be invested in developing the skills and talents of the majority of the population.*

*Punjab, Pakistan's largest province, has taken several education reform initiatives to improve education outcomes. However about a quarter of school age children are still not attending school either because they never enrolled or because they dropped out early. Low transition rates to secondary education are of special concern. Moreover, recent assessments have shown that students' knowledge and comprehension of basic subjects remains alarmingly low. Improved learning in schools is therefore another important challenge. Patterns in learning achievement in Punjab indicate the importance of school level factors, implying that a good school could make up for other regional and socio-economic disparities. Better quality schools also attract more students from the poorest families, because when parents expect better returns from education, the time and resources spent on schooling becomes worthwhile. This paper will review the extent to which critical gaps in achievement levels and other educational outcomes have been addressed by past policies and current reform programs.*

**Keywords:** Education, schooling, Pakistan.

**JEL classification:** I21.

### **1. Introduction**

Almost half of Pakistan's population is illiterate and a quarter of school-age children do not attend school. The problem of nonattendance is most acute in rural areas and for girls. The low priority given to education

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is reflected in the fact that Pakistan spends only 2 percent of its GDP on this sector—among the lowest levels in developing countries. Even these limited resources are not spent efficiently since learning achievements for the majority of students are below standard. Since 40 percent of the population is below 15 years old, enhancing their skills and wellbeing is one of the country's most important challenges. With the consolidation of democracy following the May 2013 elections, an expanded, high-quality education system becomes even more urgent to enable the country to move forward in its social and economic development.

This study provides an overview of schooling in Punjab, Pakistan's largest province and home to almost 60 percent of its population. Section 2 discusses the vision that establishes the context for a country's education system. Section 3 outlines Punjab's education achievements. Section 4 presents a framework for assessing the major interventions undertaken to improve education outcomes, and notes where progress has been made and which issues need attention. Section 5 concludes the study.

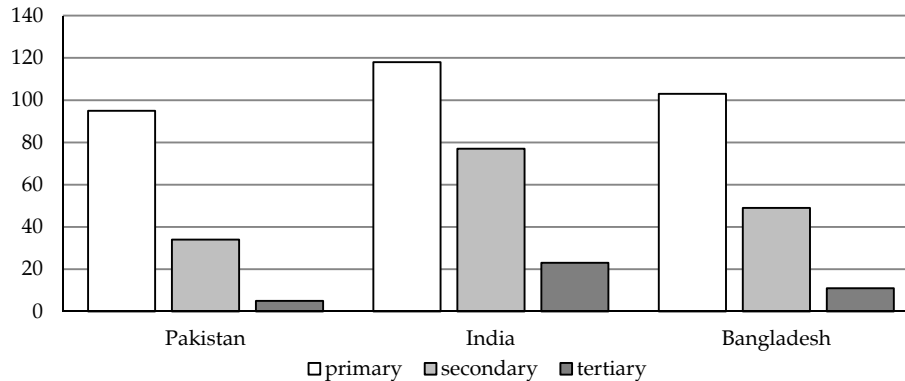
## **2. An Education Vision and its Implementation**

In the mid-19<sup>th</sup> century, many countries that are now considered developed, launched public education to instill a sense of national cohesion among their citizens and develop the basic skills required by newly industrializing economies. Variations in education systems emerged from countries' unique institutional and cultural backgrounds (Cummings, 2003). For instance, Japan emphasized schools primarily for the purpose of preparing industrial workers rather than developing individual talent. Britain's education system started out with the objective of promoting an elite class, and Germany's more centralized system promoted early streaming in primary and middle school to develop specialized skills. Most developing countries with colonial backgrounds inherited the systems their rulers had introduced.

In 1947, Pakistan and India inherited a colonial system designed to prepare government and army officers to work for their British rulers. While the purpose of this education system for the Subcontinent was clear, Pakistan has yet to define a clear postcolonial objective of education. A policy objective of investing in education for the purpose of developing the basic skills of all citizens for economic and social development still has to be clearly articulated and implemented by the federal and provincial governments.

It may be that this lack of a clear vision has resulted in the government's failure to commit steadily to investing in education and improving outcomes. Pakistan's enrollment rates lag behind those of its South Asian neighbors (Figure 1). Such low enrollment rates have serious consequences for the country's development objectives.

**Figure 1: Gross enrollment: Regional comparisons**



*Source:* World Bank (2012).

An opportunity to construct a vision for education exists in the ongoing decentralization process in Pakistan. Building on the initial decentralization of provincial administrative structures in 2001, the 18<sup>th</sup> Amendment to the Constitution in 2010 has fully devolved education and health to the provinces. With the omissions of the concurrent list in the constitution, provincial governments are now responsible for education planning, policy, curricula, and standards. Each province has to develop its own budget and action plan for education, and the provincial education and law departments are responsible for drafting legislation to implement the new devolved structure.<sup>1</sup>

Education is also compulsory by law for the first time. Article 25-A of the 18<sup>th</sup> Amendment states: *"The State shall provide free and compulsory education to all children of the age of five to sixteen years in a manner as may be determined by law."* The Punjab education department has drafted a "Right to Education" bill (2013), which is currently being presented to the Punjab government for approval; provincial legislation on the implementation of

<sup>1</sup> Concerns about ensuring minimum curriculum standards in the absence of uniform regulations have led to suggestions about a possible federal role in monitoring education. An option recommended by the Report of the Parliamentary Committee on Constitutional Reforms was to place curricula under the mandate of the Council of Common Interests or Federal Legislative List Part II.

Article 25-A is still pending.<sup>2</sup> To implement Article 25-A, provincial governments will need to increase their education budgets and manage the National Finance Commission award efficiently.<sup>3</sup>

Research in education reforms repeatedly emphasizes that merely spending more money on education and on building school systems does not necessarily lead to better learning and improved worker productivity (Pritchett, 2001). The development impact of investments in education depends on governance structures, the extent of demand for newly developed skills, and the quality of education imparted.

On the other hand, in a comparative study of India and China, Dreze and Sen (2013) argue that state investment in education and health is the key to increased productivity, growth, and development. According to the authors, the majority of the population—especially the poorest groups in society—gains more from expenditures on health and education as opposed to spending on inefficient, poorly targeted subsidies on items such as diesel fuel.

A unique feature of Pakistan's education system is the rise of low-cost private schooling, particularly in Punjab (comprising up to a quarter of total enrollments), reflecting the significant demand for education. Parents may prefer private schools for several reasons: they may be located closer to home, especially for girls at the primary level; teachers attend class more frequently; and the quality of teaching at the middle and secondary levels—when examination preparation becomes important—is likely to be better (Ahmed, Amjad, Habib, & Shah, 2013). The quality of education is, overall, relatively better in private schools; they also function more efficiently since teachers' salaries reflect their performance and the cost of education is considerably lower than in public schools (Andrabi, Khan, Khan, & Naseer, 2012). Moreover, private school graduates in Pakistan are estimated to earn more than their counterparts in Bangladesh, indicating that the regulatory framework may be more conducive to operating private schools in Pakistan (Asadullah, 2009). These insights from the experience of private schools can help formulate policies aimed at delivering effective schooling in the government sector.

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<sup>2</sup> Of the other provinces, so far only Sindh and the Islamabad Capital Territory have passed the compulsory education bill; Khyber Pakhtunkhwa (KP) and Balochistan have yet to draft the legislation.

<sup>3</sup> Federal tax revenues still provide the major portion of education financing, which is distributed to the provinces on the basis of the National Finance Commission awards. The provincial finance commissions then transfer funds to the district governments.

One conclusion we can draw from the evidence presented in the empirical research is that an expanded and elaborate education reform program is not necessarily a sufficient condition for higher productivity and higher economic growth, but without educated workers, higher productivity cannot continue. The challenge of education reforms is to efficiently implement an investment program to support a high-quality education system suited to local demand and employment opportunities.

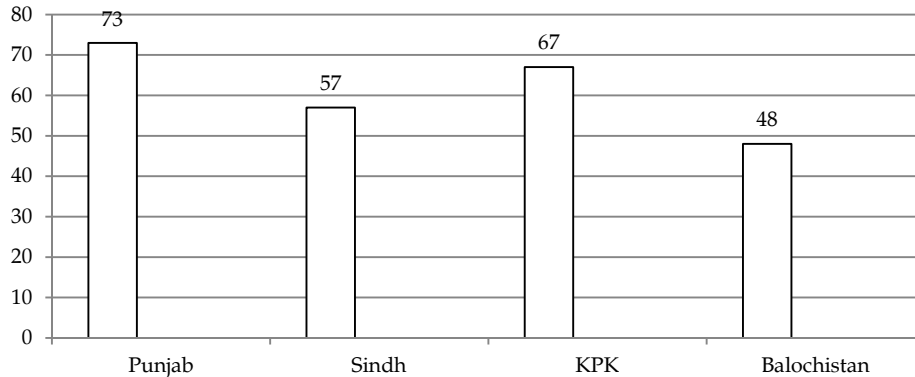
### 3. The State of Education in Punjab

Compared to the other provinces, Punjab has the highest participation rates among school-age children (Figure 2).<sup>4</sup> There are currently about 60,000 government schools and 35,000 private schools in Punjab, spread across 36 districts. Government schools are administered at the district level, and districts are further subdivided into *tehsils* and clusters. One education district officer per district provides the main administrative link to the provincial government and plays a key leadership role in the delivery of education. Education district officers are assisted by two or more assistant education officers.

Punjab's elaborate education administrative structure, however, has produced poor outcomes. Low enrollment rates (reflecting children who have never attended school as well as early dropouts), low levels of learning in schools, inadequate access to schooling for girls, and poor transition to middle and higher levels of education are of particular concern. Moreover, the poorest households and southern districts show the least numbers of children enrolled.

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<sup>4</sup> Figure 2 is based on school enrollment data by age to assess the overall proportion of children in school according to the compulsory schooling requirements set by Article 25-A.

**Figure 2: Percentage of 5–16-year-olds in school**

*Source:* Pakistan Bureau of Statistics (2011).

The absence of census data makes estimating net enrollment rates (NERs)<sup>5</sup> especially problematic because data on the total number of school-age children in the country and in the provinces are based on projections that vary by source.<sup>6</sup> Moreover, the incidence of overage and underage children as well as repeaters reduces the accuracy of calculating NERs. The large number of children in *katchi* or pre-primary classes should also be taken into account since many five- and six-year-olds attend pre-primary classes, and delayed entry into primary school is fairly common in rural areas.

Table 1 below gives NER estimates, including pre-primary enrollments, since substantial overlap in primary and *katchi* age groups is expected. Data for middle and high schools shows specific age groups corresponding to grades 6–8 and grades 9 and 10, respectively. The data indicate that children in middle and high schools tend to be in older age groups within the categories used to calculate NERs.

<sup>5</sup> NERs measure the number of age-appropriate children in school as a proportion of school-age children for a particular level.

<sup>6</sup> Calculating net and gross enrollments is problematic because accurate numbers for the school-age population are not available. Following the last population census in 1998, data collection for a new census started in 2011 but has not yet been completed. Without an updated census, the evidence for assessing outcomes consists of estimates based on surveys and projections of the population.

**Table 1: NERs in Punjab, 2010/11 (%)**

	Primary and <i>katchi</i> (4–9 years)			Middle school (10–12 years)			Middle school (11–13 years)			High school (13–14 years)			High school (14–15 years)		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Rural	67	61	64	21	17	19	34	29	31	11	11	11	21	19	20
Urban	80	77	79	29	34	31	46	51	48	17	25	21	32	38	35
Total	70	66	68	23	22	23	37	36	37	13	16	14	24	25	25

Note: F = female, M = male, T = total.

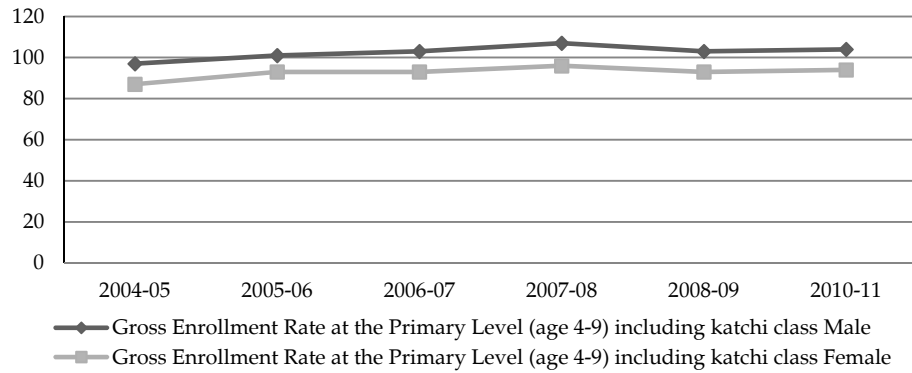
Source: Pakistan Bureau of Statistics (2011).

A higher proportion of middle school children fall in the older age groups, so children older than nine are expected to be in primary school but are not included in net enrollment calculations. Children older than 15 are also enrolled at matriculation level or in high school, although this is not reflected in the NER data. Government schools do not deny admission to children who want to attend, so having children of various ages and skill backgrounds makes it difficult to teach at grade-appropriate levels.

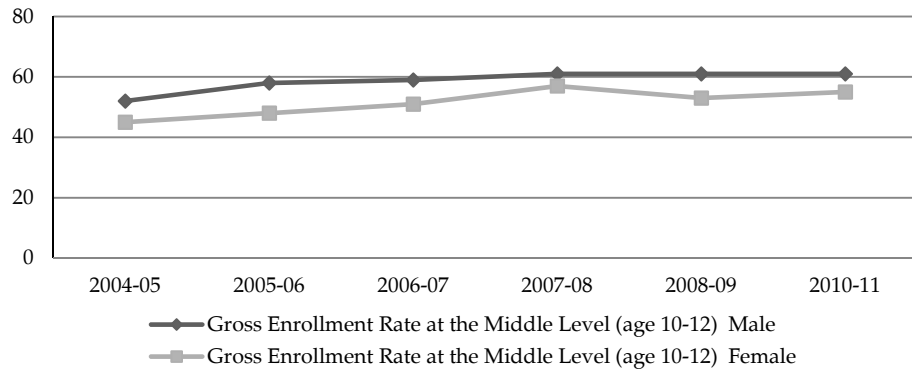
Although net enrollments do not capture accurate levels of school participation, the data indicate substantial differences between urban and rural and male and female enrollments. There are sharp drops in overall enrollment at the high school level, but girls who make it beyond middle school tend to drop out less than boys at the high school level, especially in urban areas.

To help picture trends in school participation since the introduction of major education reforms in 2003 in Punjab, Figures 3, 4, and 5 illustrate data on gross enrollments<sup>7</sup> from 2004 to 2011. Primary enrollments rose from 2004/05 to 2007/08, after which they declined with only modest improvements up to 2011 (Figure 3). Boys' middle school enrollments remained fairly stagnant over the period. Girls' middle school enrollments increased substantially from 2006 to 2008, but declined the following year (Figure 4). Secondary school enrollments show greater increases in girls' participation rates although overall enrollment levels are higher for boys. The gap between male and female enrollments persists, although it narrows due to the rise in girls' middle school enrollments around the time the scholarship stipend for middle school girls was introduced.

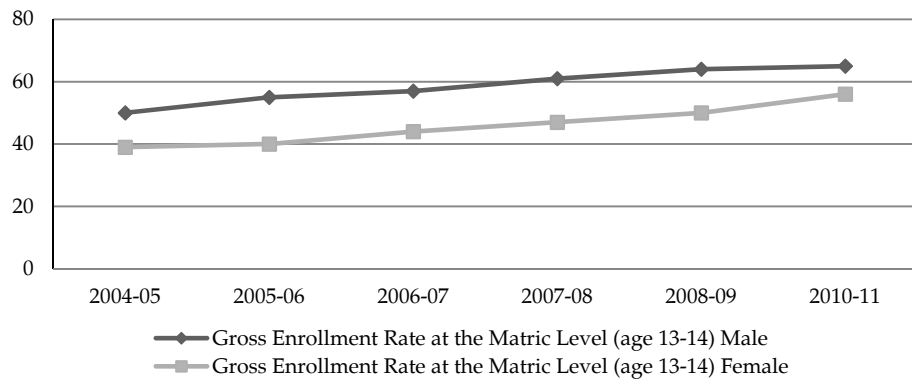
<sup>7</sup> Gross enrollment rates measure total enrollments irrespective of age as a proportion of total children in the expected age group at that education level.

**Figure 3: Primary school gross enrollments, 2010/11**

Source: Pakistan Bureau of Statistics (2011).

**Figure 4: Middle school gross enrollments, 2010/11**

Source: Pakistan Bureau of Statistics (2011).

**Figure 5: Secondary school gross enrollments, 2010/11**

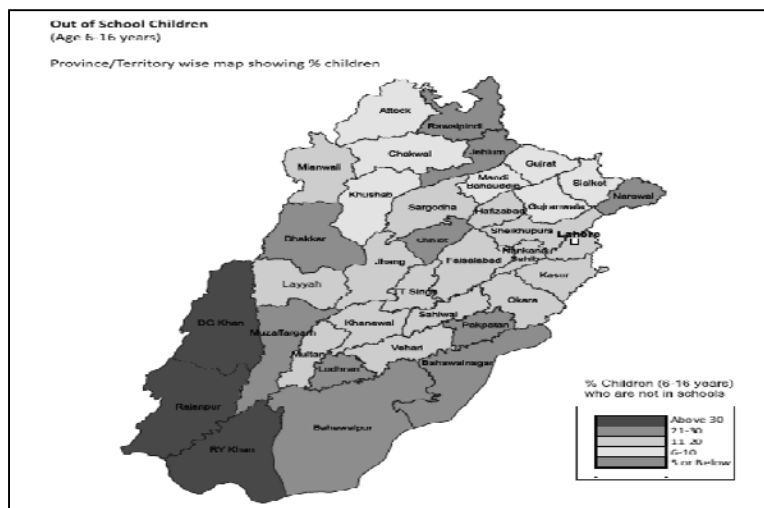
Source: Pakistan Bureau of Statistics (2011).



A number of critical gaps remain in Punjab's education system:

1. *Too many children are still out of school.* An estimated 7 million children belonging to the relevant age group are out of school, and half of these children are in Punjab (Pakistan, Ministry of Education and Training, 2013). Girls and children from the southern districts make up a higher proportion of out-of-school children. Figure 6 shows that, in three southern districts, over 30 percent of 6–16-year-olds do not attend school, and in seven districts, four of which are in the south, 20–30 percent of children are out of school.

**Figure 6: Out-of-school children by district**



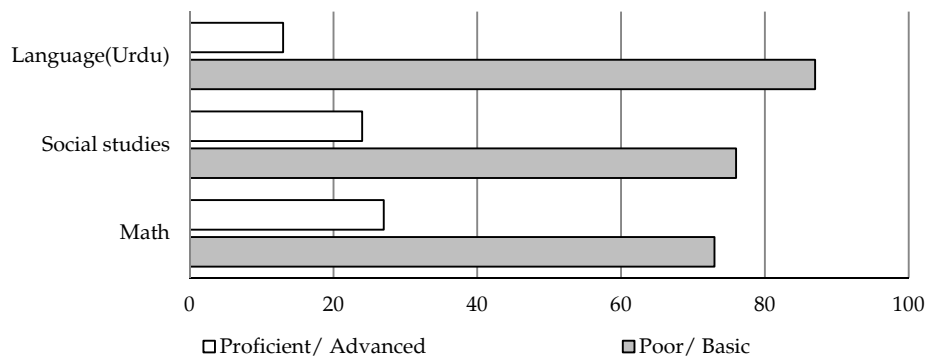
*Source:* Annual Status of Education Report (2013).

2. *The poorest households have the least access to education.* The proportion of out-of-school children is highest in the lowest income quintile. Half of 5–18-year-olds (and 63 percent of females) in the lowest income quintile had never attended school, compared to 38 percent of the same age group (and 47 percent of females) in the highest income quintile (Pakistan Bureau of Statistics, 2010). The Annual Status of Education Report (ASER) (2013) also reports that the poorest quintile has the most (46 percent) out-of-school children.
3. *Girls' participation lags persistently behind that of boys.* Girls from poor households in rural areas are least likely to be in school and “suffer a triple disadvantage, with their poverty and rural location compounding the gender-based disadvantage experienced by their better-off urban peers” (Lloyd, Mete & Grant, 2007). In Figures 3, 4,

and 5 above, data from the Pakistan Living Standards Measurement Surveys for 2004–11 on male and female enrollments show that the gender gap in enrollment has persisted over time. However, increases in girls' middle school enrollments in 2007, continuing onto increased secondary enrollments, indicate the effect of policies targeted to improve girls' enrollment.

4. *Enrollments drop after the primary grades.* There is limited opportunity to obtain education beyond the primary level. As Figure 1 shows, fewer students progress onto secondary education in Pakistan compared to India and Bangladesh. In a comparison with other developing countries, the proportion of places per grade at the secondary level compared to the primary level are much lower in Pakistan; in Iran and Sri Lanka, for instance, the proportion is 100 percent compared to 46 percent in Pakistan (Lynd, 2007).
5. *Inadequate learning levels.* The gauge of a good education system is the availability of high-quality education for every child. Results based on examinations in grade 4 introduced by the Punjab Examination Commission (PEC) show that most students in public and private schools have basic proficiency in mathematics, language, and social studies (Figure 7). ASER also carries out assessments of learning, and its 2012 report shows that only 40 percent of 6–16-year-olds could read a second grade-level sentence in Urdu or their mother tongue and perform basic arithmetic (ASER, 2013). Although there was a slight improvement in overall reading and mathematics on average compared to the figures in the previous year's report (ASER, 2012), absolute learning levels in both government and private schools continue to be low.

**Figure 7: Skills in math, language, and social studies (grade 4 assessments)**



*Source:* Punjab, School Education Department (2011a).

#### 4. Interventions and Outcomes

The limited success in education is not for want of reforms. Several education programs and policies have been introduced since independence in 1947. In a review of the history of national and provincial education policy and reform in Pakistan, Bengali (1999) gives a comprehensive list of the many intended programs designed as a matter of bureaucratic routine, whose targets and goals were seldom met.

While the bulk of education funding continues to be on salaries and infrastructure, recent initiatives in Punjab's education policy are aimed more consciously at increasing student enrollment and learning. Current donor and government programs in education revolve around access, quality, and governance, and several innovative schemes have been introduced for better delivery of these outcomes. Section 4.1 presents a framework for assessing recent interventions (policies, programs, and projects) aimed at improving Punjab's education outcomes.

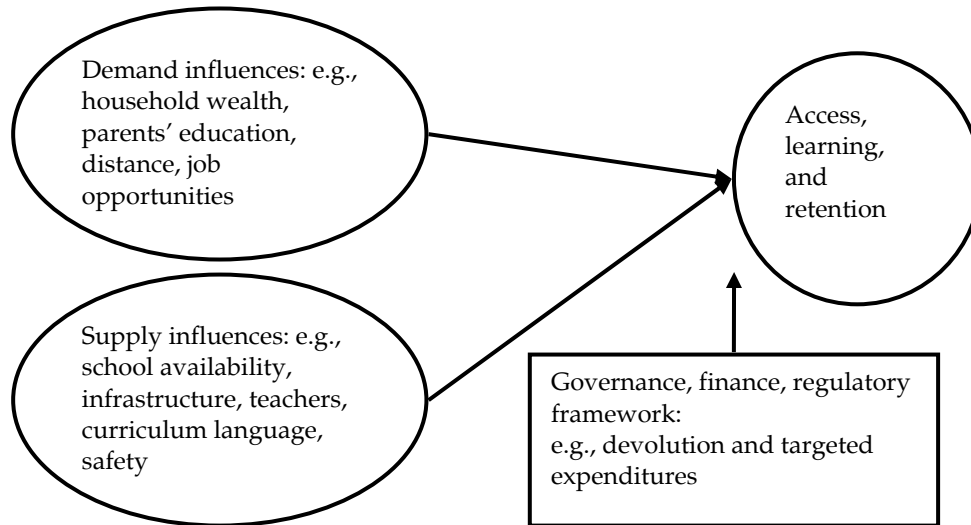
##### 4.1. A Framework for Assessing Interventions

Various school and household characteristics play a role in aiding or constraining educational goals. Influences at home as well as school can have an effect on whether students enroll in the first place, how well they learn, and if they stay in school. A child's innate talents and his/her home and school environments—in which learning takes place—are also important determinants of educational achievement.

Figure 8 presents a broad framework for looking at supply- and demand-side influences on educational outcomes identified by the education literature. Demand-side influences include household income, parents' education, distance from home, number of siblings, and job opportunities. Supply-side influences include investment in textbooks, school buildings and facilities, teacher training, availability of jobs, and higher education opportunities. Children's school attendance depends, therefore, on whether (i) their households can afford to send them to school, (ii) schools are available close by and it is safe to travel there, and (iii) parents value the education offered by these schools. A child is more likely to remain in school if (i) high-quality middle and secondary schools are accessible, (ii) his/her parents can continue to afford their child's education, (iii) the school environment is satisfactory, and (iv) teachers are present. All these factors are influenced by the common platform of the regulatory, governance, and financial structures in which education delivery takes place.

Demand and supply factors are also interrelated. For example, the quality and type of schooling and teacher availability will influence parents' demand for education—poor parents might not consider it worthwhile to devote their children's time and household resources to poor-quality schooling that is not perceived to impart better skills or employment opportunities than could be gained without the education. Student attendance and motivation to study also depends on the quality of instruction, the school environment, and principal leadership.

**Figure 8: Factors influencing educational access and learning**



Many studies have identified various demand and supply factors explaining educational achievement. In the earlier literature, parents' socioeconomic status was given as one of the major reasons for investing in education. Subsequent studies have emphasized the role of school inputs such as teacher training and school infrastructure (Orazem & King 2007; Glewwe & Kremer, 2006). For Punjab's primary schools, important demand-side factors influencing school participation and performance include poverty and the distance to school. However, student performance varies the most across schools and not across poorer or richer districts. This implies that improving school-level factors could help overcome some of the demand-side constraints associated with families' lower socioeconomic levels (Das, Pandey, & Zajonc, 2006; Andrabi, Das, Khwaja, Vishwanath, & Zajonc, 2007; Andrabi et al., 2012).

Supply-side initiatives that make school a pleasant experience with actual learning leading to better opportunities and wellbeing seems to be

the key to better education outcomes. However, it is difficult to pinpoint the specific school and teacher characteristics that improve educational outcomes. A review of a large number of studies across several countries conducted over 1999–2010 reveals that only a few school and teacher characteristics have a significant impact on learning and dropouts. These can include teachers' subject knowledge, low teacher absenteeism, and the availability of desks (Glewwe, Hanushek, Humpage, & Ravina, 2011).

#### ***4.2. Punjab Education Reform Initiatives***

The Punjab Education Sector Reform Program (PESRP), which started in 2003, has undertaken major investments in education. Funded by the World Bank and the UK Department for International Development (DFID), the PESRP uses disbursement-linked indicators to disburse funds on the fulfillment of at least eight out of ten such agreed indicators. The Punjab government meets most of the PESRP's cost (about USD 3.5 billion) with support from donors, mainly the World Bank (USD 350 million) and DFID (USD 200 million). The PESRP was introduced with three overarching goals: improving access, quality, and governance in education. A devolved administrative structure with increased targeting of educational expenditures to poorer households was also planned. However, the program's general impact has not been significant: the enrollment trends given in the previous section show stagnating primary and middle school enrollments over the reform period, with only secondary school girls' enrollments increasing in some years.

The Punjab Schools Reform Roadmap was initiated in 2010 under a broader DFID-funded program, formulated especially as a framework to expedite the delivery of educational results under the PESRP. The program's administrative structure involves keeping track of progress on the education outcomes of schools and districts, and the results are reported directly to the chief minister of Punjab every two or three months. Under the roadmap program, a significant rise in the number of school visits by monitoring teams has helped improve student and teacher attendance in the two years that it has been implemented (Barber, 2013).

The urgent approach taken under the roadmap depends on the commitment of the highest-level officials. Should this commitment wane, there may be a slump in education outcomes if the system relies too heavily on the roadmap framework. Moreover, ranking performance by districts may be misleading if there is wide variation among schools within districts (Andrabi et al., 2012). A closer look at these variations across

schools is important in explaining why some schools perform better than others and in using these existing examples of what works as standards for improvement rather than relying on average district-level performance.

However, the roadmap has created a dataset of schools and a monitoring system to jumpstart the Punjab school system into performing better. It provides a useful overall framework in which the details of teacher, subject, and curriculum quality can be worked out as long as excessive political pressure is not imposed on districts to force results out of schools and students—a process that normally takes time.

As mentioned earlier, salaries and physical infrastructure absorb the bulk of government budgets, usually leaving little room for experimenting with innovative programs. Donor-assisted programs allow flexibility to try new interventions to improve education; based on their results, these reforms can be scaled up and new policies introduced. Major reform initiatives can be assessed in the overall framework of factors influencing education outcomes.

### ***4.3. Demand-Side Initiatives***

On the demand side, policies being followed include the girls' stipend program, school vouchers, and conditional cash transfers (CCTs) under the Benazir Income Support Program (BISP)—a large-scale social protection program targeting women in low-income households and currently reaching up to 4 million households in Pakistan.

#### ***4.3.1. Female Secondary School Stipend Program***

This program was introduced as one component of the PESRP in 2004, designed to improve female enrollments by addressing the demand-side constraints of affordability and distance. The stipend was implemented in 15 districts with low female literacy levels and girls in grades 6–8 were awarded a cash transfer of PRs 600 every three months if they met the 80 percent school attendance criterion. Since distance to school has been identified as an important constraint, the program was also meant to encourage parents to spend on transporting girls to school. In 2006, the stipend program was extended to high school girls and the amount of the stipend has also been increased. Chaudhury and Parajuli (2010) indicate that enrollments for secondary school girls may have increased by 9–20 percent, depending on the data sources. However, the authors do not find any significant improvement in learning among girls in the stipend districts.

#### 4.3.2. Education Voucher Scheme

This scheme addresses the poverty constraints faced by parents and is designed to attract out-of-school children. Started in 2006, the voucher program was set up by the Punjab Education Foundation,<sup>8</sup> developed in response to the success of low-cost private schooling in Pakistan, especially in Punjab. Under this scheme, students who would otherwise not be able to afford an education can use vouchers of up to PRs 350 to attend private schools. Expanding the voucher scheme is expected to increase enrollments. However, unlike schools in the private sector, the voucher scheme entails administrative effort and expense to monitor learning assessments and identify deserving students and strategic school locations to receive vouchers.

A study on parents' perceptions of school choice finds that a unit increase in expenditure on private schooling relative to public schooling decreases the probability of female enrollments in private school by 13 percent. For males, this factor is insignificant in explaining school choice. This implies that the cost of schooling is a key factor in deciding on the type of school for girls, but not for boys (Ahmed et al., 2013). An extension of the voucher scheme could be used to target a higher proportion of girls since the research indicates that parents are willing to spend more on boys' education.

#### 4.3.3. Waseela-e-Taleem

The *Waseela-e-Taleem* program was launched under the BISP in 2012. The program aims to help enroll out-of-school children and encourage families to continue schooling those who are already enrolled. A beneficiary family is eligible for a cash transfer of PRs 200 a month for up to three children on meeting the admission requirements of a verified school and fulfilling a 70 percent minimum quarterly school attendance criterion. In January 2013, about 50,000 families were enrolled in the program and it is estimated that by 2015 more than 2 million children will be enrolled (Nabi, 2013). Using a phased implementation approach, the program will be tested in selected districts and scaled up based on the results of the pilot. A rigorous evaluation of the program has been built into the BISP's implementation structure but the results of the first phase of testing are not yet available.

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<sup>8</sup> The Punjab Education Foundation was established as an autonomous body through a parliamentary act in 1991 to set up public-private partnerships between government and private institutions to extend quality education to low-income families.

While CCTs have been effective in raising enrollments and improving student progression to higher grades, their impact on students' academic achievement is harder to measure. Research on a large-scale primary scholarship pilot program in Cambodia compares the results of targeting scholarships based on merit with scholarships based on poverty ranking (Barrera-Osorio & Filmer, 2012). Enrollment and school progression was favorable in both approaches, but the achievement impact is greater only in the merit-based approach, implying that students and households would be more motivated to obtain an education under a merit-based voucher scheme.

#### *4.4. Supply-Side initiatives*

Past and current education policies on the supply side include school infrastructure facilities, contract teachers, the provision of free textbooks, teacher professional development, student assessments, and effective school councils.

Earlier education initiatives tended to focus entirely on the provision of school inputs related to infrastructure; these inputs were seldom linked to increased enrollment and student performance. In particular, the Social Action Program (SAP)—comprising SAP-I and SAP-II started in 1993—made large investments in school infrastructure over a period of almost 10 years, but there was hardly any evaluation of results. Considered mostly unsuccessful, the SAP suffered from a complex monitoring system and weak engagement of local leadership. Frequent political changes during that period created opportunities for corruption, and in general, donor dialogue and operations with the federal government took up most of the program's energy with less focus on the actual results (Khan, 1999). However, some lessons have been learned from the SAP in designing subsequent programs, mainly in devolving operations to local administrative units, avoiding corruption, paying attention to results, and setting up more efficient systems for planning and monitoring.

A more promising supply-side initiative was the contract teacher reform introduced in Punjab in 2002, in which all new teachers were hired on a contract renewable after five years based on their performance. There was evidence of learning gains from the use of contract teachers (Das & Bau, 2011), but problems of policy design and implementation—such as frequent resignations by contract teachers and site-specific hiring—made it difficult to sustain the positive effects of the reform. Contract teachers generally had a lower status than tenured teachers despite their higher educational



qualifications (Habib, 2010). Contract hiring was given up in 2011, mainly due to political pressure, and all teachers were regularized.

Since several developing countries have had a positive experience with contract teachers (Kingdon, Aslam, Rawal, & Das, 2013), a more beneficial approach would have been to evaluate the policy and modify its design and implementation to correct for some of the problems encountered rather than abandoning it altogether. However, one positive outcome was that the practice of merit-based hiring (first introduced under the contract scheme) has been retained in hiring new teachers.

#### 4.4.1. *Continuous Professional Development Program for Teachers and Teacher Bonus Scheme*

Teachers' role in improving learning in schools is addressed in this initiative. Until recently, teacher absenteeism was one of the major problems in effective education delivery.<sup>9</sup> Better monitoring since the PESRP and Punjab schools roadmap has improved teacher attendance significantly, especially in urban schools. The Directorate for Staff Development introduced the Continuous Professional Development Program in 2004 in all 36 districts of Punjab as an in-service and professional development program for primary teachers.

This initiative follows a decentralized approach to teacher training with one district training support center for each district and district teacher educators covering 10–15 schools each. In this model of in-service teacher training, mentoring and support takes place in the school environment and in the context of the issues and problems of that particular school.

The abolition of training certification such as the Primary Teaching Certificate in Pakistan in 2002 has been an important step in removing ineffective training requirements, since the education literature indicates that teacher training in general does not raise student achievement (Darling-Hammond, 2013). The effectiveness of the innovative Continuous Professional Development Program and teacher bonus program will depend on how much more effort is invested in the classroom as a result of incentives in the scheme. There could be adverse effects if training requires teachers to spend less time on active teaching and if receiving bonuses encourages "teaching to the test." A significant

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<sup>9</sup> Teacher absenteeism in Pakistan has been estimated to vary from 10 to 20 percent, with higher rates prevalent in rural areas (Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006; Gazdar, 2000).

finding of Andrabi, Das, and Khwaja (2010) is that teacher compensation is commensurate with teacher performance in private but not public schools, indicating better “pay-for-performance” incentive structures in private schools where it is possible to fire absent and nonperforming teachers irrespective of their qualifications, training, and seniority.

#### 4.4.2. *Foundation-Assisted Schools*

As a public-private partnership initiative under the Punjab Education Foundation, “foundation-assisted schools” were designed to meet the increased demand for private schooling under the Education Voucher Scheme. These schools are monitored for quality assurance and public subsidies are continued on the basis of schools achieving a minimum pass rate after two test rounds. An impact evaluation of the initiative from 2008 to 2011 found that enrollment in foundation-assisted schools had increased by 40 percent and that student achievement had improved by the equivalent of one to two additional years of schooling. Substantial increases in learning were observed between the two test rounds due to the pressure of a high-stakes test (Barrera-Osorio & Raju, 2010).

#### 4.4.3. *Report Cards and Student Learning Assessment*

The PEC has been undertaking student learning assessments for grades 5 and 8 since 2003, made mandatory from 2005 in all private and public schools. Punjab is the first province to launch a large-scale assessment program. In a study combining 2009 data on school characteristics with PEC scores, Andrabi et al. (2012) attempt to link student performance to school inputs. The authors find variations at the school level to be important in explaining differences in student achievement: “The gap between good and bad district is relatively smaller compared to the gap between good and bad schools within any given district.” Factors associated with better student performance are lower student-teacher ratios, better-educated and more experienced teachers, and better school facilities such as blackboards. Moreover, districts with higher enrollments do not necessarily have better child learning results.

The variation in quality across schools calls for greater focus on school-level factors that could help explain why some government and private schools are better than others and how the characteristics of these schools affect learning.

#### 4.4.4. *Medium of Instruction*

The results of the PEC exams show language achievement test scores to be particularly low. The lack of a clear language policy has probably had a detrimental effect on learning. The Punjab government announced a policy of English-medium instruction at the primary level in 2006 to address parental demand, gauged by the increased demand for private schools offering instruction in English. Government schools and teachers were not prepared for this drastic policy change: teachers' knowledge of English was limited and textbooks and curricula were not developed for teaching subjects in English. As a result of this policy, math and science teachers started asking to be switched to teaching Urdu because of their lack of English skills (Bari, 2013). More than 50 languages are spoken across Pakistan and a clearer language policy in schools is needed based on a consensus of views and local demand.<sup>10</sup>

Parents demand English-medium education mainly for its perceived usefulness in access to job opportunities and in reducing social inequality. At the same time, national and indigenous languages are considered an important part of belonging to a community and of a student's identity (Ahmed et al., 2013; Rahman, 2010). Rather than engaging in emotional debates, it is important to take practical steps to develop language training facilities and curricula that incorporate at least two languages (English, Urdu, and a local language) in school instruction to promote meaningful learning.

#### 4.4.5. *Introduction of High-Stakes Testing*

To improve the quality of learning, significant weight is given to PEC test scores in ranking districts and approving subsidies for foundation-assisted schools. However, the disadvantages of high-stakes testing have been shown to encourage teaching a narrowly focused curriculum that emphasizes test preparation. School systems have also tended to prevent academically weaker students from sitting high-stakes tests (Figlio & Getzler, 2006). Better evaluation of the PEC assessment system is required to ensure that testing is not geared to fulfilling mainly bureaucratic and political aims and that it is used to enhance students' subject knowledge and academic skills.

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<sup>10</sup> The experience of other countries with multilingual backgrounds could be useful in developing a language policy for the medium of instruction. For instance, India follows a "three-language formula" (Annamalai, 2001) and in several developing countries where there is a demand for competence in English, schools have bilingual language policies (Garcia, 2008; Klaus, 2003).

A monitoring study by the Society for Advancement in Higher Education (2011), conducted in 3,000 examination centers in 18 districts over a period of one year, reveals the weaknesses of the examination system: the lack of clear checking guidelines; too many exams held in one day; undue stress on teachers and students; and the absence of proper facilities at exam centers, such as furniture, bathrooms, and electricity. The current pass percentage of 33 percent is also considered too low as it reflects a poor standard of achievement. The study recommends that linking teacher accountability to students' test scores alone should be avoided, given some of the reliability and validity issues that hamper the assessment system. Problems with "teaching to the test" experienced in other countries that use high-stakes assessment systems imply that investing in foundation-assisted schools could be counterproductive if favorable learning results are achieved mainly on the basis of teaching a narrow curriculum.

#### 4.4.6. *School Councils and Head Teacher Leadership*

Several studies emphasize the importance of supply-side school-related factors in access and learning. As part of the devolution program and in an attempt to involve communities in school management and accountability, 56,000 school councils were formed in 2009. These councils receive annual grants to improve school infrastructure. Council members comprise the head teacher, parents, and local citizens who monitor the performance of teachers and school results; the head teacher is given a prominent role in this. Annual grants ranging from PRs 20,000 to PRs 50,000 are provided at various schooling levels to address the needs of particular schools. As a step toward greater focus on activities and structures within schools, strengthening school councils and conducting research on initiatives at the school level would help identify some of the characteristics that make schools better or worse.

#### 4.4.7. *School Environment*

Parents' demand for schooling and students' motivation to learn and continue their education is influenced greatly by the quality of schools available. Much more attention needs to be focused on activities and structures within schools. An intervention under the Private-Public Partnership program addressed the problem of rote learning and low standards in schools by introducing a "child-friendly" class environment (Naseer, Patnam, & Raza, 2010). Teacher and principal training was offered twice a year, and technical assistance provided throughout the

school year. Materials such as prisms and building blocks were also provided and activities such as book making and dramatic play introduced. Schools where the intervention was introduced were found to have higher learning scores than nonprogram schools.

#### *4.4.8. Curriculum Standards and Coverage*

A crucial supply-side constraint in providing better-quality education is an appropriate curriculum. An effort to raise standards by developing an improved school curriculum was undertaken in 2006 at a national level; since devolution, the provinces have implemented some changes from the new curriculum. However, problems associated with curricula, as identified in several research studies, have yet to be addressed. Studies on Africa and South Asia (including Pakistan) show that covering too much material too quickly can have an adverse effect on cumulative student learning. As a result, students do not master the basics despite several years of instruction (Pritchett & Beatty, 2012). Not only is it therefore important to develop a high-standard curriculum, but it is also important to pace the instruction of class materials for children to be able to master basic concepts in elementary grades.

### **5. Concluding Remarks**

Although Punjab has a more advanced education system than the other provinces, most of its people remain poorly educated despite numerous education policies and reforms. On average, about a quarter of school-age children are not enrolled, fewer girls than boys attend school, and learning outcomes are inadequate. Increased expenditures are required to meet the cost of an expanded and improved school system, but incurring more expense in itself is not likely to yield positive results in the absence of better governance and a clearer vision of the goals of education.

The process of devolving education to provincial and district governments via the 18<sup>th</sup> Amendment to the Constitution provides an opportunity to shift governance and administrative structures in education closer to the communities that will benefit from them. Parents' demand for quality education is reflected in the rapid spread of private schooling throughout the country for families of all income levels. Devolution is expected to help articulate the purpose of education to more effectively match the supply of education with demand for the large numbers of children in need of schooling within the array of Pakistani ethnic and geographical contexts.

Major investments in education are currently taking place under the PESRP and Punjab Schools Roadmap. The stated goals of access, quality, and retention can be assessed within a framework of household-, school-, and community-level factors that affect these goals. The education literature indicates that, on the demand side, poverty remains an overwhelming constraint to school attendance in Punjab. Schooling quality, school location, and teacher presence affect parents' decision to send their children to school. Important supply issues include appropriate and high-quality curricula, the presence and effectiveness of teachers, and efficient school management.

Past initiatives in education were driven by expenditure on school infrastructure with limited evaluation of results. Recent reform programs have incorporated lessons from past failures such as the SAP, and are aiming to build better monitoring and governance structures that include student assessments. On the other hand, a better evaluation of past policies is needed as they are implemented. Under the PESRP, the policy of contract hiring was shelved despite positive results in teacher attendance and student achievement. Rather than addressing the implementation problems and inherent contradictions in policy design that were causing teacher dissatisfaction, political pressure led to the policy being abandoned altogether and all contract teachers being regularized.

A number of education reform initiatives are currently in progress in Punjab. Some of these, such as the girls' secondary stipend program, have been partially successful in that enrollments and attendance levels have improved as a result. Learning levels, however, have remained the same. Extending merit-based voucher and CCT programs to girls may help address the problem of lower female participation and improve learning.

To address the issue of low learning standards, an innovative in-service teacher professional development program has been introduced, and testing takes place regularly in grades 5 and 8 to monitor students' progress. Student and teacher attendance as well as test scores have improved since 2011, mainly due to better supervision and monitoring.

However, these assessments involve high-stakes tests that link student and teacher performance to rewards and punishments for teachers and schools. This creates incentives for teaching a narrowly focused curriculum aimed at "teaching to the test" and for gaming the system by excluding poorly performing students. Math and language skills remain low, as gauged by independent evaluations such as ASER (2013) and the official Punjab Education Department statistics.

Research studies on Punjab's educational system and evaluations of similar reform initiatives in other countries point to a number of factors that need to be addressed to remedy poor learning levels. These factors could be incorporated in the several innovative approaches currently in place under the PESRP and Punjab Schools Roadmap such as lesson plans, public-private partnerships, teacher in-service mentoring, and school councils.

1. Existing lesson plans in earlier grades should be modified to ensure that students master basic concepts and build a solid educational foundation. This will require considerable effort by teachers and school administrators as well as parents, to ensure teacher presence in the classroom, teacher competence in subject knowledge, and the ability to create a comfortable and inclusive learning environment for students.
2. Classes usually have a student mix of different ages and competency levels. Remedial programs may be required to ensure that the majority of students are receptive to teaching at grade-appropriate standards.
3. Exam results show low proficiency in students' language competence. Further policy debate and research is required to develop a multilingual policy incorporating English, Urdu, as well as local languages. This would fulfill multiple aims of education by increasing employment opportunities while remaining integrated with national and local identity and culture.
4. Less emphasis on high-stakes assessments will take pressure off district administrators and teachers to achieve results quickly under threat of dismissal, transfer, or lack of financial rewards. Testing should be geared to raising actual learning levels.

Few rigorous evaluations of educational initiatives have been conducted for programs implemented in Punjab and in Pakistan. For greater accuracy in assessing program results, baseline data needs to be collected on variables of interest and other factors that might influence outcomes; the counterfactual also needs to be built for meaningful comparison of results. Revisions in implementation and policy design can be based on these evaluations.

Educational investments show results over time. Education budgets usually suffer cutbacks along with other public sector development programs during periods of economic downturn. To prevent the early dissipation of educational benefits, investments in education have to follow overall school, district, provincial, and national goals and continue over a period of time despite political and economic setbacks.

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## The Public School System in Sindh: Empirical Insights

Salman Asim\*

### Abstract

*This paper presents descriptive statistics on the government school education system in Sindh. The data are obtained from the latest administrative annual school census in Sindh (2011/12). The province's schooling system comprises 48,932 schools of which 47,000 are primary, middle, and elementary schools, giving Sindh one of the densest public schooling systems in the world with almost 1.8 schools for every 1,000 people in rural Sindh. The functional schooling capacity, however, is low, with less than 15 percent of these schools having at least two teachers and access to basic facilities such as toilets, drinking water, electricity, and boundary walls. Against this backdrop, we examine key trends in education outcomes using the Pakistan Living Standards and Measurement surveys for 2004/05 and 2010/11. We find that the net enrollment rates (NERs) at primary, middle, and secondary level in Sindh stagnated, at best, during 2007–11 after a sharp increase registered in 2006; this trend is similar to that of the rest of Pakistan. Gains in NER vary significantly across districts with some performing exceptionally better than others. Finally, we cross-validate these statistics using independent household- and school-level census data on 300 communities, collected as part of an ongoing impact evaluation study in three districts of rural Sindh.*

**Keywords:** Patronage model, administrative data, PSLM, net enrollment rate, student achievement, public education, Sindh, Pakistan.

**JEL classification:** I21, I28, O20.

### 1. Introduction

Pakistan's economy experienced a remarkable turnaround in the early 2000s after reaching the verge of economic collapse in 1998. Its national GDP grew at an impressive average rate of 6 percent between 2000 and 2006. This cycle of episodic growth dissipated shortly as a result of

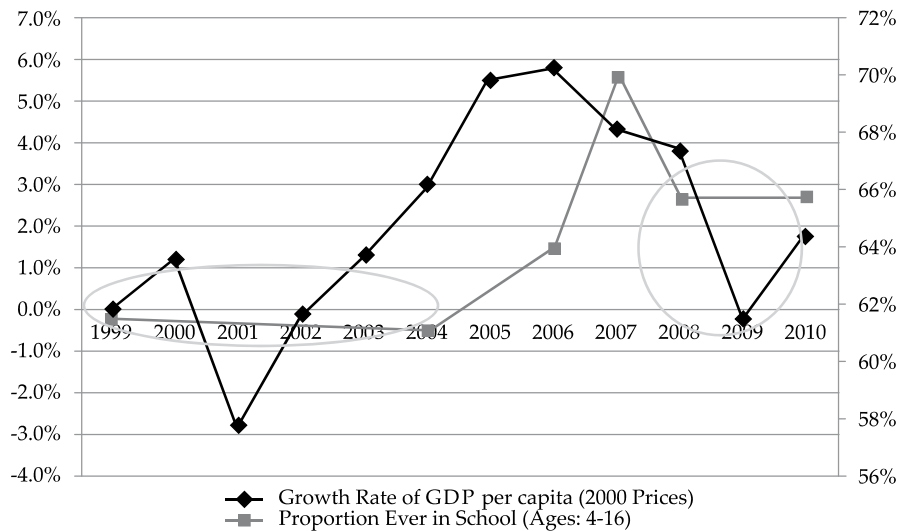
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unaddressed long-term structural constraints such as a low tax-to-GDP ratio, untargeted subsidies in the power sector, losses by state-owned enterprises, and dismal performance on human development indicators. These factors, accompanied by the global economic crisis, major floods in Sindh and Punjab, and overall deteriorating security conditions, have taken a toll on Pakistan's economy.

To steer the economy back onto a higher growth path and harness the potential of its vast human resource base for more robust and sustainable growth, the country must accelerate its progress on human development indicators. Currently, it ranks 163rd (out of 177) on the United Nations' index of education systems. Overall, the country's performance in school participation and completion is poor relative to its regional counterparts and to developing countries with a similar level of per capita income. That said, Pakistan did witness improvements in school participation rates between 2004 and 2007, but this promising trajectory of growth in human development was reversed with the slowdown in economic activity (see Figure 1).

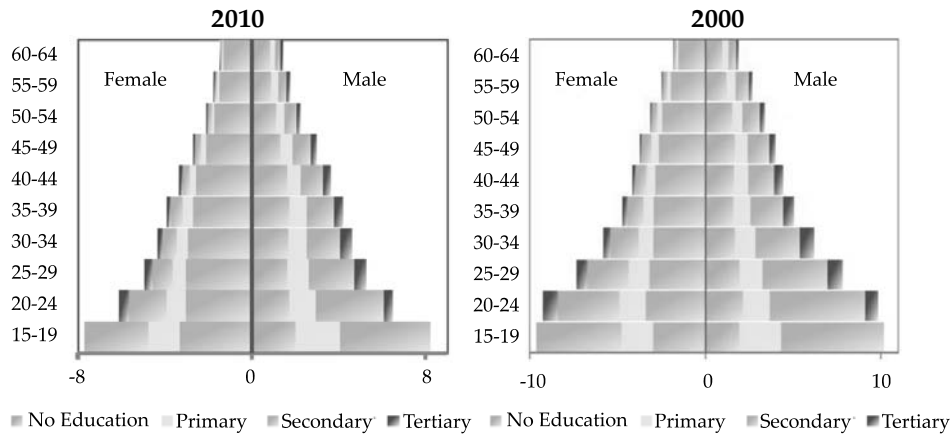
**Figure 1: Economic and education progress in Pakistan (1999–2010)**



The province of Sindh is no exception as far as the poor state of education in the country is concerned. With a population of approximately 42 million people—roughly one quarter of the country's total population—the province has a net enrollment rate (NER) of 62 percent, which drops to 54 percent in rural areas. The proportion of uneducated youth (aged 15–19) in Sindh is 31 percent compared to 27 percent nationally, which, in turn, is

almost double the proportion of uneducated youth in any economy with a comparable per capita income. Overall, the percentage of uneducated females in Pakistan is disproportionately larger than that of males, but as illustrated in Figure 2, the shrinking of the uneducated population in the last decade can be attributed mainly to higher school participation rates among females compared to males. Sindh follows similar patterns.

**Figure 2: Population pyramid by gender, age, and education levels**



Source: EdStats (2010).

In March 2013, the legislative assembly enacted the Sindh Right of Children to Free and Compulsory Education Bill, which makes education mandatory for all children aged 5–16 years. The extent to which the Sindh government will be able to translate this act into access to quality education for *all* will depend on how the government addresses long-term structural challenges to the system that could derail even well-intentioned reforms. To inform this discussion, we present key trends, comparisons over time, and clues in the data that strip down the province’s complex education landscape into simplified numbers. Section 2 provides a snapshot of Sindh’s school education system, Section 3 examines key trends in education performance indicators over time, Section 4 reports robustness checks on the statistics presented in this paper, and Section 5 concludes our assessment.

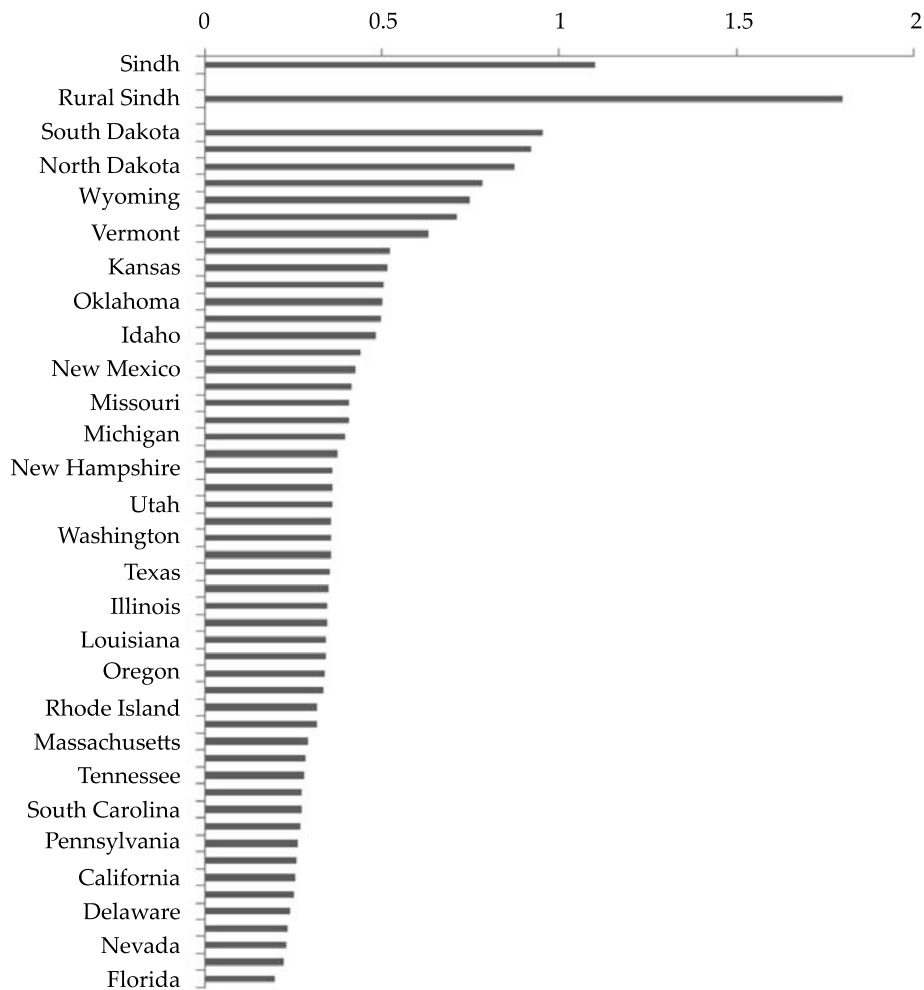
## 2. Sindh’s Education System

There are 48,932 government schools in Sindh, of which 43,027 are functional and 42,620 have at least one teacher and positive enrollments. About 38,471 are primary schools, 2,252 are middle/elementary schools, and 1,897 are secondary/higher secondary schools. Roughly, 3.65 million

students are enrolled in these schools and are taught by a total of 147,945 working teachers. Of these, 141,718 are government teachers comprising 100,858 male teachers and 47,087 female teachers.

These numbers reveal that Sindh has one of the densest schooling systems in the world, with 47,000 government schools serving elementary grades in the province. To illustrate the sheer size of the system, we compare the number of elementary schools in the US per 1,000 people with those in Sindh and rural Sindh. The comparison is for illustrative purposes only and does not control for differences in the spatial distribution of population in Sindh and states in the US (Figure 3).

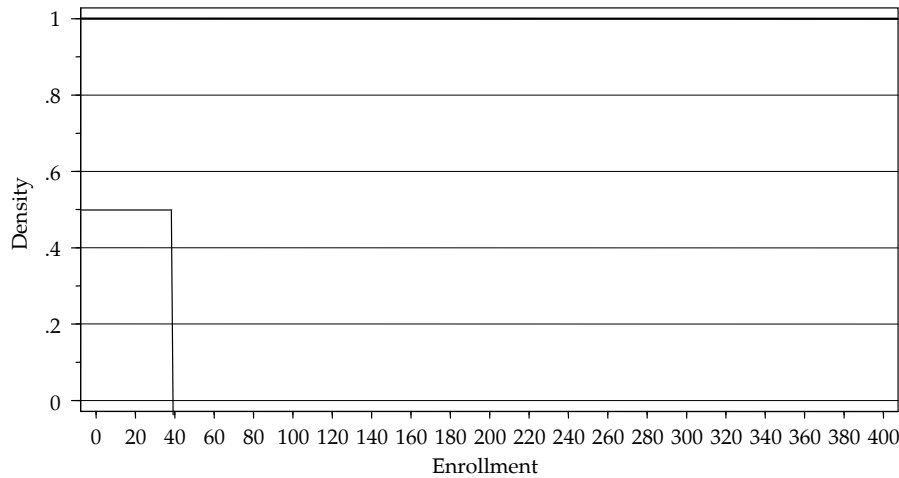
**Figure 3: Schools per 1,000 people**





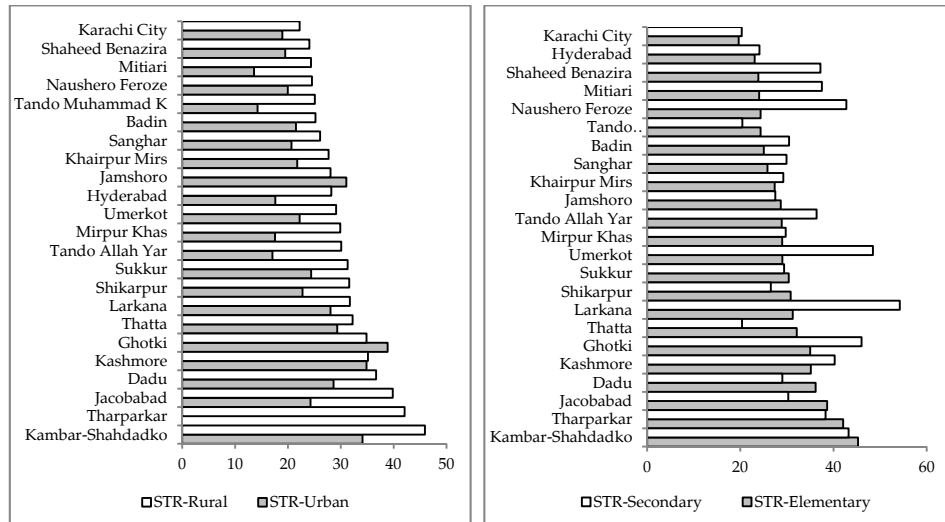
A quick look at the median school enrollments in Sindh for primary, middle, and elementary schools detracts from the optimistic thought that Sindh surpasses the US in managing to create a dense web of government schools. The median school intake for elementary schools in Sindh is only 40 students. As Figure 4 shows, a significant proportion of these schools (10–15 percent) are nonfunctional (zero enrollment) while others have very low enrollment rates. This is symptomatic of the Sindh’s patronage model of politics where schools were created to serve targeted constituencies. Under this model, schools were constructed primarily to fulfill the objective of job creation (to buy votes) and to accumulate rents associated with the construction of schools and placement of teachers (Cheema & Mohmand, 2006; Keefer, Narayan, & Vishwanath, 2003; Gazdar 2000).

**Figure 4: School enrollment density function**



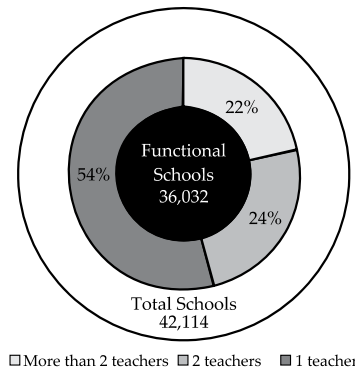
We find evidence of patronage-based politics once again when we look at the placement of teachers in schools. Overall, the student–teacher ratio (STR) in elementary and secondary schools in Sindh is 30. This average is comparable with or even better than that of countries with similar levels of per capita income and implies that Pakistan is on track to achieving the Millennium Development Goals. However, it masks huge regional and intra-district variations: Karachi city and Hyderabad (urban districts) have STRs of 20 compared to Jacobabad, Tharparkar, and Kambhar Shahdadt where the average is more than 40 (Figure 5). Even within districts, schools located in urban centers have significantly higher STRs than rural schools. These patterns clearly suggest political patronage at work where teachers wielding adequate political clout are placed in schools where there is the least need.

**Figure 5: District and intra-district variations in STRs**



Having established the heterogeneity of the schooling system in Sindh, we now take a more nuanced look at the data to present key insights intended to inform education policy and management in the province. The focus is on government primary, middle, and elementary schools, which constitute more than 96 percent of the total schools Sindh, of which almost 90 percent are rural. We carefully analyze the data to identify “functioning schools” that meet the minimum definition of what a school is expected to be. We start with a base of 42,114 elementary schools in rural Sindh; 6,082 of these were either found closed for a period of more than six months in the annual school census data, had no teacher assigned to them or reported zero enrollment. Excluding these, we are left with a total of 36,082 schools with a teacher distribution depicted in Figure 6 below.

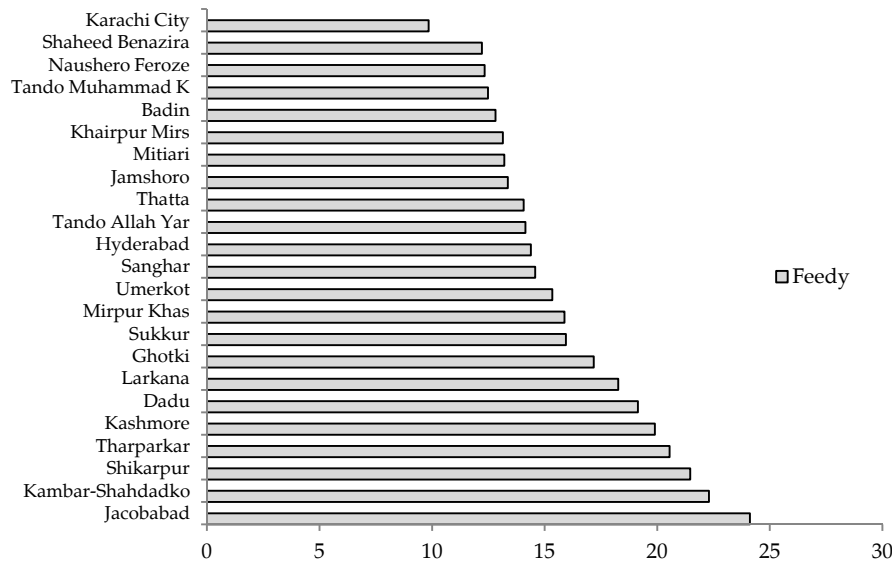
**Figure 6: Teacher distribution in functional rural schools**



About 54 percent of these schools are one-teacher schools. Given the political economy assessment above, we need to differentiate between resource-constrained schools in the province (“needy”) and schools that feed the political elite (“feedy”). Teacher management policies in the province must be sensitive to the distinction between “feedy” and “needy” schools in order to steer the education system back on track and away from the distortions created by deep-seated vested interests.

Specifically, we propose that any school in a given district that falls in the bottom quintile of STRs in that district is classified as “feedy”<sup>1</sup>—these schools should be on policymakers’ “negative list” with the intention of expunging them from the system in due course. Hence, any form of additional school inputs (teachers, school facilities, grants) should not be channeled to these schools, or we risk feeding the world of politics, interests, and power. There are a total of 4,038 “feedy” schools in the province with a mean STR (across districts) of 15.9 (Figure 7). Total enrollment in these schools is less than 65,000 and simple internal efficiency estimates are sufficient to write them off.

**Figure 7: Mean STRs in “feedy” schools**

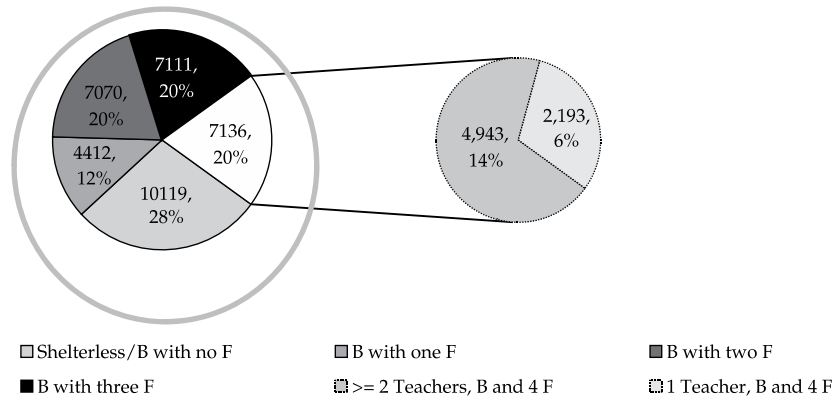


With these simple clues from the data, we have reduced the schooling system in rural Sindh from more than 42,000 to less than 32,000

<sup>1</sup> The relationship between school size and performance (earlier in the context of Sanghar district) is discussed in detail in Gazdar (2000).

schools. Going further, we use a refined definition of school functioning that extends beyond students and teachers. We now look at the distribution of basic facilities in functional rural schools, such as toilets, drinking water, electricity, and boundary walls (see Figure 8).

**Figure 8: School facilities in functional rural schools**

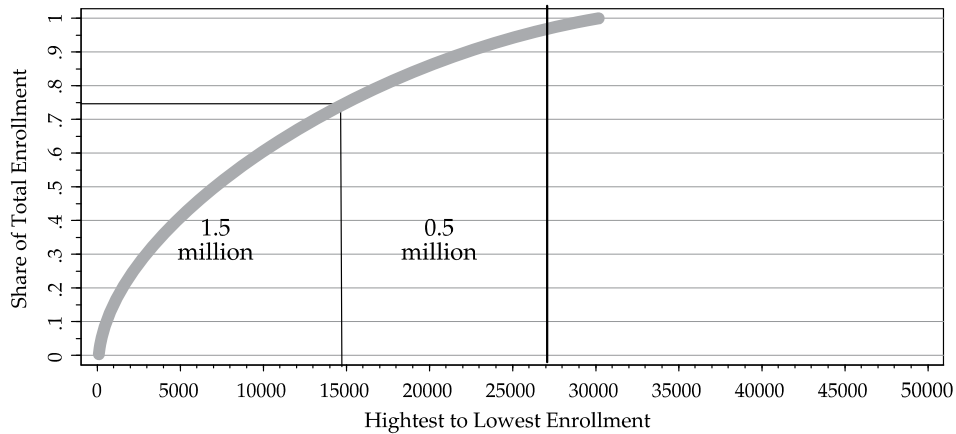


As the figure shows, 28 percent of functional rural schools in the province either lack a school building or have one with none of the four basic facilities for students; 70 percent are one-teacher schools. In this massive public education outlay in Sindh, the school functioning capacity remains limited to less than 5,000 schools—schools with two or more teachers and access to the four basic facilities. To further our political economy analysis of “needy” versus “feedy” schools, we use a simple matching algorithm to identify functioning schools that share the infrastructure characteristics of closed schools. There are 5,633 at-risk schools that, similar to closed schools, lack physical infrastructure (access to the four basic facilities). The median STR for these schools is 26 with a mean of 31, indicating a fat right tail.

To remain conservative, we add to the list of “feedy” schools only those that have a below-median STR with virtually the same school infrastructure characteristics as closed schools. These calculations suggest that another 1,880 schools could be categorized as “feedy,” thus reducing the elementary schooling system in Sindh to 30,000 potentially functioning schools. The enrollment cost of excluding these additional 5,633 schools in the province is 124,000 students. The total reported elementary enrollment in rural Sindh falls from 2.04 million to 2.03 million

With these remaining 30,000 schools in rural Sindh, the province still retains its undisputed top position on the school density chart. There will still be some “feedy” schools camouflaged in this reduced set of 30,000, but they have characteristics similar to functioning schools in the province, and we cannot refine the categorization based on observed school covariates. Evidence of such schools is indicated by the skewed distribution of enrollment shares for these 30,000 schools: 1.5 million children are enrolled in 15,000 of these schools with only 0.5 million in the remaining schools (Figure 9).

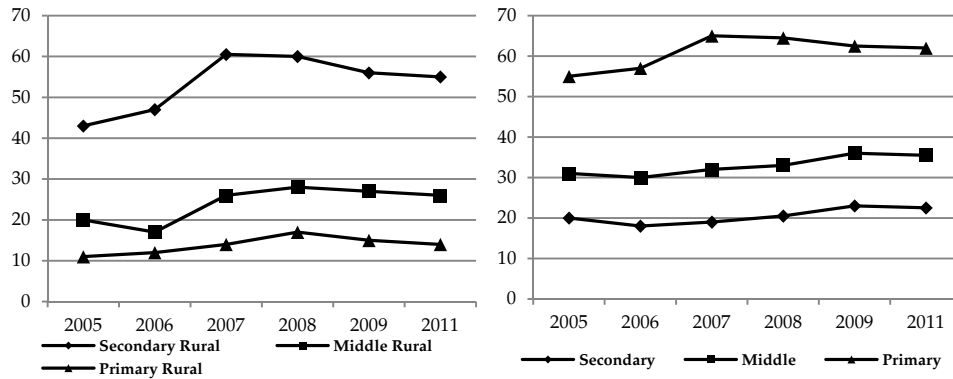
**Figure 9: School size heterogeneity in functional schools**



### 3. Education Indicators in Rural Sindh

Against the backdrop of this large proportion of nonfunctional schools in Sindh, we now examine whether the deadweight they create overburdens the education system and stalls the progress of key outcome indicators.

Sindh’s performance in education outcomes is qualitatively similar to that of the other provinces. In 2011, the NERs at the primary (ages 6–10, grades 1–5), middle (ages 11–13, grades 6–8), and high school (ages 14–15, grades 9–10) levels in Sindh were 62, 36, and 23 percent, respectively. Growth in school participation at all three levels has been slow (i.e., single-digit growth) over the period 2005–11. The upward trajectory in NERs witnessed at all levels during 2004–07 was reversed in 2008, with larger participation shortfalls registered for children from poor households and girls in rural areas.

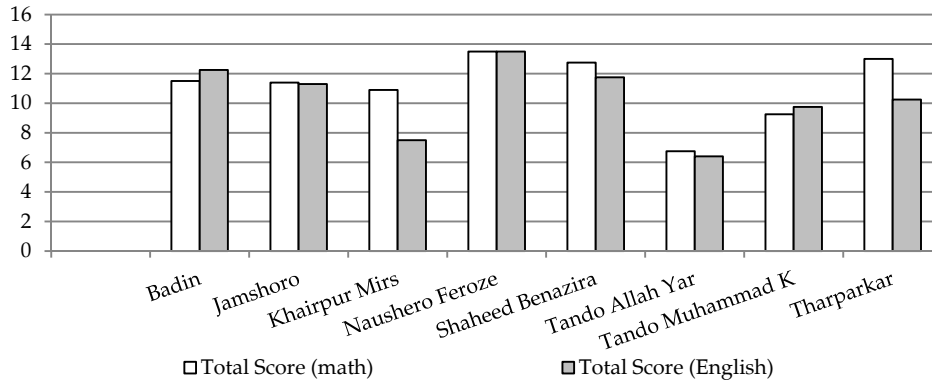
**Figure 10: Trends in NERs: primary, middle, and secondary levels**

Likewise, student achievement in Sindh is low, with students performing well below their grade-level competencies in independent tests (mathematics, English, and Sindhi) administered in 2012.<sup>2</sup> The tests were administered to 4,863 Grade 4 and Grade 5 students in a district-representative sample. On average, students attempted 74 percent of the test items in mathematics and 70 percent of the test items in English; they achieved a mean score of 12.01 for mathematics and 10.82 for English out of 25 tested items in both subjects. Taking a specific question, less than 60 percent could answer a Grade 2-level question on adding two two-digit numbers.

With the exception of one sample district, the performance of the other seven rural districts was more or less similar in terms of mean student achievement (Figure 11). Even if we disaggregate the scores across gender, we do not see much difference in learning levels between girls and boys. Of the total sample, 1,627 were girls and 3,158 were boys; girls performed slightly better than boys in both mathematics and English.

<sup>2</sup> These assessments were conducted as part of the baseline surveys for an ongoing information awareness campaign to build demand-side accountability pressures to improve school management in Sindh.

**Figure 11: Student achievement in math and English tests, 2012**



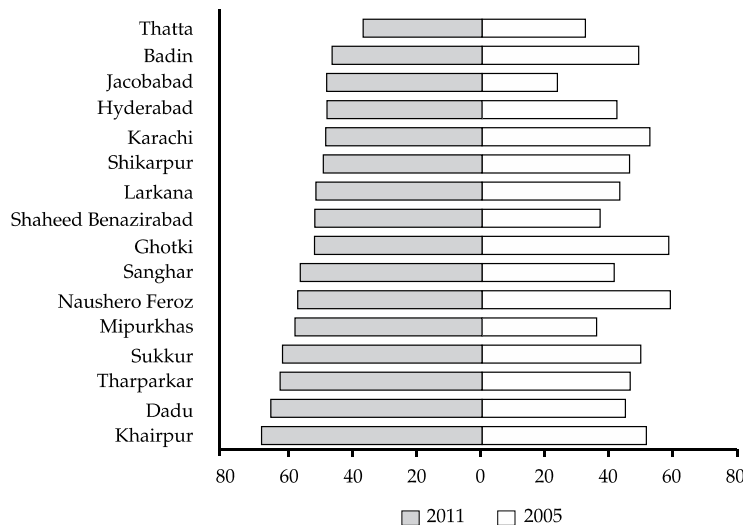
There also appear to be systematic differences in mean test performance across age groups. Age is discretized based on children younger than the official age for completing primary school (10 years or below, which is also the median age of the sample) and those older than 10 years (who should have completed Grade 5 by now). Across the tested grades, younger students have higher mean test scores than those older than the median age in the sample.

**Table 1: Test scores across age groups**

Age	Total score (math)	Total score (English)
>10 years	11.61519	10.28518
<=10 years	12.24337	11.14396
Total	12.00995	10.82485

Next, we take a closer look at primary NERs in rural area to examine any district-level heterogeneity in school participation rates across districts over time (Figure 12). There are significant differences in school participation rates across the province’s 23 districts. However, barring Karachi and Hyderabad where private education predominates, districts have far more similar rates of government school participation. The decision to carve four new districts out of Larkana, Dadu, Khairpur, and Jacobabad to reduce the administrative burden seems to have worked, with significant gains in NERs for both the parent and bifurcated districts.<sup>3</sup>

<sup>3</sup> Districts established in 2004 are re-merged with their parent district to compare performance over time. We have assumed that the primary sampling units for the PSLM 2004/05 and 2010/11 were by no means affected by the change in administrative district boundaries.

**Figure 12: Over-time comparison of primary NERs (rural)**

School participation rates in rural areas have improved in most districts, although these gains have been offset by worryingly negative and stagnant growth trajectories in others. Unsurprisingly, Thatta, the district with the highest concentration of “feedy” schools, has the lowest primary NER. Ghotki and Badin in rural Sindh registered negative NER growth over the six-year period. Mirpurkhas, Jacobabad, and Dadu, however, exhibited growth rates upward of 20 percent in the same period. These developments mean that regional disparities in educational attainment are on the rise in Sindh, and targeted policies must be adopted to deal with districts that are lagging behind in basic education outcomes.

School participation rates at the primary level in each district are based on the proportion of children (aged 6–10) attending Grades 1–5. Given the small number of sample observations for the relevant age group for each district, we must cross-validate these statistics to obtain a degree of confidence for the trends reported here.

#### 4. Robustness Checks

To cross-validate the descriptive statistics reported in this paper, we use household- and school-level census data collected for 300 villages in three districts of rural Sindh—Matiari, Mirpurkhas, and Sanghar.<sup>4</sup> Table 2

<sup>4</sup> Household listings and school censuses were conducted in 2012 across 300 randomly selected villages in three districts of Sindh as part of the ongoing impact evaluation work for the information awareness campaign in Sindh.



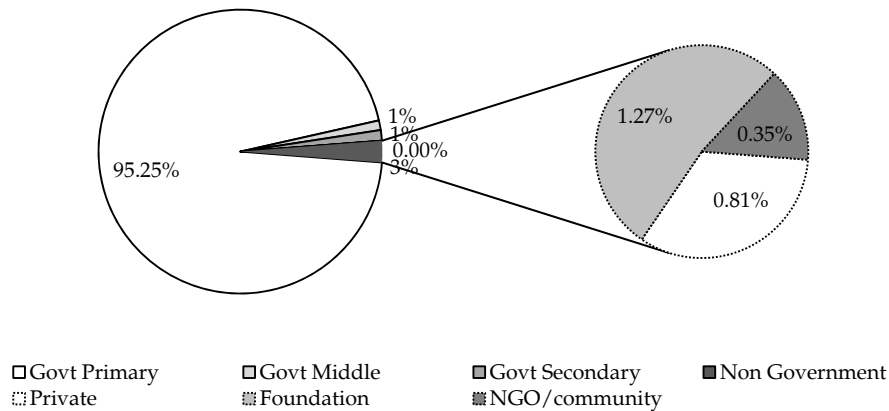
below gives the school participation rates for school-age children (aged 5–16) in these districts, compared with those estimated in the PSLM survey for 2010/11. Population estimates obtained from the census listing of households in Sanghar and Matiari are very close to those reported in the household survey data. However, the unexpected gains in the NER for Mirpurkhas are inconsistent with the estimate we obtained from our study sample; sampling errors in the PSLM data may have led to this deviation from the population mean.

**Table 2: Participation rates in three districts (children aged 5–16)**

	Participation rates	
	PSLM (2011)	Census (2012)
Sanghar	47.8%	50.6%
Matiari	42.9%	42.9%
Mirpurkhas	48.8%	28.7%

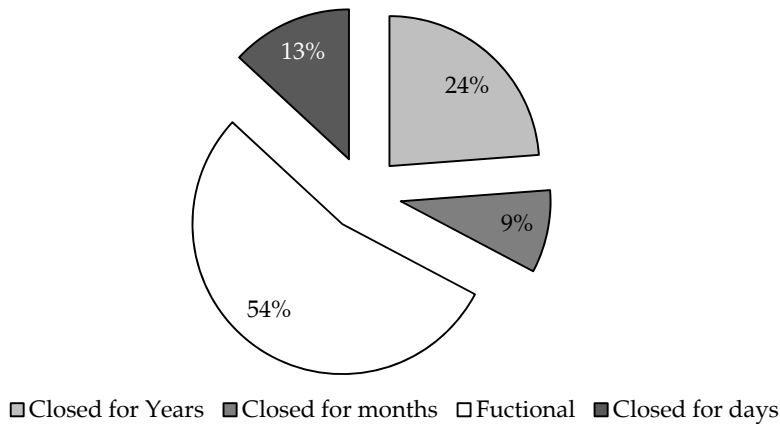
The census data was collected for 300 randomly selected villages in Sanghar, Mirpurkhas, and Matiari. A total of 181,061 households were listed in these villages, and 1,727 schools were mapped. Out of these, 1,644 are public primary schools, 19 are middle schools, and 21 are secondary schools. In sharp contrast to Punjab, the private sector is virtually absent in rural Sindh, with only 14 private schools captured in the village-level census. These numbers can be generalized for the entire province as household survey data from 2011 indicate that private school participation for children aged 6–10 in rural Sindh is less than 1 percent (Figure 13).

**Figure 13: Level and type distribution of schools**

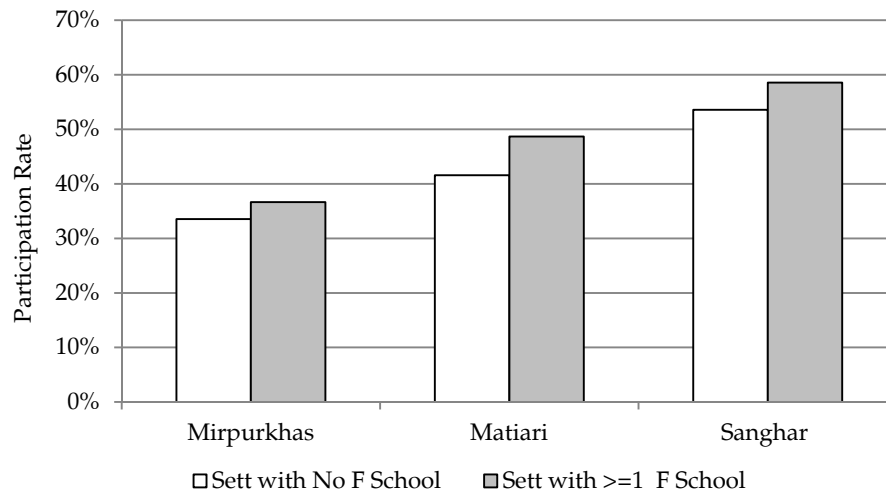


We limit our analysis to 1,626 government primary schools that were asked to fill out a basic census information sheet. A series of random visits revealed 880 of these schools to be functional (in session). We have categorized the closed schools as those that have been closed for (i) a year or more, (ii) a month or more, or (iii) less than 30 days on the day they were visited. Roughly 24 percent fall in the first category (closed for a year or more) It is reassuring to note that the number of “feedy” schools estimated in Section 2 account for about 25 percent of schools in the overall primary school population—equivalent to what we have categorized now as closed schools in the sample.

**Figure 14: Functionality status of schools**



In these 300 villages, about 1,456 settlements have at least one primary school. Functional primary schools, however, are located in only 945 of these settlements. Settlements with access to functional primary schools in all districts have a higher school participation rate (ages 5–16) than settlements with no functional school (see Figure 15). The magnitude of difference, however, is small as was established in Section 2. That said, we recommend a careful analysis of disadvantaged settlements to provide low-cost schooling options in areas that lack functional government primary schools within a one-kilometer radius of the community.

**Figure 15: Participation rates and access to functional schools**

Overall, in the last six years, Sindh’s performance in basic education indicators has remained wanting. At best, there have been modest improvements in primary, middle, and secondary school NERs, and only a handful of districts have demonstrated a substantial improvement in their NER. These gains could not, however, be confirmed using independently collected primary data. The robustness checks performed substantiate the body of evidence against “feedy” schools in Sindh: 24 percent of schools in 300 randomly selected villages were found to have been closed for more than a year; another 21 percent were closed on the day they were visited, and many of these had been closed for months.

## 5. Conclusion

An education policy aimed at improving governance, strengthening systems, and improving education outcomes in Sindh should be fully cognizant of the “feedy school” problem in the system, and its uncanny ability to render futile any attempts to reform education service delivery in the province. Consolidating the schooling system by absorbing these schools into functional schools could potentially lead to significant efficiency gains in the education sector. A school consolidation policy backed by teacher rationalization and the intent to depoliticize teacher placement is necessary and sufficient to ensure that school inputs are deployed where they are needed most. The Sindh government is already moving in this direction with teacher management and school consolidation identified as key reform areas in the second Sindh Education Sector Reform Program currently under implementation.

In an education system characterized by vested interests, power, and politics, one cannot underscore enough the need to clearly separate out the results metric that quantifies progress on outcomes and system indicators to actively reduce the size of distortions in the system as a policy objective. Well-intentioned reforms are almost always comprehensive and contribute as much to the expansion of a “bad system” as they do to support “needy” schools and beneficiaries. The net effect on education outcomes is, however, zero. One example is the universal stipends program for secondary school girls in Sindh: the nontargeted nature of the program seems, at first glance, quite innocuous, but it has resulted in massive systemic inefficiencies, fattening “feedy” schools in the process.

While quantifying the results of interventions, we should not only look at the benefits to those in the “good” system, but also weigh these against the rents created for those in the “bad” system. The merit- and needs-based recruitment and placement of teachers under the Sindh Education Sector Reform Program is one such example where only the good system benefits from the intervention. Any policy that cannot make a strong case for disproportionately benefiting the good system while penalizing the bad system is not justified in a challenging political economy context such as that of Sindh.

The simple act of carving out four additional districts in 2004 significantly reduced the administrative burden of education officials, resulting in improved education outcomes in the constituent districts. This lesson resonates well with the idea of excluding closed schools from the system and reducing the court cases, inquiries, and unnecessary administrative burden that overwhelm the district management daily and reduce the time and energy they could otherwise spend on improving the system’s performance. Free and compulsory education cannot be provided to all school-age children in the province simply by legislating a bill, but there is no doubt it can easily be done by acting on this body of evidence.

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## **Struggling against the Odds of Poverty, Access, and Gender: Secondary Schooling for Girls in Pakistan**

**Zeba A. Sathar,\* Asif Wazir,\*\* and Maqsood Sadiq\*\*\***

### **Abstract**

*While schooling outcomes for girls have improved over the period 2001–11, progress has been uneven within Pakistan. Rural girls lag far behind urban girls and progress across the provinces remains unequal. The transition to secondary school—in some ways more critical for improving employability, reproductive health, and other outcomes—shows even more disparate progress by province and income class. Questions about the preference for public versus private schools and the actual choice of schools available to girls in most rural areas need to be answered if we are serious about a rapid escalation of secondary school enrollments for girls.*

*We use data from the Pakistan Integrated Household Survey for 2001/02 and the Pakistan Social and Living Standards Measurement Survey (PSLMS) for 2007/08 and 2010/11 to look at patterns in this transition. Access is likely to be the main driving force behind the transition to secondary-level schooling. Initial findings reflect the almost total reliance on public schools for 10–14-year-old girls. This suggests that private secondary schools are not an option for girls in rural areas. The next major intervening factor is household income level: even rich families appear to favor public schools for girls. The data also suggest that girls from poor and large families compete with their brothers and other siblings for limited resources.*

*Importantly, secondary school is only an option on completing primary school and the choices are greater at the primary school level. We study the choice of secondary school as conditioned on factors driving primary school completion. Regional patterns reflect the expansion of private schools in Punjab and Khyber Pakhtunkhwa (KP), less so in Sindh and Balochistan.*

**Keywords:** Poverty, girls, education, urban-rural gap, Pakistan.

**JEL classification:** I21, I24.

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## **1. Introduction**

While schooling outcomes for girls have improved over the period 2001–11, progress has been uneven within Pakistan. Rural girls lag far behind urban girls and progress varies across the provinces. The transition to secondary school is in ways far more critical for improving employability, reproductive health, and other outcomes. It is, therefore, important to assess why secondary schooling for girls shows even more disparities by province and income class.

Access is likely to be the main driving force behind the transition to secondary-level schooling. Initial findings reflect the almost total reliance on public schools for 10–14-year-old girls. The preference for public versus private schools and the actual choice of schools available to girls in most rural areas need to be explored to determine the possibilities of rapid escalation of secondary school enrollments for girls. The other major intervening factor is household income level: even rich families appear to favor public schools for girls. The data also suggest that girls in poor and large families compete with their brothers and other siblings for limited resources (this will be explored further). Most important, secondary school is only an option on completing primary school and choices are greater at the primary school level. We study the choice of secondary school as conditional on factors driving primary school completion. Regional patterns reflect the expansion of private schools across the provinces of Punjab, Khyber Pakhtunkhwa (KP), Sindh, and Balochistan.

This study utilizes an extensive, rich dataset from a Population Council study on 16 communities in Punjab, KP, and Sindh that provides detailed information on the number and quality of schools within and outside the community and schooling outcomes. We also use the Pakistan Integrated Household Survey (PIHS) for 2001/02 and the Pakistan Social and Living Standards Measurement Survey (PSLMS) for 2007/08 and 2010/11 to look at patterns of change in girls' schooling. We then run regressions to observe the weight of choice and distance in assessing the transition from primary to secondary school for girls.

## **2. A Review of the Literature**

Several studies have focused on the determinants of primary enrollment, particularly for girls, in developing countries (see Lloyd & Hewett, 2003; Lloyd, Mete, & Grant, 2007; Hewett & Lloyd, 2005; Gönsch, 2010; Huisman & Smits, 2009). These mostly reaffirm the importance of girls' education for socioeconomic development. Female education plays a



vital role in eradicating poverty by increasing the productivity of the poor; it also increases women's participation in the workforce, improves their health, and reduces fertility by equipping girls and women with the skills they need to fully participate in society.

Most developing countries have achieved a significant improvement in primary education, reaching an average of 89<sup>1</sup> percent in net primary enrollment, which, in Pakistan's case, is still 57 percent. With such a low primary enrollment rate, large numbers of students do not complete even their primary education, and the transition from primary to secondary level is lower still. In 2010, nearly 50 percent of children aged 5–9 had left school before completing the fifth grade. Moreover, only 30 percent of the remaining students had completed their primary education and continued to higher levels of schooling (Khan, Azhar, & Shah, 2011).

Only 30 percent of girls are enrolled in secondary school in Pakistan, while the rate for boys is 37 percent (see Table 1). Girls usually have a higher dropout rate than boys at the primary level. Poverty is the most important factor in girls' dropout from school (Rihani, 2006). Moreover, because of the drop in number of schools at the secondary level, travel time increases for both boys and girls (Rihani, 2006). Economic reasons and safety concerns make parents reluctant to send girls to boarding school or to let them walk long distances to day schools. Inadequate school infrastructure, such as a lack of latrines, also contributes to girls dropping out (Rihani, 2006). Thus, in addition to the large investments being made to achieve universal primary education, secondary education has to be given equal priority. The current focus on universal primary education is important but inadequate. Research shows that investing in secondary education together with primary education clearly boosts economic development (Lutz, Crespo Cuaresma, & Sanderson, 2008).

Glewwe and Kremer (2006) provide a comprehensive overview of a wide range of educational issues specific to developing countries and summarize the relevant literature. Colclough, Rose, and Tembon (2000) evaluate the reasons for low enrollment rates and gender gaps in schooling in developing countries. They conclude that low enrollment is a result of poverty, but that lower enrollment among girls is caused by adverse cultural practices (which themselves can be connected to poverty).

In their cross-country comparison, Huisman and Smits (2009) study household- and district-level determinants of primary enrollment in 30

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<sup>1</sup> <http://www.cedol.org/wp-content/uploads/2012/02/Primary-education-by-region.pdf>

developing countries. The authors categorically show that parental decisions regarding children's education are based on socioeconomic and demographic factors, household characteristics, and the types of educational facilities available. While many factors drive school enrollment and attendance in developing countries, the effect of family resources is identified as one of the most influential and consistent factors in school enrollment and educational attainment (Oxaal, 1997).

Government education policies and school characteristics also determine children's schooling outcomes. Vital school characteristics include cost, the distance from the child's home, and the quality of the school (provision of water and sanitation facilities, for instance). The distance from the child's home to her school adversely affects enrollment and completion probabilities (Chaudhury, Christiaensen, & Asadullah, 2006). Gitter and Barham (2007) find that travel time to the nearest school in rural Honduras significantly affects children's educational attainment. In Ethiopia, the availability of a school in the vicinity determines the age at which a child is likely to start school (Abebaw, Delelegn, & Admassie, 2007). In addition to access to school, the availability and quality of textbooks, and the pupil-teacher ratio are also found to be important determinants of schooling (Woldehanna, Jones, & Tefera, 2005; Abebaw et al., 2007; Chaudhury et al., 2006).

The studies cited above mostly highlight the direct and indirect costs of schooling as important factors in school attendance and dropout. Income, assets, family size and structure, and parental education have also been identified as important correlates of school enrollment. A household's wealth and resources determine its ability to invest in its children's education. Numerous studies conducted on developing countries have found that household wealth significantly improves the probability of children's schooling (Rankin & Aytaç, 2006; Rose & Al-Samarrai, 2001; Oxaal, 1997). Furthermore, dropout rates are significantly lower among children from rich households (Sibanda, 2001; Chaudhury et al., 2006) while their accumulated educational attainment is also higher (Pal, 2004).

The international findings are confirmed in the Pakistani context. Most studies analyzing the determinants of enrollment in Pakistan have also found that family income is positively and significantly associated with girls' enrollment (World Bank, 2002; Pakistan Bureau of Statistics, 1998; Sathar & Lloyd, 1994). Moreover, when the results for boys and girls are compared, the effect of income is larger for girls than for boys. As to the direct cost of schooling, household poverty restrains parents from sending their children to school when they are not able to cover the expenses (Lloyd et al., 2007).

The indirect costs of schooling include forgoing child labor inputs to the household's economic activities and domestic chores (Lloyd et al., 2007).

Several studies have explored the determinants of primary school enrollment in Pakistan and found that access to school has a substantial impact on the variation in enrollment across communities, particularly for girls' enrollment (see Alderman, Behrman, Khan, Ross, & Sabot, 1995; Sawada & Lokshin, 2001; Sathar & Lloyd, 1994; Durrant, 1998; Lloyd, Mete, & Sathar, 2005; World Bank, 2002, 2005). These studies conclude that the problem has persisted for many years in Pakistan. However, given the recent rise in private schools, particularly in rural areas, it is of interest to policymakers to see whether private schooling can fill the gap in access to primary schooling for girls, reducing the past importance of access.

Poverty, access to school, cultural constraints, the socioeconomic and demographic characteristics of the household, and the insufficient availability of schools are the principal factors consistently identified in the literature in explaining the gender gap in secondary school enrollment. Additionally, early marriage and/or pregnancy, the threat of sexual harassment and violence in and en route to school, and lack of water and sanitation facilities (a serious problem for girls during menstruation) constrain girls' enrollment at the secondary level (Rihani, 2006).

Girls are persistently disadvantaged in enrolling in school, particularly in rural areas. In traditional and developing societies such as Pakistan, conservative attitudes tend to apply to girls' schooling when people are uneducated, poor, and typically live in villages where others endorse their views in the community. In addition, the empirical literature consistently confirms that mothers' education rather than fathers' education has a more significant impact on the decision to send daughters to school (see Holmes, 2003; Sathar & Lloyd, 1994; Pakistan Bureau of Statistics, 1998; World Bank, 2002).<sup>2</sup>

Sathar and Lloyd (1994) examine and identify the determinants of parents' decision to enroll their children in primary school and complete primary-level education. The authors find that children with educated mothers and a higher household income have a better chance of attending school. Girls are less likely to attend primary school, particularly in rural areas. In addition, children from larger households have a lower probability of attending primary school, particularly in urban areas.

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<sup>2</sup> This finding is also confirmed in our statistical results, see the section "Multivariate Analysis"

Majid (2012) examines the role of parental perceptions of child quality (in addition to school characteristics and poverty status) on decisions regarding enrollment in private and public schools in Pakistan. Applying a generalized ordered logit estimation model to data from the LEAPS project (2003 and 2004) on schooling outcomes, she concludes that school environment and household socioeconomic status play a significant role in schooling decisions: "Poorer households exhibit a lower tendency to enroll their children, while children from richer households face a higher probability of being enrolled in private schools."

It is widely accepted that, in most developing countries, a large family will limit the household's resources available for children's nutrition, health, and education. High fertility is negatively correlated with school enrollments. The argument is clear: a small sib-ship size will increase enrollment while children from large families will enroll later or not at all. Eloundou-Enyegue, DaVanzo, Yana, and Tchala-Abina (2000) find the median age of children's enrollment to be six years in families with 7+ children; in families with 4+ children, the median age was five years. Moreover, the probability of dropping out is higher in large families, and their children are likely to be concentrated in low-tuition schools.

### **3. Data Sources and Methodology**

Two main data sources have been used for this study. We use several rounds of the PSLMS from 2001 to 2011, which provide a nationally representative sample of 14,000–16,000 households. These surveys collect a broad range of information on all household members, including demographic characteristics, education, health, employment, household assets, household amenities, population welfare, water supply and sanitation, and economic characteristics.

We also use a study on schooling and fertility in rural Pakistan conducted by the Population Council in 2012 (Zaidi, Sathar, Haque, & Zafar, 2012). This is the third round of a survey on schooling conducted initially in 12 communities in KP and Punjab with four communities in Sindh added in the 2012 round. The earlier rounds were conducted in 2004 and 1997. We have used the latest wave of the panel survey dataset, which spans 16 communities from Punjab, KP, and Sindh. The study provides information on the supply of schools as well as the demand for schooling across Punjab, Sindh, and KP. The communities were selected on the basis of being high-, medium-, or low-performing districts in terms of enrollment in relation to income levels. The districts selected were Sialkot, Dera Ghazi Khan, and Rahimyar Khan in Punjab; Abbottabad, Karak, and

Swat in KP; and later, Dadu and Thatta in Sindh to represent relatively high- and low-performing districts. Returning to the initial 12 communities offers the opportunity to assess real changes in the same communities visited 14 years ago at the community, school, and household levels.

In order to measure road distance access to schools, GPS technology was introduced in the latest round of the survey in 2012. In addition to visiting each school and updating the school inventory, the GPS coordinates of each school were also recorded. Household GPS coordinates were recorded, a PSU centroid (geographical mean) was estimated, and the road distances between households and schools were measured from that centroid.

Four types of questionnaires were fielded to address basic information on the supply of and demand for schools. These included a community questionnaire, a school questionnaire, a household questionnaire, and a young women's questionnaire. We use this rich micro-level data to address questions related to access and availability of schools in communities, particularly for girls.

To examine the impact of demographic and socioeconomic characteristics on school enrollment more formally, we also use micro-level data obtained from the PSLMS for 2011/12. We apply a logistic regression model with the child currently enrolled as the dependent variable (if attending = 1 and 0 otherwise) and a number of independent variables including sex, parental education, household wealth quintile, province, and number of children under 15 in the household.

#### **4. How Does Geography Affect Enrollment?**

This section compares the level of and trends in net enrollment for boys and girls at the primary and secondary levels; the results are disaggregated by place of residence and province. Although education has not been a top priority for the Government of Pakistan for several decades, a sharp improvement has occurred in recent years. Table 1 gives the net enrolment rate (NER) at the primary and secondary level, disaggregated by gender and place of residence for the period 2001–12. There has been significant progress toward achieving universal primary education in Pakistan: the primary NER has increased from 42 in 2001/02 to 57 in 2011/12—approximately 15 percentage points in one decade. However, this improvement is not sufficient to achieve the Millennium Development Goal (MDG) educational targets by 2015. The secondary NER has, meanwhile, increased by 10 percentage points between 2001 and 2012.

The urban-rural differential at the primary and secondary level in Pakistan persists, even though the gap appears to be narrowing over time. For instance, the primary NER for rural areas was 18 percentage points lower than that for urban areas in 2001; by 2012, the difference had fallen to 13 percentage points. Table 1 also shows that Pakistan has made impressive gains in reducing gender disparity in primary and secondary schooling and between urban and rural areas. The ratio of females to males—formally known as the gender parity index (GPI)—in primary schools has steadily increased from 83 percent in 2001/02 to 90 percent in 2011/12.

A similar pattern of gender disparity exists in primary schools in urban and rural areas. The female-to-male ratio in rural primary schools has improved substantially in the last decade: the GPI has risen from 77 percent in 2001/02 to 86 percent in 2011/12. It is important to mention here that urban areas have contributed substantially to the rise in the primary NER compared to rural areas. On the other hand, gender disparity in rural areas has also declined significantly in primary and secondary schools.

**Table 1: Primary and secondary NER disaggregated by gender and place of residence in Pakistan, 2001–12**

2001/02 PIHS								
Region	Primary				Secondary			
	Boys	Girls	Overall	GPI	Boys	Girls	Overall	GPI
Urban	57	54	56	95	36	40	38	111
Rural	43	33	38	77	24	12	19	50
Total	46	38	42	83	28	21	24	75
2011/12 PSLMS								
Region	Primary				Secondary			
	Boys	Girls	Overall	GPI	Boys	Girls	Overall	GPI
Urban	67	66	67	99	44	44	44	100
Rural	58	50	54	86	34	24	29	71
Total	60	54	57	90	37	30	34	81

Table 1 also gives the NER at the secondary level by place of residence and disaggregated by gender for 2001/02 and 2011/12. As can be seen, there are significant disparities in the NER at the secondary level within and between urban/rural areas and by gender. In urban areas, the secondary NER has doubled compared to rural areas in 2001/02, although the gap between urban/rural enrollments narrows over time. The NER at the secondary level in rural areas has increased substantially—from 19 to 29 in a decade.

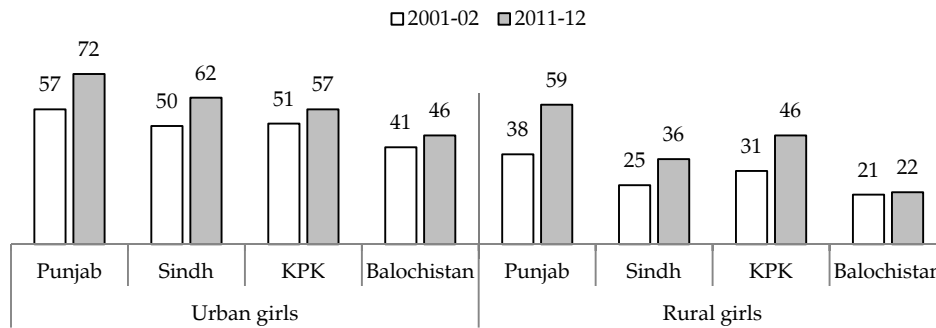
If we look at gender disparities in secondary schools in urban and rural areas in Pakistan, the picture is very interesting. In 2001/02, secondary school enrollment was severely biased toward boys in rural areas, but the pattern was entirely the opposite in urban areas. Girls have a higher enrollment rate in urban areas than boys—40 and 36 percent, respectively. However, by 2011/12, this gender disparity has diminished in rural areas.

These results suggest that there is a great deal of scope for raising both net primary and secondary enrollment in Pakistan, particularly in rural areas. However, the achievements in these rates are still likely to fall short of the levels called for by the MDGs.

As we can see, there are significant enrollment differentials by place of residence at both primary and secondary level in Pakistan. Figures 1 and 2 show the NER for girls at the primary and secondary levels, disaggregated by gender and place of residence at the provincial level for 2001–12. Rural girls’ primary enrollment rates are almost 18 percent lower than that of urban girls both in Punjab and KP in 2011/12. Substantially higher differentials exist in Sindh and Balochistan for the same year—42 and 52 percent, respectively.

Figure 1 shows that girls’ primary enrollment has improved in Punjab, particularly in the rural areas. The NER at the primary level for rural girls has increased by almost 21 percent in a decade. This shows that access to school and other socioeconomic barriers to rural girls’ enrollment in Punjab are now being gradually overcome. However, rural girls still suffer large disadvantages in enrollment compared to urban girls across other parts of Pakistan.

**Figure 1: NER for girls at primary level, disaggregated by gender and place of residence at provincial level, 2001–12**

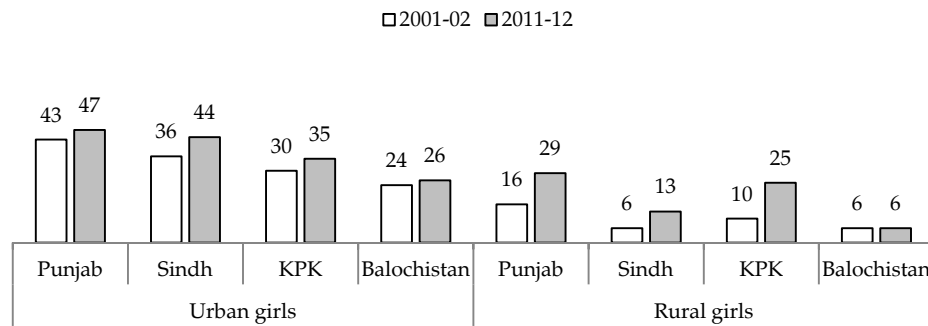


Source: PIHS 2001/02 and PSLMS 2010/11.

Geographically, the disparity in girls' secondary enrollment by place of residence in Punjab is lower than that for the other provinces. In 2011/12, enrollment rates at the secondary level were 17 percent lower in rural areas compared to urban areas. In Sindh and Balochistan, the urban-rural gap for secondary enrollment is substantially higher (see Figure 2). However, rural secondary enrollment rates in the provinces have increased drastically, while the pace of improvement in urban areas appears slower from 2001/02 to 2011/12.

These provincial variations are unlikely to have evolved by chance, and are likely the outcome of social and economic forces that influence other sectors such as health and poverty levels. These underlying socioeconomic and political influences on education opportunities can be assumed to intensify inter- and intra-provincial imbalances.

**Figure 2: NER for girls at secondary level, disaggregated by gender and place of residence at provincial level, 2001–12**



Source: PIHS 2001/02 and PSLMS 2010/11.

## 5. What Does Poverty Have to Do With Enrollment?

We have already pointed out that poverty, cultural constraints, access to school, and insufficient government schools for girls in rural areas are the principal factors contributing to low primary enrollment, and are consistently recognized in the literature in explaining the gender gap in primary schools. Human capital theory posits a link between education and poverty (measured at the household level), and education is considered a means of poverty reduction<sup>3</sup> or vice versa.

<sup>3</sup> “Education—especially basic (primary and lower-secondary) education—helps reduce poverty by increasing the productivity of the poor, by reducing fertility and improving health, and by equipping people with the skills they need to participate fully in economy and society” (World Bank, 1995, p. 1).



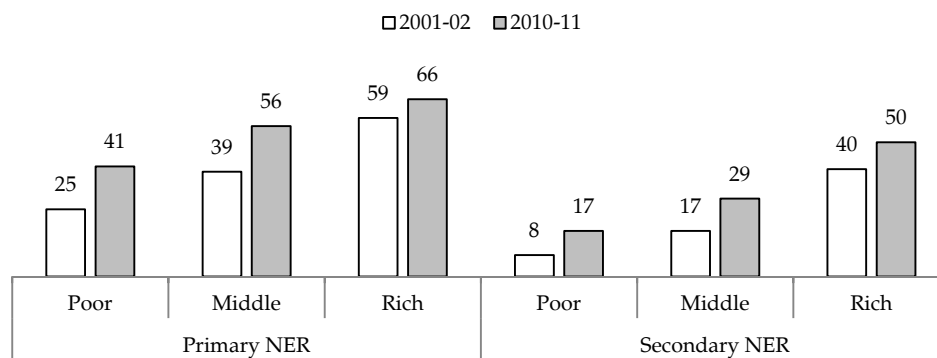
At the macro-level, it is generally assumed that countries with a low per capita income tend to have low levels of enrollment. However, among poor countries, the evidence also shows that a low gross national product does not always translate into low levels of enrollment (as in the case of Lesotho and Madagascar, which have high levels of enrollment despite low income levels). Additional factors such as the better availability of schools and general awareness of the importance of education may override this (Oxaal, 1997).

At the micro-level, substantial evidence suggests that children from poor households generally receive less education. Figure 3 illustrates the NERs for girls at the primary and secondary levels, disaggregated by socioeconomic status for the period 2001–11. Girls from poor households received less education than their richer counterparts. The net primary enrollment rate for girls from rich households was more than double that for girls from poor household in 2010/11—a difference of 34 percent.

The data show that NERs at the primary level for girls from poor and middle socioeconomic groups have increased substantially from 2001/02 to 2010/11, with a 16 percentage point increase in primary enrollment for poor girls and an almost similar increase for the middle group. This shows that inequalities in enrollment and access to schools for poor and middle-class families have improved in the last decade.

However, the differential between girls from poor and rich households at the secondary level is far greater than at the primary level. In 2010/11, the poorest girls’ enrollment rates were almost three times lower than those of rich girls, and the differentials have not changed since then.

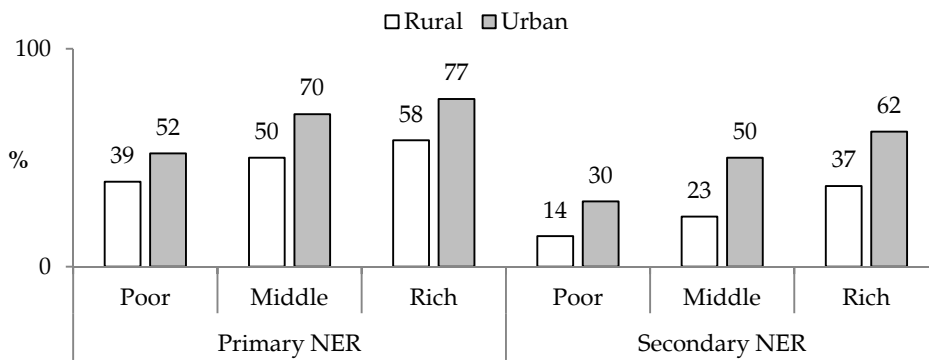
**Figure 3: NERs for girls at primary and secondary level, disaggregated by socioeconomic status, 2001–11**



For Pakistan as a whole, primary enrollment rates for poor girls in rural areas are 13 percent lower than those for their urban counterparts (Figure 4), while the gap between urban and rural areas is even wider for rich girls. A difference of 19 percentage points is observed in the primary NERs for rich girls in urban and rural areas. The degree of inequality between rich and poor groups is even wider at the secondary level. Poor girls in urban areas have enrollment rates that are almost twice as high as poor girls in rural areas.

Similar inequalities exist for rich girls between urban and rural areas at the secondary level. Moreover, significant differences exist if one assesses parents' aspirations for their children's education in rural versus urban areas: "Eighty percent of parents of rural girls and 93 percent of parents of urban girls express the aspiration that their daughters should obtain secondary or higher education" (Lloyd et al., 2007).

**Figure 4: NERs for girls at primary and secondary level, disaggregated by place of residence and socioeconomic status, 2010/11**



## 6. Has Private Schooling Contributed to the Increase in Enrollments?

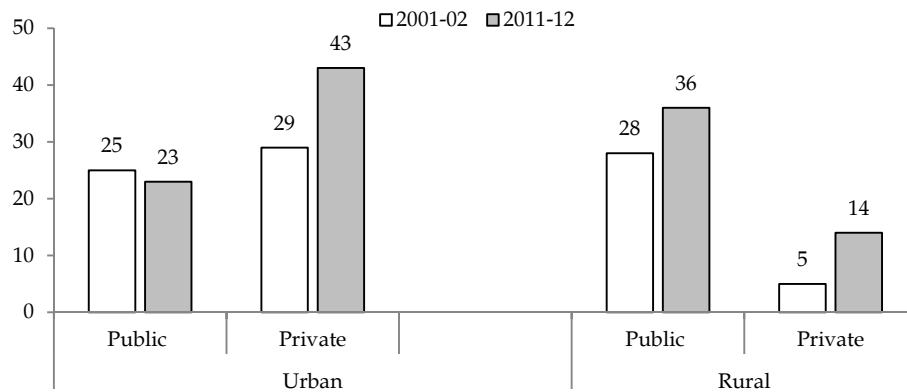
Private schooling is expected to produce better academic outcomes than government schools. This seems true after controlling for background characteristics such as parental education and household socioeconomic status (Alderman, Behrman, Lavy, & Menon, 2001). Several studies have focused on private-public schooling in developing countries, but only a few have looked at Pakistan where private schooling has grown rapidly in recent years. The evidence suggests that, even the poorest households use private schools extensively, and that utilization increases with income.

Lowering private school fees or distance or raising measured quality increases private school enrollments, partly through transfers from

government schools and partly through the enrollment of children who might otherwise not have gone to school. “The strong demand for private schools is consistent with evidence of greater mathematics and language achievement in private schools than in government schools” (Alderman et al., 2001). These findings support the increased role of private schools in raising enrollments, particularly among children from poor households.

Access to school is an important constraint to girls’ enrollment, particularly in rural areas. The rapid growth of private schools as part of a national educational policy may be changing the educational opportunity structure for poor rural girls. Figures 5 and 6 depict the NERs for girls at the primary and secondary levels by public-private division and disaggregated by place of residence for 2001/02 and 2010/11.

**Figure 5: NERs for girls at primary level by public/private sector, disaggregated by place of residence, 2001/02 and 2010/11**



**Figure 6: NERs for girls at secondary level by public/private sector, disaggregated by place of residence, 2001/02 and 2010/11**

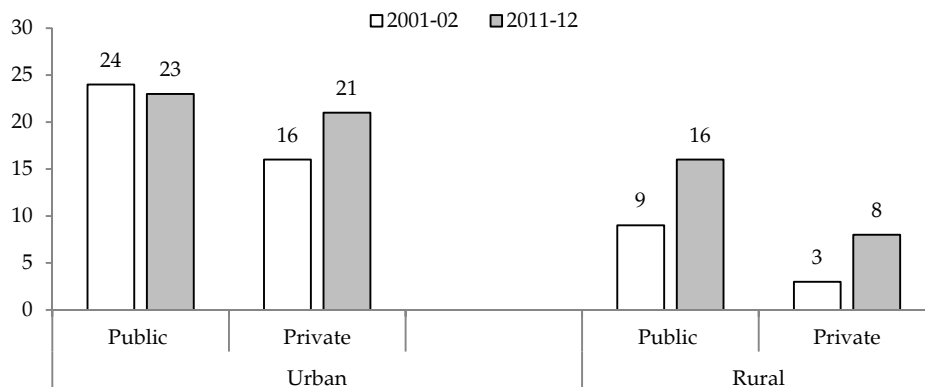


Figure 5 shows the distribution of public and private primary schools for girls in rural and urban areas, and how it has changed over the period 2001–11. We find very significant differences between public and private primary enrollment for girls. In a decade, the primary NER for public schools in urban areas has decreased from 25 percent in 2001/02 to 23 percent in 2001/12. However, girls' primary enrollment in private schools has risen considerably in this time. The increase in primary enrollment in rural private schools is also impressive, although primary enrollment in rural public schools has also increased notably. Thus, it would appear that communities in both urban and rural areas are moving toward higher girls' enrollment in private primary schools, given that more private schools are becoming available in their vicinities.

A similar, though less dramatic, pattern exists for secondary enrollment in public and private schools. The NER at the secondary level for rural private schools has jumped up drastically between 2001/02 and 2011/12. This seems to imply that urban areas have experienced more of a shift toward private schools rather than a dramatic rise across the board, whereas in rural areas, both public and private school enrollments have risen substantially.

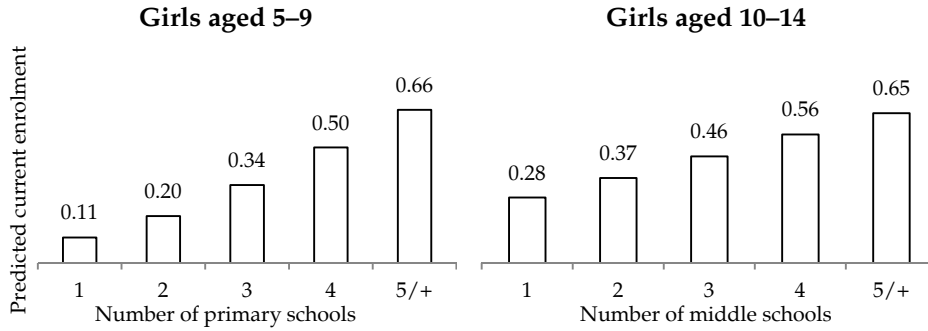
## **7. Are New Schools Addressing the Needs of the Most Disadvantaged Girls?**

The most important factor in girls' enrollment, particularly in rural areas, is access to and the availability of schools in the community. Of course, access is conditioned on household resources and poverty remains a constraint to sending children to school. The increased availability of schools has, nevertheless, improved the probability of attending school, especially for girls in poor rural households. Using community- and household-level data, Zaidi et al. (2012) provide evidence that the availability of schools in a community increases the probability of girls' enrolment at primary and lower secondary levels.

Figure 7 shows the predicted probability of current enrollment by the number of girls' schools after controlling for province and socioeconomic status. At the primary level, with a choice of three schools in the community, enrollment for girls aged 5–9 increases to 34 percent and the probability goes up to 50 percent if there is a choice of four schools. Moreover, for older girls aged 10–14, three schools (at lower secondary level) increases enrollment to 46 percent. Interestingly, with the same choice of two schools in the community at primary and middle level, the

predicted probability of girls' enrollment rises to 20 percent and 37 percent at the primary and middle school levels, respectively.

**Figure 7: Predicted probability of current enrollment by number of schools**

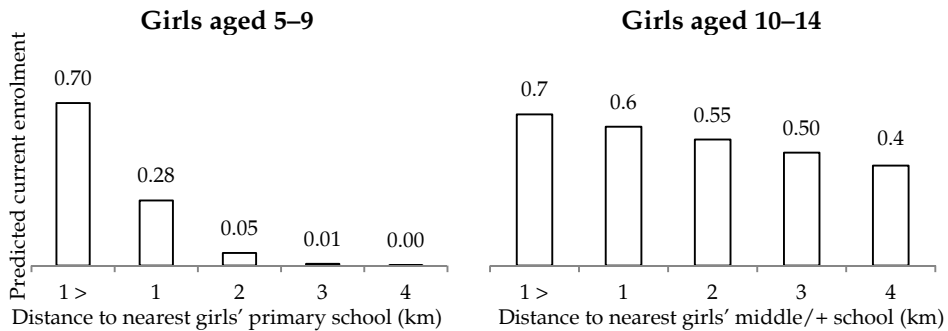


Source: Adapted from Zaidi et al. (2012).

### 8. Does Distance to Schools Increase Girls' Enrollment?

There is a strong association between girls' enrollment and the distance to school. The shorter the distance, the higher will be the probability that girls will attend school. At the primary level, a school located within 1 km raises the enrollment rate for girls aged 5-9 to 70 percent and to 65 percent if a middle or high school is nearby for 10-14-year-old girls. Likewise, if a primary school is located 3 km away, the predicted probability of girls' attendance falls to 1 percent, and to 50 percent in the case of middle schools (see Figure 8). Thus, we can conclude that, in order to increase girls' enrollment at both the primary and secondary level, the number of girls' schools in proximity to communities should be increased.

**Figure 8: Predicted probability of current enrollment by nearest distance to a girls' school (controlling for province and SLI)**



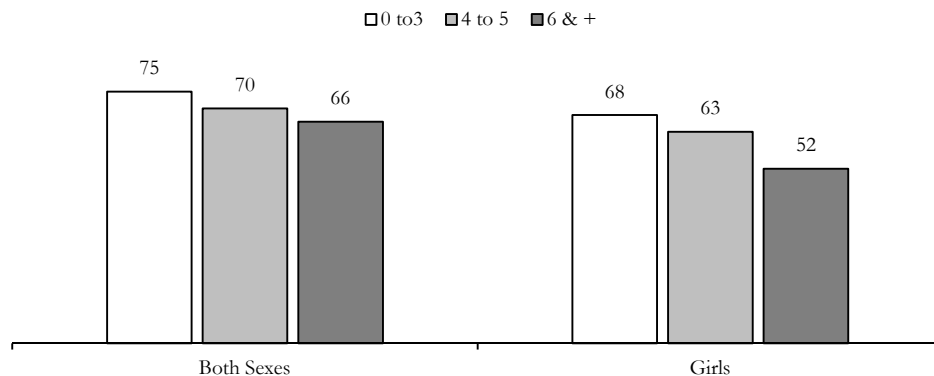
Source: Adapted from Zaidi et al. (2012).

## 9. Is Fertility Associated with Enrollment?

Female education is believed to be one of the most influential factors in fertility decline. Evidence from both developed and developing countries shows that female education is associated with a decrease in fertility (see Sackey, 2005; Lam & Duryea, 1999; Vavrus & Larsen, 2003; Lloyd, Kaufman, & Hewett, 2000). Lloyd et al. (2000) find that developing countries (mostly in sub-Saharan Africa) that have achieved mass schooling now also show evidence of the onset of the fertility transition.

Very few studies have explored the relationship between girls' schooling and fertility in Pakistan's context. High fertility, particularly in rural areas, as well as poor nutrition and health among rural school-age children from poor households have been found to be related to schooling. Lloyd, Mete, and Grant (2006) find that the birth of an unwanted child is one of the most significant factors associated with dropout rates for girls in rural KP and Punjab. Moreover, the empirical evidence generated using the PSLMS for 2011/12 shows that the probability of attending school is significantly higher for those children with fewer siblings. As is evident from Figure 9, children living in households with fewer siblings are more likely to attend school than children with six or more siblings under 15 (75 versus 66 percent). The results are more pronounced for girls.

**Figure 9: Percentage of children (aged 10–14) currently enrolled in school, by number of children under 15 in household**



Source: PSLMS 2011/12.

## 10. A Multivariate Analysis

We apply a binomial logistic regression model to the dichotomous variable, in which the log odds of the outcomes are modeled as a linear

combination of the predictor variables. The selected dependent variable is those children who were attending school at the time of the survey.

Table 2 presents the results of the logistic regression in terms of odds ratios and reveals some interesting outcomes. The first model is based on observations for both sexes and the second is based on outcomes for girls alone. The dependent variable in both models is children (aged 5–14) who are currently enrolled in school or not enrolled. Punjab is set as the reference group in both models to capture the variation in other provinces. Punjab leads in school enrollment compared to the other provinces, although KP appears not far behind. The odds ratios for KP are very close to those for Punjab and are statistically significant (see model 1). This relationship also holds for girls (model 2) in KP. In addition, the probability that the child is enrolled in school is almost 51 percentage points lower for Balochistan and 58 percentage points for Sindh compared to Punjab—the results are highly statistically significant.

Model 1 introduces the gender variable to capture gender disparities. The probability of being enrolled in schools is almost 47 percentage points lower for girls than for boys and the estimated coefficient is statistically significant. This makes it logical to run separate regression models for girls alone, because they are severely disadvantaged.

For both boys and girls, household socioeconomic status has a strong, positive, and statistically significant association with enrollment. Both models 1 and 2 explicitly conclude that socioeconomic status is the strongest influence on enrollment in Pakistan, particularly for girls, after controlling for the mother and father's education. As far as household size is concerned, households with fewer siblings have a positive and statistically significant impact on enrollments as a whole and for girls in particular. The results are significant when the sib-ship size is six or more.

The place of residence contributes positively to the likelihood of enrollment. Girls in rural areas are less likely to be enrolled in school than girls in urban areas, and the estimated coefficient is strongly statistically significant (see model 2). Parental education proves to be one of the most significant factors in girls' schooling outcomes. In both models, the mother and father's education have a strong, positive, and statistically significant association with enrollment. If the mother has attained higher education, the probability that her children will enroll in school is 10 times greater—for girls, the probability is eight times higher—than for mothers with no education.

**Table 2: Estimated odds ratios from logistic regression model for children (both sexes and girls) aged 5–14, currently attending school**

Variable	Model 1		Model 2	
	Both sexes (n = 26,452)	p > z	Girls only (n = 12,413)	p > z
Dependent (current) children aged 5–14				
Currently not attending school = 0				
Currently attending school = 1				
Province				
Punjab (ref.)	1.00			
Sindh	0.42***	0.000	0.36***	0.000
KP	0.98+	0.701	0.80**	0.002
Balochistan	0.49***	0.000	0.34***	0.000
Region				
Urban (ref.)	1.00			
Rural	0.53***	0.000	0.43***	0.000
Sex				
Male (ref.)	1.00			
Female	0.53***	0.000	NA	NA
Socioeconomic status				
Poor (ref.)	1.00			
Middle	1.63***	0.000	1.59***	0.000
Rich	1.93***	0.000	1.73***	0.000
Children aged 5–15 in household				
1 to 3 (ref.)	1.00			
4 to 5	0.96+	0.330	0.93+	0.226
6 +	0.87**	0.025	0.79*	0.006
Father's education status				
No education (ref.)	1.00			
Primary	1.69***	0.000	1.56***	0.000
Secondary	2.72***	0.000	2.91***	0.000
Higher	4.01***	0.000	4.30***	0.000
Mother's education status				
No education (ref.)	1.00			
Primary	3.02***	0.000	3.61***	0.000
Secondary	4.10***	0.000	6.37***	0.000
Higher	9.70***	0.000	7.86***	0.000

Note: \*\*\* = significant at 1 percent, \*\* = significant at 5 percent, \* = significant at 10 percent, + = not significant.

With such a remarkable expansion of school availability and choice, private schools have contributed substantially to boosting enrollment in



recent years in Pakistan. However, this expansion in enrollment is mostly in urban areas; rural areas have seen only a slight increase in private schooling. This might suggest that private schooling in rural areas is not widespread and that the costs are fairly prohibitive. We therefore apply the regression models to public and private enrollment separately to assess the determinants of girls' enrollment in Pakistan.

Table 3 gives the estimated odds ratios from the logistic regression model for girls (aged 5–9 and 10–14) currently attending public or private schools (based on the PSLMS for 2011/12). The regression results show that private primary schooling for girls (aged 5–9) has risen in KP while Sindh and Balochistan lag behind in the expansion of the private sector in primary schools. The provincial estimates are statistically significant at 1 percent, except for KP. The expansion of private secondary schools for girls (aged 10–14) is more dramatic in Sindh (probably concentrated in Karachi and Hyderabad). The probability of attending a private secondary school for girls is 35 percent higher compared to Punjab, and the estimate is statistically significant at 10 percent.

As expected, substantial urban/rural differentials are observed, particularly at the primary level. Girls aged 5–9 are 78 percent less likely to attend private schools in rural areas compared to urban areas. However, the expansion of private schools at secondary level is striking in rural areas. Estimates from both models are strongly statistically significant at 1 percent.

In both models, the household's socioeconomic status and parental education have a strong, positive, and statistically significant association with enrollment in private schools at primary and secondary level. Enrollment in private schools for girls from rich households at primary and secondary level is four times higher than for poorer households. Likewise, the mother's education plays a more vital role in girls' enrollment than the father's education. If the mother has attained higher education, the probability that her daughters will enroll in school is four times higher than for a mother with no education.

High fertility is one of the most significant factors associated with girls' enrollment, particularly in rural areas. In order to assess the impact of fertility on girls' enrolment (either public or private), we use the proxy variable of children aged 5–15 in the household. The regression results show that the number of children in the household has a strong impact on girls' primary schooling (Table 3, model 1) and is statistically significant. For girls aged 10–14 (Table 3, model 2), the regression coefficient is negative but not statistically significant.

**Table 3: Estimated odds ratios from logistic regression model for girls aged 5–9 and 10–14, currently attending public or private school**

Variable	Girls aged 5–9, enrolled in class 1–5 (n = 3,274)		Girls aged 10–14, enrolled in class 6–10 (n = 1,511)	
	Odds ratio	p > z	Odds ratio	p > z
Dependent (school) girls aged 5–9 and 10–14				
Attending public school = 0				
Attending private school = 1				
Province				
Punjab (ref.)	1.00			
Sindh	0.58***	0.000	1.36	0.074
KP	0.65*	0.007	0.54*	0.006
Balochistan	0.08***	0.000	0.04***	0.000
Region				
Urban (ref.)	1.00			
Rural	0.22***	0.000	0.63*	0.007
Socioeconomic status				
Poor (ref.)	1.00			
Middle	0.22***	0.000	3.44***	0.000
Rich	0.22***	0.000	3.87***	0.000
Children aged 5–15 in household				
1 to 2 (ref.)	1.00			
3 +	0.80***	0.000	0.90+	0.898
Father's education status				
No education (ref.)	1.00			
Primary	1.43*	0.057	1.11+	0.712
Secondary	1.51*	0.008	1.23+	0.327
Higher	1.66**	0.023	1.35+	0.281
Mother's education status				
No education (ref.)	1.00			
Primary	1.29+	0.141	1.88**	0.003
Secondary	2.49***	0.000	1.75***	0.004
Higher	2.50**	0.011	3.47***	0.000

Note: \*\*\* = significant at 1 percent, \*\* = significant at 5 percent, \* = significant at 10 percent, + = not significant.

## 11. Conclusions and Policy Implications

Despite the dramatic expansion of primary schools (public and private) in Pakistan, universal primary education is still a distant dream. The percentage of girls—in poor rural households—enrolled in school

(both at primary and secondary level) remains low. Girls' secondary school enrollment has progressed at only a modest pace in the last decade. This finding may be explained by the fact that access to school and school choice has expanded mostly in urban areas and in those areas where the gender disparity is narrower. Consequently, many of the poorest rural communities still lack girls' schools.

Rural girls are more disadvantaged. Most private schools (primary as well as secondary) are limited to urban areas and there is substantial variation across urban and rural areas in terms of the cost of private schooling (Zaidi et al., 2012). The high cost of private schools means that it is only affordable for higher-income groups. Thus, it is unlikely that the growing private sector can fully substitute for the public sector in addressing the educational needs of poor rural girls.

There is also substantial variation across provinces in girls' enrollment at primary and secondary level. Punjab leads in terms of girls' enrollment, while KP is catching up. However, rural Sindh and Balochistan lag far behind in reaching the MDG targets. There is a dire need to reduce provincial disparities in girls' enrollment. Following the 18<sup>th</sup> constitutional amendment, it is now a provincial responsibility to establish government schools (especially for rural girls). If a cost-effective model is developed and implemented across all the provinces—and equally in urban and rural areas—the probability of reducing the gender gap improves considerably because the poorest rural communities are least likely to have a school for girls.

If public and private schools are made equally available in urban and rural areas as well as for boys and girls, we would expect some improvement but with a remaining gender differential. This is because some of the constraints to girls' schooling are clearly economic. First, due to the higher cost of private schooling and less availability of government schools within the community, parents are more reluctant to enroll their daughters in private schools. Second, parents are somewhat less willing to invest in girls' schooling compared to boys due to cultural constraints such as requirements for female teachers and possible chaperones for travel (Lloyd et al., 2007). Providing a greater choice of schools with female teachers and shorter distances will be necessary to break the barriers to girls' schooling for the majority of parents, and will ultimately lead to higher enrollments.

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## Preparing Women of Substance? Education, Training, and Labor Market Outcomes for Women in Pakistan

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### Abstract

*This paper investigates the economic (i.e., labor market) outcomes of “training” for individuals in Pakistan. The labor market benefits of general education have been relatively well explored in the literature and specifically in Pakistan. They point to the benefits of education accruing both from education or skills that promote a person’s entry into more lucrative occupations and from raising earnings within any given occupation. This research delves into another angle by investigating the role, if any, of acquired “training”—technical, vocational, apprenticeship, or on-the-job—and its impact through both channels of effect on economic wellbeing. This is done using data from a unique, purpose-designed survey of more than 1,000 households in Pakistan, collected in 2007. Multinomial logit estimates of occupational attainment show how training determines occupational choice. In addition, we estimate the returns to schooling and to training separately for men and women. The results show that, while training significantly improves women’s chances of entering self-employment and wage work (as well as the more “lucrative” occupations), only wage-working women benefit from improved earnings through the training they have acquired. On the other hand, men who have acquired skills this way benefit through an improved probability of being self-employed and earning higher returns within that occupation.*

**Keywords:** Returns to schooling, vocational training, apprenticeship training, occupational choice, Pakistan.

**JEL classification:** I21, J16, J24.

### 1. Introduction

Individuals and firms undertake education and training as an investment to increase their earnings and productivity—the basic tenet of human capital theory (Becker, 1964). Within this context, the returns to general education, measuring the benefit (measured as increased

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earnings) of each additional year (or level) of schooling, have been the focus of immense research scrutiny. Education's critical role in determining and enhancing individuals' labor market outcomes is well documented in the literature.

Several recent studies on Pakistan have also shown this to be the case, for instance by showing that the labor market benefits of education and skills may accrue by facilitating entry to more lucrative occupations and, within occupations, by raising earnings. These associations, for example, have been investigated by Aslam, Kingdon, and Söderbom (2008) and more recently by Aslam, De, Kingdon, and Kumar (2012) who analyze the relationship between schooling and cognitive skills on the one hand, and occupational choice and earnings on the other. The authors find that education and skills significantly enhance individuals' chances of entering the more "rewarding" occupations and of raising their earnings within these occupations. This is especially true for women, suggesting that education can play a critical role in enhancing labor market outcomes for women in Pakistan.<sup>1</sup>

However, across the globe and particularly in Asia, the level of female participation in the labor force varies dramatically across countries and different contexts. According to the United Nations Development Programme, Pakistan ranked 146 out of 187 with a gender inequality rank of 115 out of 146.<sup>2</sup> The country's female population accounts for 49.11 percent of the whole population and 63 percent of the rural population. Female labor participation is exceptionally low, with women in South Asia more likely to be involved in the agricultural sector and as unpaid workers compared to any other region in the world. For Pakistani women, as for other South Asian women, the decision to participate in the labor force is determined not only by market forces but, to a large degree, by nonmarket factors as well.

Having said this, female labor force participation is on the rise and is estimated to have increased from 13.9 percent in 1990 to around 23 percent in 2010. Nonetheless, compared to its South Asian counterparts, Pakistan's female labor force participation remains low. For example, it is 59.8 percent in Bangladesh, 83.1 percent in Nepal, and 68.2 percent in Bhutan

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<sup>1</sup> However, the authors do note that women in Pakistan, both in rural and urban areas, begin to take advantage of the benefits of education only after about 10 years of schooling when they start undertaking wage work. This has important implications because very few women in Pakistan appear to have acquired 10 years of schooling or more, which means that only a relatively small proportion are able to take advantage of the benefits of schooling. Among men, in stark contrast, occupational choices are considerably more flexible with respect to education.

<sup>2</sup> <http://hdrstats.undp.org/en/countries/profiles/pak.html>

(International Labour Organization [ILO] estimates from 2010). Within this context, studies such as Aslam, De et al. (2012) note that, while education can play a significant role in enhancing women's labor market outcomes, the existence of conservative cultures severely inhibits women's participation in productive activities. The constraints thus imposed on women are very apparent in analyses of labor markets in the region and specifically in Pakistan. Nevertheless, the consensus is that developing the human capital of a country, and specifically that of women, is a worthwhile investment.

Increasingly, research also indicates that human capital is embedded in an individual's *ability to perform specific tasks*, suggesting that there is a need to focus on the occupation-specific nature of human capital (Johnson & Keane, 2007; Kambourov & Manovskii, 2008). This, in turn, indicates that the labor market outcomes, variously measured, are likely to depend heavily on the skills individuals have learnt through general education and through any technical and vocational education (TVE), apprenticeship training, or on-the-job training acquired.

Despite this, there is no agreed consensus on how best these skills are conferred and debates abound about alternative routes through which labor market entrants' skills can be best developed. From a national perspective, increasing the skill base of the labor force is crucial to ensure efficiency and international economic competitiveness, particularly as the rate of increase of human capital formation is arguably more important than that of physical capital. In many developing countries, a large proportion of the workforce remains unskilled and many have skills that are not valued by employers. Skills development has, therefore, attracted policymakers' attention internationally over the last few decades.

Most educational systems around the world combine a "general" and "vocational" component in secondary schooling. However, these systems are organized very differently with varying degrees of emphasis placed on skills development through the latter. An undocumented number of individuals also undertake "apprenticeship training" where an employer or "mentor" undertakes to either employ a person (or engage without payment) and train him/her systematically in some trade for a fixed duration during the course of which the apprentice is bound to work in the master's service. Vocational education and training (VET) can be defined as "skill-based programs that focus on specific trades and impart the practical skills which allow individuals to engage in a specific occupational activity" (Agrawal, 2012).

The current structure of vocational education and skill development programs in Pakistan is complex, with several agencies involved in providing skills and of different types. While government vocational institutes are administered by the provincial education departments, technical training centers and apprenticeship training centers are administered by the provincial labor departments. The provincial directorates of manpower and training administer apprenticeship training under the Apprenticeship Training Ordinance. Skills training is variously provided by polytechnic institutions, vocational training centers, apprenticeship schemes, training and vocational institutions under various ministries and departments, commercial training institutions, and through the *ustad-shagird* (mentor-apprentice) system in the informal sector (see Kazmi, 2007, for a useful summary).

This study aims to investigate the economic outcomes of training in Pakistan. In particular, we ask whether women who enter the labor market are equipped with skills that will not only benefit them by improving their occupational choices but also, eventually, by augmenting their earnings. The study is motivated by some major questions that have not yet been answered satisfactorily, such as the effects of training on economic outcomes in developing countries.

While there are many studies that estimate the economic rate of return to *education* in order to examine how much education is rewarded in the labor market (e.g., Aslam, 2009; Aslam, Bari, & Kingdon, 2012), we are not aware of any such studies that compare this with the economic return to *training*. Since the household survey used in this study has collected detailed data on individuals' training, this study aims to fill the existing gap in the literature. Additionally, it is the first study we are aware of that investigates whether acquiring training promotes an individual's entry into certain occupations; analyzing this separately for males and females allows us to enrich the study. Finally, because the dataset includes earnings information on both wage- and self-employed individuals (unlike the usual household surveys that focus on wage earners alone), we can distinguish between the differential returns to training for the self-employed and wage-employed.

The paper is structured as follows: Section 2 provides an overview of the literature. Section 3 discusses the empirical methodology used and Section 4 describes the data and its key features. Section 5, which discusses the results, is divided into two subsections: the first part analyzes whether training determines occupational outcomes and the second examines the

relationship between earnings, education, and training. Section 6 discusses our key findings and concludes the paper.

## 2. Training: What We Know and Do Not Know

Box 1 below summarizes the key channels through which “training” can be delivered. The mix will vary across different countries and, within them, across different regions. In some instances, one also expects certain channels of training to be available to certain demographic groups (younger versus older, male versus female) or those with particular characteristics (those having completed certain levels of general education or belonging to a particular socioeconomic group).

### Box 1: The five models of vocational training

We start by looking at the models that have been used to deliver vocational skills. There are five models:

*Secondary school practical subjects*—in some secondary school systems, students have to take what are called “practical subjects” in addition to their traditional academic subjects (e.g., geography, history, and so on). For example, in Zimbabwe, students in secondary school often have to take two “practical” subjects. These may include, agriculture, bricklaying, sewing (called “Fashion and Fabrics”), cooking (called “Food and Nutrition”), technical drawing (draftsmanship), woodwork, metalwork, and bookkeeping (accounting). Of course what subjects are available to the students depends on the resources of the school: in order to offer, say, metalwork, a school must have a metal workshop. We do not know of any evaluation of the impact of these practical subjects.

*Apprenticeships*—this involves learning a trade on the job. We do not know of an evaluation of apprenticeship programs.

*Technical trade school and apprenticeship*—in this model, vocational training is given as a form of “tertiary” or post-secondary education. Students that do not continue on the academic track after secondary school go to what are sometimes called “technical colleges” where they learn a trade. Specialties include mechanics (aircraft, train, automotive), accounting, construction, secretarial, boilermaker, and electrician. These are formal schools on par with (primary) teachers’ college, agricultural college, and nursing college. The training can take years. Because it aims to produce professional artisans who will work in the formal sector, the classroom learning is often combined with an apprenticeship in industry. The colleges can be private or public.

We know of two evaluations of this model, both of them in Latin America (Peru and Colombia).

*Community recreational centers*—some community recreational centers will have, along with other recreational facilities, staffed workshops where people can learn certain skills, such as carpentry, welding, typing, sewing, wound dressing, and so on. The courses are often very short and geared towards the one skill. (A good way

to think of these training centers is to think of recreational hobby shops at some American colleges, where students can go and work wood or make jewelry under guidance from the shop manager.) These are often available in urban communities. We do not know of any evaluations of this model.

*Livelihoods training*—this is often given by NGOs and other groups in the community (such as religious groups or women’s groups). The focus is on teaching income-generating activities, such as how to produce goods (batiks, knitwear, soap, clothes, cookware, cups, dishes made from salvaged metal); enterprises at local markets; and small-scale import and export (for example, women from Zimbabwe would take their batiks to South Africa by bus, sell them there, and buy goods to resell in Zimbabwe). NGOs in South Asia have used this model to train girls, for example, on cultivating crops and vegetables, poultry farming, poultry and livestock vaccination, tailoring, hairdressing and other non-agricultural businesses.

*Source:* Glennerster and Takavarasha (2010).

Evidence on the “returns” to training is not as vast as that investigating general primary education. Measuring the benefit of training to the individual is analogous to estimating the return to education. The problems with measuring the impact of training are not very different from those faced when measuring returns to general education. Specifically, endogeneity bias (the best workers acquire more training and would earn more anyhow) and survival bias (the best firms train more workers and tend to be the ones that survive) are the two key methodological constraints to econometric analysis.

To some extent, these problems can be overcome by allowing for a worker’s ability, family background, and early schooling in estimated equations. Firm-level studies also include the characteristics of the firm, while others use various econometric techniques to try to account for any other unobservable differences between trained and untrained workers, which lie at the heart of the endogeneity problem. In addition to these underlying concerns, the existence of externalities at the industry and national level (benefits to other workers, industries, etc., particularly if poaching is a major problem) also constrain estimation.

Much of the developing country research on the impact of training has looked at the role of vocational training and is based in Latin America. Evaluations there have shown that vocational training linked to apprenticeships can improve the earning and employment outcomes of individuals. However, the research on Asia, where different labor market conditions exist, is far more limited and, therefore, presents weighty grounds for further investigation along the lines of this paper.

From the limited evidence that does exist for Asia, the findings are not very encouraging. For example, a report by the World Bank (2008) found that the labor market outcomes of those with vocational training in India were not good and that a high proportion of those with VET remain unemployed long after they have completed their courses. Similarly discouraging results were found by the ILO (2003) efficiency/impact study of industry training institutes and industrial training centers in three Indian states. This evidence is often also combined with the perception that VET is a “second-tier education” associated with low-paid or low-status jobs and for those who cannot gain admission to perceived higher-quality academic institutions.

Generally, vocational training programs are shown to be most effective for those at the higher end of the wage distribution. Vocational training in a trade school and combined with an apprenticeship has been shown to work for both males and females in Latin America. Moreover, when the relative returns to training in male- relative to female-dominated trades are explicit, it can increase female enrolment in such courses, e.g., mechanics, information technology, etc. (Glennester & Takavarasha, 2010).

There is also more evidence that confirms that combining technical training with apprenticeships can be effective. For example, the *Jovenes en Accion* in Columbia evaluation finds that women spent more time on training and that the program increased employment chances, chances of employment in the formal sector, the probability of contract work, and the number of days and hours worked. The employment effects were found to be smaller for men. The study also found that the program improved wages for both men (8 percent) and women (18 percent). The internal rate of return for women (14 percent) was found to be higher than that for men (5 percent) (Attanasio, Kugler, & Meghir, 2008).

Another randomized study of technical training in Peru (*Pro Joven*) has similar positive results for vocational training. Nonrandomized evaluations of the program, however, found no differences in the hourly wages of men and women, although employment rates and the extent of occupational segregation differed for both. Training was found to have a greater impact on women’s employment rates (15.2 percent) than that of men (11 percent) (Nopo, Robles, & Saavedra, 2007). Finally, another randomized evaluation of vocational training in Kenya was conducted to investigate whether providing young people with vouchers to attend a trade school of their choice had positive effects for those involved (Hjort, Kremer, Mbiti, & Miguel, 2011). It found that providing women with

simple and actionable information on the relative returns to female-dominated trades (compared to male-dominated trades) increased their enrolment in the higher-return, male-dominated courses by 10 percent.

The evidence outside the randomization literature is also convincing. For example, Agrawal's (2012) study on vocational education in India uses a large-scale, nationally representative household survey (National Survey Sample Organization) to examine the labor market outcomes of general secondary school graduates compared to those who have received vocational training. The study finds a relatively high rate of unemployment (11 percent) for those in the age group 15–29 that have acquired VET. However, while this unemployment rate is higher than that for those in the age group as a whole, it is smaller than for those who have a general secondary qualification. VET graduates are found to have higher average daily wages whether they are casual or regular workers. Agrawal also highlights the large number of training institutions that have emerged recently, although he indicates that there are regional and state disparities in coverage.

In a study on Indonesia, Newhouse and Suryadarma (2009) note that private vocational school graduates fare at least as well as private general graduates, despite coming from more disadvantaged socioeconomic backgrounds. The returns to public vocational education, however, appear to have declined sharply for the most recent cohort of men in Indonesia. According to the authors, this is cause for concern, given the expansion of public vocational education and the relevance of the male vocational curriculum in an increasingly service-oriented economy.

Evidence from the UK hints at the benefits of adult education and training. Feinstein, Galindo-Rueda, and Vignoles (2004) use a very rich dataset that includes early-ability tests and looks at the number of work-related training spells lasting more than three days. The study finds that 47 percent of males and 36 percent of females received training. It also finds that training has a 4–5 percent impact on wage growth for males aged 33–42; the gain for the trained group (when taking into account that firms tend to cherry-pick those for training) is high (12 percent) but there is no potential gain for the untrained group. The results for females, however, are not robust: while the authors do not find training to affect wage growth for females in this age bracket, they do note the large impact of training on wages at age 42.



Deardon, McIntosh, Myck, and Vignoles (2000) find that additional returns associated with academic qualifications (without taking into account the time taken to gain those qualifications) are typically higher than those associated with vocational qualifications at the same level in the UK. When the time taken is included, the annual returns to vocational qualifications move closer on average to those accruing from academic qualifications. The study also finds gender differences: women tend to earn more for academic qualifications but the gender bias for vocational qualifications depends on the different types of qualifications with women's vocational returns being highest for teaching and nursing. Greenwood, Jenkins, and Vignoles (2007) also find that there are high returns to academic qualifications across the board in the UK, but there are also substantial returns to higher-level vocational qualifications and smaller but not insignificant returns to some, but not all, intermediate and lower-level vocational qualifications.

At a macro-level, studies show strong differences among countries in the probability of being enrolled in vocational schooling. Altinok (2012) uses data from the Program for International Student Assessment (PISA) 2009 to show that the probability of being enrolled in the general or vocational stream depends heavily on gender, family education, socioeconomic status, immigrant status, repetition rate, and reading for enjoyment. He finds that pupils in vocational schools perform significantly lower than those in general education schools in most countries. While pupils with a high socioeconomic status are significantly more likely to be enrolled in general education, standard characteristics such as gender, family education, and a proxy for motivation explain about a third of pupils' achievement differences between the two streams.

Evaluations of VET have also focused on the long-run impact on employment and earnings. Krueger and Kumar (2004a, 2004b) argue that the propensity to use vocational rather than general education may be an underlying cause of growth rate differentials between the US and Europe. This, the authors argue, is due to vocational or "skill-based" education as opposed to general education—"concept-based" education leading to slower adoption of new technologies.

Hanushek, Woessmann, and Zhang (2011) use a sample pooling individuals from 18 countries and find that general education improved individuals' employment probability as they become older relative to those with vocational education. However, they do find differences across countries with the US, Canada, and Chile showing patterns where the

employment probability of individuals with different types of education does not vary with age at all, whereas this is not the case in most of the European countries in the sample.

Far fewer studies have focused exclusively on comparisons of apprenticeship training versus vocational training as a form of acquiring skills. Using developed country data, Parey (2009) shows that firm-based apprenticeship training leads to substantially *lower* unemployment rates than vocational training. Investigating this pattern over time, the evidence indicates that former apprentices have only a transitory advantage. The study does not, however, find a significant difference in wages between those with vocational or apprenticeship training. This suggests that these alternatives confer similar overall levels of productivity, and that apprenticeship training improves the early labor market attachment relative to vocational schooling.

The literature base evaluating training in the labor market in Pakistan is very limited. Most studies are primarily descriptive and discuss how technical, vocational, or apprenticeship training is provided and has evolved within the country. A joint study by the Pakistan government and UNESCO discusses the various efforts made to encourage technical schooling in Pakistan in recent years (Pakistan, Ministry of Education, and UNESCO, 2009). These include a bid to incorporate TVE subjects at the secondary level of education, the launching of specific projects, and the desire to create model vocational schools. On the whole, most of these efforts have failed due to a shortage of facilities (laboratories and equipment) and qualified teachers, lack of commitment, and political instability, among other factors.

The study also highlights the fact that, as in other sectors of education in Pakistan, TVE is plagued by issues of access as well as quality. In practical terms, it barely meets demand with the consequence that not enough individuals benefit from skills development through this channel. Additionally, when they do access this stream, issues of poor quality arising from the little time spent preparing students and limited, outdated curricula undermine the value of any such training acquired. A key factor attributed to the poor access and quality of TVE in the country appears to be the fragmented structure of governance in training institutions. The study clearly reflects the need for a national curriculum framework to guide appropriate TVE (see Pakistan, Ministry of Education, and UNESCO, 2009). We are not aware of any quality study in Pakistan that has looked at the role of training for men and women separately.

### 3. Empirical Methodology

The association of “training” with earnings may operate through several channels such as improving access to lucrative occupations or, conditional on occupational attainment, by raising earnings within any given occupation. In this study, we explore the relationship between training and occupational attainment as well as the total effect of training on earnings, conditioned on general education.

The first of these employs a form of multinomial regression analysis. All sampled labor market participants in the dataset are classified under one of five occupational categories: (i) out of the labor force, (ii) unemployed, (iii) unpaid family workers, (iv) self-employed, and (v) wage-employed. Unemployed individuals are those who seek employment and are available for it, while those out of the labor force are those who do not seek employment, such as homemakers, fulltime students, and retirees. In South Asia, often more than one household member may be working in a family farm or nonfarm household enterprise, in which case we define the person reported to be the primary worker or decision maker as self-employed. If any other family member reports separate earnings from the work, they are considered wage workers and the rest are considered unpaid family labor.

The second part of the paper presents earnings functions of the form

$$\ln Y_i = \beta_0 + \beta_1 S_i + \beta_2 X_i + \beta_3 \text{Training}_i + \varepsilon_i \quad (1)$$

The earnings regressions use data from wage- and self-employed individuals in the labor market. For each of the wage-employed, we have data on earnings and on the likely explanatory variables. So, in (1),  $\ln Y_i$  is the natural log of annual earnings for individual  $i$ ,  $S_i$  measures the years of completed schooling,  $X_i$  is a vector of observed characteristics of individual  $i$  (such as age and its square), and  $\text{Training}$  is a dummy variable that takes the value of 1 if an individual reported *ever* acquiring technical or vocational schooling, on-the-job training, or working as an apprentice.  $\varepsilon_i$  is an individual-specific error term. In this specification,  $\beta_1$  reflects the return to schooling while  $\beta_3$  captures the return to training (technical, vocational, on-the-job, or apprenticeship).

Since one of our objectives is to estimate the *total* returns to education, the variables included as regressors in the multinomial logit (MNL) and earnings function models differ. In the MNL models, the

regressors include age (and its square), years of completed schooling and its square, state, location, number of household members younger than 15 years and number older than 60, and whether married or not. Cognitive test scores are included in some MNL models. In addition, we include a measure of “training” to assess the extent to which acquiring training assists entry into certain occupations. The MNL models are estimated separately for men and women to allow for gender-differentiated effects.

The regressors used in the earnings function estimates include education, age and its square, and regional and state fixed effects. As in the MNL models, “training” is included as an additional regressor to assess the returns to training, if any. The earnings functions are derived through ordinary least squares (OLS) regression analysis, and yield lower-bound estimates of the rates of return to education and training. Mincerian functions are estimated separately for all men and women engaged in wage- or self-employment, and then separately for wage- and self-employment.

We recognize that the OLS earnings function estimates potentially suffer from two major biases: sample selectivity and endogeneity (omitted variable) bias. The first stems from estimating the earnings function for separate subsamples of workers, each of which might not be randomly selected. However, evidence from previous estimates has shown this not to be a major concern in Pakistan (Aslam, 2009).

The second problem, omitted variable bias, is potentially more problematic. Human capital theory posits that additional years of schooling and training raise worker productivity, consequently increasing earnings in the labor market. Thus, the coefficient of schooling/training in the earnings function is interpreted as the causal effect of education/training on earnings, giving the expected percentage gain in earnings with an additional year of schooling/training. However, this is valid only if earnings differentials between individuals with varying years of schooling/training do not reflect differences in unobserved ability that happen to be correlated with education/training.<sup>3</sup> Unobserved inherent ability is clearly a determinant of schooling attainment/training as well as of earnings. While omitted ability induces an upward bias in the estimated

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<sup>3</sup> Boissiere, Knight, and Sabot’s (1985) study of two East African countries (Kenya and Tanzania) distinguishes among the effects on earnings of cognitive skills, native ability, and years of schooling as a means of adjudicating between the human capital, screening, and credentialist views. Using purpose-built establishment data for 1980 from the two countries, the authors conclude that the returns to numeracy and literacy in the two countries are large, and they attribute these to a payment to human capital. The authors also find that the direct returns to native ability are small, suggesting a refutation of the screening hypothesis, at least for their sample.

return due to a positive correlation between schooling and the error term, it is not clear whether the direction of bias is the same in the case of training as measured in this paper.

Thus, the endogeneity of schooling and training stems from unobserved heterogeneity: more able or motivated individuals may “choose” to acquire more general education and more or less certain types of training. One approach to overcoming endogeneity is to use repeated observations for the same individual over time or observations for different individuals within the same family to “difference out” the variables generating correlation in the residuals. Arguably, a good part of the unobserved heterogeneity is common to family members. Consequently, differences in unobserved ability and their impact in determining education should be lower *within* rather than *between* families.

Earnings functions can be estimated for twin samples, siblings, and father-son or mother-daughter pairs, using a “fixed effects” or first-differencing approach. By introducing subsamples of households with at least two individuals of a given gender in wage- and self-employment (and, more stringently, households with brothers or sisters and father-son or mother-daughter pairs in wage-employment), the fixed-effects method effectively controls for all household variables that are common across these individuals within a given household.

A simultaneous advantage of the fixed-effects procedure is that it eliminates the sample selection problem. In order to address the potential endogeneity of schooling and training in earnings function estimates, we generate household fixed-effects estimates. However, because of the potentially small sample of women within a household who are wage- or self-employed earners, the gender-differentiated analysis is not based on significant confidence. The estimates are, however, reported in the Annex (Table A3). Our analysis, therefore, discusses the OLS estimates with the view that the results are broadly descriptive rather than causal.

#### **4. Data and Descriptive Statistics**

This study uses data from two main sources. In the first instance, to document the status of men and women in the labor force, we use data from the Labor Force Survey (LFS) for two points in time—2000 and 2008. This allows us to provide a nationally representative overview of how men and women aged 15–60 are distributed across activity status (labor force participants versus nonparticipants) and within the labor force across

different occupational categories (unemployed, unpaid workers, self-employed, or wage workers). The LFS data also allow us to investigate the “incidence of technical and vocational training” at the national level.<sup>4</sup>

The LFS data is supplemented by another data source: the Research Consortium on Educational Outcomes and Poverty (RECOUP) household survey conducted in Pakistan between November 2006 and March 2007. The survey was administered to 1,194 urban and rural households selected randomly through stratified sampling from nine districts in two provinces (Punjab and Khyber Pakhtunkhwa [KP]).<sup>5</sup>

The RECOUP survey collected basic demographic, anthropometric, education, and labor market status information on *all* resident household members in the sampled households (more than 8,000 individuals). Detailed individual-level questionnaires were administered only to those aged between 15 and 60 years. Some 4,907 individual-level questionnaires were thus filled. Tests were also administered to assess these individuals’ literacy, numeracy, health knowledge, and English language skills. For literacy and numeracy, two types of instruments were used to capture “basic-order” skills and “higher-order” skills.

In our analysis, we have used the scores of the “short literacy test” and “short numeracy test,” each consisting of five questions. In addition to these questions, one section of the questionnaire was dedicated to asking detailed questions about the incidence of technical/vocational schooling, apprenticeship training, and any on-the-job training received. The instruments, therefore, allowed for a very nuanced version of “training” to include apprenticeship training; although the drawback of the RECOUP data is that they are not nationally representative, the very rich information available allows us to define “training” to include the three different types defined above. Additionally, the RECOUP dataset includes information on the earnings of self-employed individuals (not available in most household datasets, including the LFS), and this allows us to determine whether the returns to training are different for wage- and self-employed men and women in Pakistan’s labor markets.

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<sup>4</sup> The incidence of training is taken to be equal to 1 if the person reports having answered “yes” to the question, “Has... ever completed any technical or vocational training such as auto or engine mechanics, carpentry, typing, computer, tailoring, etc.?” and 0 otherwise.

<sup>5</sup> In Punjab, the following districts were sampled: Sargodha, Kasur, Attock, Chakwal, Rahimyar Khan, and Khanewal; in KP (then NWFP), Charsadda, Swat, and Haripur were sampled.

The following question asked of all individuals aged 15–60 is of most interest to us: “Has [sampled individual] ever (i) attended technical/vocational college, (ii) worked as an apprentice, and (iii) received any on-the-job training?” Responses to these variables were precoded to take on a value of 1 if the individual answered “yes” and 0 otherwise. Respondents were asked additional detailed questions to collect information on the “types” of skills acquired, the duration of training received, and the type of college/institution/setting where it was received. All enumerators were trained and provided with the following definition of apprenticeship: “Classify someone as an ‘APPRENTICE’ if they were/are working in a firm/environment where a formal/informal arrangement exists with the employer such that they teach that individual certain skills—regardless of whether they receive no payment, or fixed-rate or piece-rate payments.” The uniqueness of these data allows us to investigate this very interesting issue in Pakistan.

We proceed by documenting the status of women in the labor force, followed by a more in-depth analysis of training. Table 1 gives the summary statistics for labor market status by gender, comparing the LFS for 2000 and 2008 with the RECOUP 2007 dataset. The extent of gender asymmetry in the distribution of the labor force is striking. In Pakistan, about 70 percent of women were out of the labor force compared to 8 percent of men in 2007.

**Table 1: Distribution of labor force (aged 15–60) by gender (percent)**

	LFS 2000			LFS 2008			RECOUP 2007		
	All	Male	Female	All	Male	Female	All	Male	Female
<i>Pakistan</i>									
Out of the labor force	54.0	20.1	88.7	49.3	18.4	81.2	39.0	8.0	69.0
In the labor force	46.0	79.9	11.3	40.7	81.6	18.7	61.0	92.0	31.0
<i>Of those in the labor force</i>									
Unemployed	1.6	1.7	1.5	1.2	1.1	1.9	13.0	7.0	31.0
Unpaid family workers	18.1	14.4	44.9	26.7	18.7	62.4	18.0	12.0	34.0
Agriculture <sup>a</sup>							8.0	11.0	0.3
Self-employed	39.8	43.3	14.9	34.3	39.1	12.9	20.0	22.0	15.0
Wage workers	40.4	40.7	38.7	37.9	41.3	22.8	41.0	48.0	20.0

<sup>a</sup> The RECOUP dataset allows us to distinguish between the self-employed in agriculture and those in nonagriculture.

**Sources:** RECOUP data based on samples from Punjab and KP; LFS data based on all provinces (the RECOUP-Pakistan survey for 2006/07 is based on only two).

While the proportion of women in the labor force appears to have improved over the seven-year period, this must be interpreted cautiously as the LFSs are nationally representative while the RECOUP data only covers two provinces. Even when they *are* in the labor force, women are significantly more likely to be in unremunerated occupations (as unpaid family workers) with only about 20 percent of women in Punjab and KP engaged in wage-employment. In fact, this figure is not very different from the national average of about 23 percent, according to the LFS for 2008, giving credence to the view that women are, on average, under-represented in lucrative occupations and over-represented in ill-paid or nonpaying ones, both according to the LFS (2000 and 2008) and the RECOUP (2007) datasets.

Table 2 summarizes the incidence of training as defined in the LFS, i.e., technical and vocational training, by year, age group, and gender. The two key points to note in this table are that the incidence of training has *increased* over an eight-year period and the significant pro-male gender gap in the acquisition of training appears to have diminished, especially among the younger cohort. Overall, in 2008, 8.2 percent of all men aged 15–60 reported having acquired any technical or vocational training compared to 6.7 percent of women.

**Table 2: Incidence of training by age, gender, and year  
(LFS 2000 and 2008) (percent)**

	Young (15–30 years)		Older (31–60 years)			All (15–60 years)	
	Male	Female	Male	Female	Male	Female	
Ever received							
Any training (2000)	3.0	1.1 ***	3.9	0.1 ***	3.4	1.0 ***	
Any training (2008)	7.5	7.3	8.9	5.9 ***	8.2	6.7 ***	

**Notes:** “Any training” is defined as someone who reported having undergone any duration of technical or vocational schooling.

\*\*\* = significant at 1 percent.

**Source:** Authors’ computations from LFS 2000 and 2008.

As mentioned before, the RECOUP data allow us to differentiate between three categories of training: technical/vocational, apprenticeship, and on-the-job training. Table 3 summarizes the distribution of individuals aged 15–60 who reported having undertaken any such type of training.



**Table 3: Incidence of training by gender and age (RECOUP)**  
(percent)

Ever received	Young (15–30 years)		Older (31–60 years)		All (15–60 years)				
	Male	Female	Male	Female	Male	Female			
Vocational training	9.4	10.4	**	10.5	7.1	***	9.9	8.8	
Apprenticeship training	16.0	19.4	***	15.7	16.7		15.8	18.2	**
On-the-job training	3.8	1.2	*	3.8	2.1	**	3.7	1.5	***
Any training (vocational and/or apprenticeship and/or on-the-job)	23.1	26.2	*	23.6	24.7		23.3	24.3	

**Note:** \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent.

**Source:** Author's computations from RECOUP 2007

First, it must be noted that the RECOUP data reveals a somewhat higher proportion of women who reported receiving technical and vocational training compared to that reported in the LFS data: almost 10 percent of all women aged 15–60 reported having acquired this form of training in 2007 compared to about 7 percent according to the LFS 2008. This minor difference in “incidence” could just indicate a substantially higher incidence of this type of training among women in Punjab and KP. Nevertheless, we take comfort from the fact that the national average of incidence of technical/vocational training is not very different from what we find in the RECOUP data.

Second, the summary statistics in Table 3 reveal the strikingly large incidence of apprenticeship training—a kind of training not even captured in the LFS. A significantly large proportion of women, especially *young* women (19.4 percent), report having undertaken apprenticeship training. Finally, the incidence of on-the-job training is low and there appears to be a pro-male bias in its incidence.

The very high reported incidence in the two provinces covered by RECOUP is somewhat surprising. We are aware of only one other study on Pakistan that has looked at apprenticeship training in Punjab: Asghar and Siddi (2008) note that, compared to European countries, Pakistan (as indicated by the data on Punjab) displays a very low percentage of young people undergoing apprenticeships (less than 1 percent). In the UK, this proportion is 14 percent; in Germany, 57 percent; in France, 15 percent; and in Ireland, 9 percent. The authors attribute Pakistan's low percentage to lack of awareness, poor quality, lack of standardization, the passive

attitude of employers, and lack of vertical mobility among VET graduates. Our data, however, finds evidence to the contrary.

Table 4 investigates descriptive associations from another angle. “Training” is combined into a single component and individuals who reported having received any kind of training (technical/vocational, apprenticeship, or on-the-job) fall under “ever trained.” The incidence of this is reported with respect to that individual’s completed level of general education. The table reports these associations differentiated by age cohort and by gender.

Broadly speaking, the incidence of training depicts a monotonic increase with respect to education level, and this holds for all individuals and separately for the young and older age groups. For instance, among all male 15–60-year-olds, 41 percent who have completed a BA or more in general education report having been “ever trained” compared to 15 percent of those with no education. It is also worth noting that the incidence of training is significantly *higher* among all young women compared to young men. It is also significantly higher among young women with no education and those who have completed middle school (eight years), and among older women who have completed their matriculation (10 years) compared to men with similar qualifications. These patterns hint at the exit points at which training is usually undertaken and specifically by women—no education, after completing middle school, and after completing their matriculation exams.

**Table 4: Incidence of training (apprenticeship, vocational, on-the-job), by general education level, gender, and age**

Education level	Young (15–30 years)		*	Older (31–60 years)		***	All (15–60 years)		**
	Male	Female		Male	Female		Male	Female	
None	13.8	20.9	*	15.0	17.9		14.6	19.2	**
Any primary	23.0	23.1		22.3	21.1		22.7	22.4	
Middle	14.6	28.3	***	22.0	29.7		17.8	28.7	**
Matriculation	31.3	36.8		30.2	59.1	***	30.8	42.4	***
Intermediate	41.8	42.1		43.9	66.7		42.7	45.5	
BA or above	38.9	51.7		42.1	46.2		40.9	50.7	
All	23.1	26.2	*	23.6	24.7		23.3	24.3	

**Notes:** Education categories are defined in terms of years of schooling as follows: none = 0 years; any primary = 1, 2, 3, 4, 5, 6, or 7 years; middle = 8 or 9 years; matriculation = 10 or 11 years; intermediate = 12 or 13 years; BA or above = 14 or more years.

\* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent.

**Source:** Authors’ calculations.

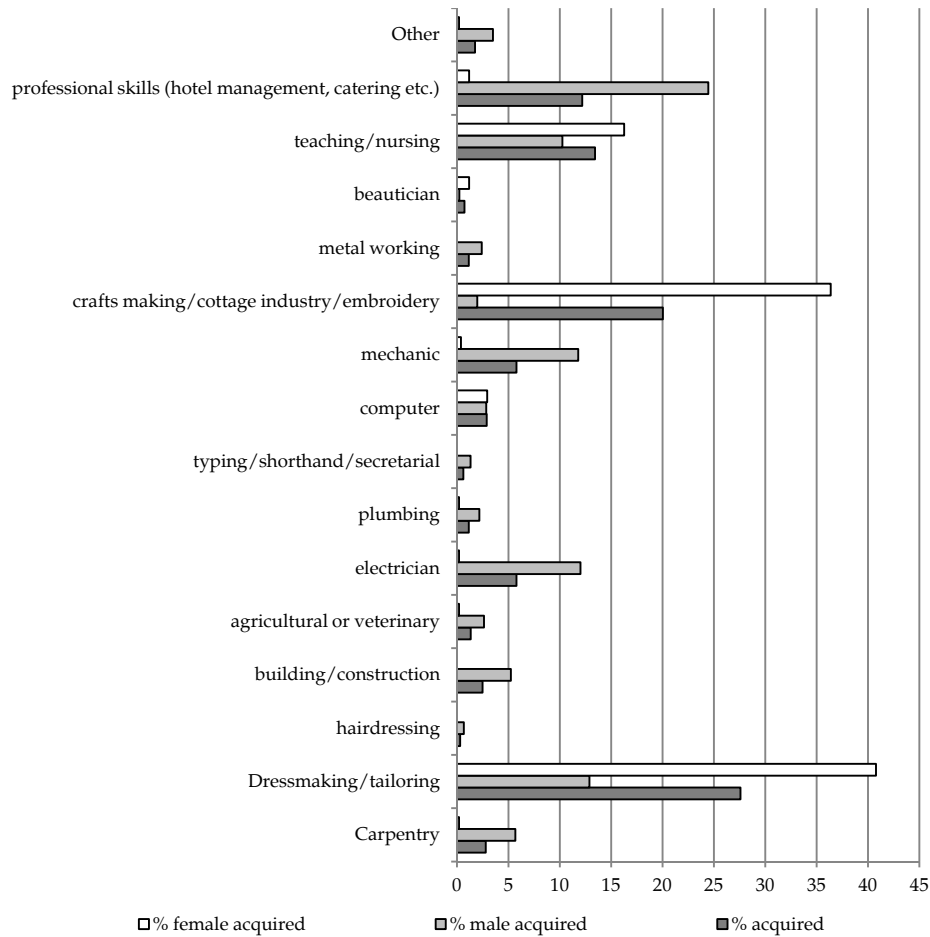
Finally, Figure 1 illustrates the “types” of skills acquired by men and women aged 15–60 in Punjab and KP.<sup>6</sup> The gender differentiation in skills acquisition is most apparent from this figure, which reveals that while men acquire a reasonably broad range of skills, women are restricted to certain types of skills. On the whole, women are largely represented in teaching, nursing, crafts-making, dressmaking, and tailoring. Men, on the other hand, also train as “mechanics” and “electricians” and acquire other “professional skills.”

This is an interesting insight into the dynamics of skills training as the eventual “return” to a certain kind of training should, surely, depend not only on the quality of the skills acquired but also on the demand for those skills. Fasih (2008), for instance, argues that policies aimed at improving the skills of the workforce will not have a significant impact on the earnings of those who acquire the skills—and eventually on economic growth—unless policies exist that *increase the demand for those skills*. She cites the example of Ghana where the demand for labor is largest in the domestic market where the return to skills is very low. However, the supply of individuals entering the domestic market outstrips the demand, which ensures that the price of skills (in this case, low-educated labor) is inevitably low. This hints at the need to address the issue of job creation—creating enough jobs that utilize the skills developed and ensuring that these jobs are of a minimum quality. We turn to this issue later on in the paper.

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<sup>6</sup> Training here excludes on-the-job training.

**Figure 1: Types of skills acquired during training (apprenticeship/vocational) by gender (RECOUP 2007)**



*Source:* Authors' computations based on RECOUP (2007).

Summarizing the findings so far, we note that, when the definition of "training" is broadened to include apprenticeship training, the incidence of training is significantly high, at least in Punjab and KP where the RECOUP data allows an analysis. In particular, we note that a significantly large number of women acquire such training compared to men. However, women appear to be limited to the acquisition of certain types of skills; the majority acquire skills that lead to teaching, nursing, crafts-making, tailoring, or dressmaking. Whether acquiring this training affects women's labor market outcomes positively—both in terms of their occupational choices and their earnings—is an empirical question that we turn to in the next section.

## 5. Empirical Findings

### 5.1. Training and Occupational Attainment

This subsection investigates whether one of the ways in which the labor market benefits of human capital accrue is by promoting entry into more lucrative occupations. We do this by looking at the effect of training (defined as “ever trained” if person has reported ever acquiring TVE, apprenticeship training, and/or on-the-job training) on occupational outcomes. As discussed earlier, we define five “occupations” using the data and analyze the case of men and women separately. The key variable of interest is “training” to determine whether having ever acquired any training is positively associated with the likelihood of entering a more lucrative occupation or with deterring an individual from entering a less lucrative one.

The analysis is undertaken by means of simple, parsimoniously specified MNL models (see Section 3). Tables 5 and 6 depict the marginal effects (and the associated z-values) of the independent variables estimated separately for men and women. The dependent variable is occupational choice, which takes on one of the following values: 1 (out of the labor force), 2 (unemployed), 3 (unpaid worker), 4 (self-employed), or 5 (wage-employed). The base outcome is whether the individual is out of the labor force.

While Aslam et al. (2008) and Aslam, Bari et al. (2012) investigate whether education and skills (as defined by cognitive skills) acquisition improve labor market outcomes in Pakistan, our study differs in a key way in that, for the first time we are aware of, this kind of study has been undertaken to evaluate the association between “training” and occupational choice and subsequent earnings.

Table 5 reports the marginal effects for men aged 15–60 based on an MNL model estimated for activity status. We control for general education and its square and for “training” along with the standard controls reported in the table. Table 6 replicates the model for women. Comparing the two tables, it is clear that the estimated vector of coefficients varies greatly by gender. In terms of our key variable of interest, having acquired any training significantly improves the likelihood of men entering self-employment while reducing their likelihood of being unpaid workers. For example, the relative probability that a trained male will be self-employed increases by about 7 percent while the relative probability that he will be an

unremunerated worker falls by about 3 percent. Training clearly appears to benefit men in terms of improving their chances of being self-employed and reducing the probability that they will be unpaid.

The results in Table 6, which replicates these models for women, are even more interesting. It appears that trained women are significantly less likely to be out of the labor force and significantly more likely to be self-employed or engaged in wage work. Somewhat surprisingly, they are significantly more likely to be “unpaid.” On closer inspection, however, this finding is not completely surprising as trained women may have a greater likelihood of being absorbed into family-run businesses as unpaid workers if they have acquired skills that are compatible with the business needs. The most striking results, however, are that trained women are 15 percent less likely to be out of the labor force and correspondingly almost 9 percent more likely to be engaged in some form of paid self-employment and 4 percent more likely to be paid wage-workers. Training thus substantially drives women’s exit from the least lucrative “out of the labor force” category and promotes their entry into lucrative self-employment and wage work.

As a robustness check, we apply an alternative specification conditioned on “cognitive skills” as measured by individuals’ scores on literacy and numeracy tests (both the short math and literacy test scores range from 0 to 5). These results are reported in the Annex (Tables A1 and A2). The pattern of results remains largely unchanged, especially for women: acquiring training improves their chances of entering self-employment and wage employment and reduces the likelihood that they are entirely out of the labor force. That the occupational outcomes of training so strongly indicate beneficial effects for both men and women—and especially for women—is a heartening result. However, do these also translate into better earnings, conditioned on schooling? We turn to this question in the following section.

Table 5: MNL model: Marginal effects, men aged 15–60

	Probability of being...													
	Out of the labor force		Unemployed		Unpaid		Self-employed		Wage-employed					
	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value				
Education	0.007	1.61	0.005	1.33	0.000	0.00	0.016	2.08	**	-0.028	-3.43	***		
Education <sup>2</sup>	-0.001	-2.22	**	0.000	-0.75	0.000	-0.08	-0.002	-2.76	***	0.003	4.29	***	
Age	-0.008	-2.29	**	-0.009	-2.79	***	-0.007	-1.44	0.023	2.99	***	0.000	0.06	
Age <sup>2</sup>	0.000	3.55	***	0.000	2.58	**	0.000	0.00	0.000	-1.88	*	0.000	-0.76	
Kidsunder15	0.000	0.01		0.000	-0.09		0.007	4.90	***	0.003	0.92	-0.010	-2.59	**
Eldove60	0.016	2.05	**	-0.007	-0.96		0.004	0.54		-0.009	-0.56	-0.004	-0.26	
Married	-0.058	-2.77	***	-0.044	-2.48	**	-0.020	-1.37		0.086	2.71	***	0.037	1.07
Punjab	-0.043	-2.88	***	-0.039	-2.90	***	0.023	2.10	**	0.036	1.43	0.023	0.84	
Urban	0.018	1.25		-0.002	-0.17		0.000	-0.01		-0.015	-0.58	-0.001	-0.03	
Ever trained	-0.013	-0.98		-0.016	-1.49		-0.033	-2.95	***	0.069	2.48	**	-0.006	-0.21
N	1,866													
Pseudo-R <sup>2</sup>	0.100													
p (chi-squared)	0.000													

**Notes:** Robust z-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better.

Base category = out of the labor force. Education is measured as a continuous variable and ranges from 0 to 18. Education<sup>2</sup> = square of education. Age is measured in continuous years. Age<sup>2</sup> = square of age. Kidsunder15 = number of children in household aged 15 or below. Eldove60 = number of adults in household aged 60 or above. Married = 1 if individual is married, 0 otherwise. Punjab = 1 if person resides in Punjab, 0 if resides in KP. Urban = 1 if residence is urban, 0 otherwise. Ever trained = 1 if person reports having ever acquired any training (defined as technical or vocational training, apprenticeship training, and on-the-job training).

Table 6: MNL model: Marginal effects, women aged 15–60

	Probability of being...									
	Out of the labor force		Unemployed		Unpaid		Self-employed		Wage-employed	
	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value
Education	0.007	1.75 *	-0.001	-0.46	-0.008	-3.74 ***	-0.001	-0.81	-0.003	2.75 ***
Education <sup>2</sup>	-0.001	-2.95 ***	0.001	3.56 ***	0.000	0.28	0.000	0.18	0.000	3.46 ***
Age	-0.017	-2.98 ***	0.004	0.83	0.000	-0.17	0.006	2.58 **	0.008	3.10 ***
Age <sup>2</sup>	0.000	2.88 ***	0.000	-0.98	0.000	-0.02	0.000	-2.49 **	0.000	-2.52 **
Kidsunder15	-0.012	-3.99 ***	0.005	2.61 **	0.004	3.41 ***	-0.001	-0.63	0.003	2.89 ***
Eldove60	0.024	1.93 *	0.001	0.16	0.002	0.40	-0.007	-1.36	-0.021	-3.73 ***
Married	0.126	4.64 ***	-0.044	-2.15 **	-0.004	-0.41	-0.037	-2.84 ***	-0.041	-3.11 ***
Punjab	-0.182	-9.49 ***	0.029	2.07 **	0.093	8.66 ***	0.029	3.81 ***	0.031	4.17 ***
Urban	0.078	3.70 ***	-0.031	-2.09 **	-0.066	-6.41 ***	0.023	2.27 **	-0.004	-0.53
Ever trained	-0.151	-6.01 ***	-0.006	-0.38	0.030	2.69 ***	0.089	5.48 ***	0.037	3.19 ***
N	2,043									
Pseudo-R <sup>2</sup>	0.142									
p(chi-squared)	0.000									

**Notes:** Robust z-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better.

Base category = out of the labor force. Education is measured as a continuous variable and ranges from 0 to 18. Education<sup>2</sup> = square of education. Age is measured in continuous years. Age<sup>2</sup> = square of age. Kidsunder15 = number of children in household aged 15 or below. Eldove60 = number of adults in household aged 60 or above. Married = 1 if individual is married, 0 otherwise. Punjab = 1 if person resides in Punjab, 0 if resides in KP. Urban = 1 if residence is urban, 0 otherwise. Ever trained = 1 if person reports having ever acquired any training (defined as technical or vocational training, apprenticeship training, and on-the-job training).



## 5.2. Education, Training, and Earnings

This subsection starts by investigating the wage increment that accrues across wage- and self-employed individuals from each extra year of schooling and from whether an individual has acquired any training. This is done by estimating and comparing the marginal rates of return to general education supplemented by “ever trained.” We use the familiar Mincerian earnings function approach where the coefficient of “years of schooling” measures the rate of return to each additional year of schooling, and the coefficient of the binary training variable indicates the marginal benefit in terms of additional earnings for someone who has acquired any training compared to someone who has not.<sup>7</sup> Table 7 reports the results for all individuals and separately for males and females. The overall return to an additional year of schooling in this sample is about 4 percent, i.e., each additional year of schooling increases lifetime earnings, on average, by 4 percent.

**Table 7: Earnings functions for all wage- and self-employed individuals (aged 15–60) and by gender**

Ln(earnings)	All		Male		Female	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Education	0.044	6.15 ***	0.025	3.20 ***	0.094	6.17 ***
Age	0.106	6.53 ***	0.094	5.88 ***	0.132	2.51 **
Age2	-0.001	-5.74 ***	-0.001	-5.32 ***	-0.002	-2.02 **
Punjab	-0.068	-0.95	0.018	0.25	-0.110	-0.60
Urban	0.003	0.05	0.091	1.66 *	-0.158	-1.01
Ever trained	0.014	0.24	0.190	3.57 ***	-0.032	-0.20
Constant	8.598	30.25 ***	8.988	31.79 ***	7.118	8.37 ***
N	1511		1290		221	
R <sup>2</sup>	0.100		0.100		0.228	

**Note:** Robust t-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* significant at 1 percent or better.

There is a striking difference between men and women in the returns to additional years of schooling—an additional year of schooling increases women’s lifetime earnings by about 9 percent compared to less than a third (2.5 percent) for men. These findings are completely consistent

<sup>7</sup> Although equations with the education-squared term were also estimated, the term was insignificant in most cases, indicating that, in these specifications, education has a linear impact on earnings.

with previous evidence from Pakistan and indicate that acquiring an additional year of schooling benefits women significantly.

We focus now on the key variable of interest—“ever trained.” Unlike the evidence on returns to schooling, we do not find corresponding benefits in terms of improved earnings for women who have acquired any training. Men who have acquired training, however, earn 19 percent more over their lifetimes than those who have not (conditioned on general education).

Tables 8 and 9 explore this interesting anomaly further by estimating earnings functions separately for the self-employed and wage-employed. Table 8 shows that, among self-employed men, education confers no “return” while training yields a huge 33 percent return, i.e., self-employed men who have acquired any training earn 33 percent more than those who have not done so. However, while additional years of schooling confer large returns to self-employed women (about 9 percent), the acquisition of training yields no such apparent return.

**Table 8: Earnings functions for all self-employed individuals (aged 15–60) and by gender**

Ln(earnings)	All		Male		Female	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Education	0.042	2.43 **	-0.003	-0.14	0.093	3.44 ***
Age	0.133	4.13 ***	0.085	2.46 **	0.154	1.85 *
Age <sup>2</sup>	-0.002	-3.89 ***	-0.001	-2.58 ***	-0.002	-1.62
Punjab	-0.064	-0.41	0.075	0.45	-0.276	-0.83
Urban	0.125	1.06	0.240	1.93 *	0.370	1.46
Ever trained	0.042	0.41	0.332	3.24 ***	-0.083	-0.34
Constant	7.901	12.90 ***	9.140	13.54 ***	6.762	5.14 ***
N	616		516		100	
R <sup>2</sup>	0.100		0.100		0.260	

**Note:** Robust t-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better.

Table 9 replicates the results for wage workers. While an additional year of schooling increases a wage-working male’s (female’s) earnings by about 4 (6) percent, the acquisition of training yields large beneficial effects only for women and not for men. Having acquired any training increases wage-working women’s earnings by about 35 percent compared to women

with no training.<sup>8</sup> However, this effect is only just significant at the 10 percent level.

**Table 9: Earnings functions for all wage-employed individuals (aged 15–60) and by gender**

Ln(earnings)	All		Male		Female	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Education	0.040	7.76 ***	0.039	8.34 ***	0.060	2.81 ***
Age	0.088	6.30 ***	0.086	6.85 ***	0.095	1.40
Age <sup>2</sup>	-0.001	-5.29 ***	-0.001	-5.82 ***	-0.001	-1.08
Punjab	-0.083	-1.64	-0.031	-0.64	0.071	0.34
Urban	-0.080	-1.56	0.012	0.27	-0.406	-2.09 **
Ever trained	0.033	0.66	0.061	1.34	0.352	1.66 *
Constant	9.007	39.23 ***	9.073	42.47 ***	7.945	7.24 ***
N	895		774		121	
R <sup>2</sup>	0.150		0.183		0.200	

**Note:** Robust t-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better.

What do these results imply? In order to examine this issue, we re-estimate the equations in Tables 7, 8, and 9 with “training” differentiated into its components (TVE, apprenticeship training, and on-the-job training).<sup>9</sup> The key findings from this differentiation are, first, that the large positive returns to “training” for men (both wage- and self-employed) are due to the high positive returns to “apprenticeship training.” Second, among women, the large positive returns (35 percent) among wage workers are captured entirely in the training acquired through TVE. Therefore, the channels through which the benefits from training accrue in the form of raised earnings differ by gender.

## 6. Discussion of Results and Conclusion

In the context of Pakistan, we have addressed the question of whether “training” confers any labor market benefits to individuals who undertake it and whether the benefits are differentiated by gender.

<sup>8</sup> Table A3 in the Annex reports the fixed-effects functions, controlling for schooling and training. The samples are limited to at least two males or two females within a household who report being either wage- or self-employed. However, the samples are very small, especially among women, and we do not have much confidence in the precision of the estimates. The findings are, therefore, not discussed.

<sup>9</sup> The results are not reported due to space constraints.

This study has corroborated what we know very well about the Pakistani labor market: a large majority of women are out of the labor force and, hence, economically inactive. Among those who *are* in the labor market, very few are represented in the more lucrative and rewarding occupations (wage work followed by self-employment). This is contrary to how men are distributed in the labor market. From previous work, we also know that general education can induce equality—women who acquire more education not only enter the more lucrative occupations but also face higher returns in the form of increased earnings (see Aslam, Bari et al., 2012; Aslam et al., 2008; Aslam, De et al., 2012). However, only women with very high levels of schooling (more than eight years) can take advantage of its labor market benefits, and only a very small proportion of women in Pakistan have actually acquired this level of education.

Another route that is often available to less-educated workers is TVE or the acquisition of some form of apprenticeship training. Within the context of a labor force constrained by cultural barriers to women's participation in paid work and low levels of education (and, hence, skills), the potential role of any such training in determining occupational choice and improvements in earnings becomes very interesting. This study has attempted, therefore, for the first time to address these questions in the context of Pakistan.

The evidence presents several key findings. We find that both men and women benefit significantly from having acquired any training. Women in particular are not only significantly less likely to be out of the labor force but are also significantly more likely to be self-employed or engaged in wage work. Thus, acquiring training promotes men and women's entry into more lucrative occupations.

For women, the return to an additional year of schooling is significantly larger than that for men, suggesting that the labor market rewards to additional schooling for women are substantial. However, while training aids women's entry into more lucrative occupations, earnings benefits are also differentiated by gender—training increases men's earnings substantially when they are self-employed and women's earnings when they are wage-employed. A clue to this difference lies in the fact that self-employed men's returns derive entirely from having acquired apprenticeship training, while the benefits to women in the form of higher wages occur through their acquisition of TVE. Thus, men with apprenticeship training as opposed to those without earn significantly more when self-employed. Women with technical or vocational training earn significantly more than those without, when engaged in wage work.

Our findings shed light on several policy angles. The study's evidence leads us into the policy discussion on how best to prepare individuals who exit general education at various points for the labor market. Different approaches compete with each other (and also depend on the level of general education completed): firm- or employer-based apprentices, fulltime or part-time vocational education, or on-the-job training.

We are not aware of any studies to date that have highlighted the extent to which training affects labor market outcomes for men and women in Pakistan, and the relative effectiveness of different types of training in the form of improved earnings. This paper has documented how training can prove a beneficial pathway for men and women to gain entry into lucrative occupations. It has also shown how apprenticeship training and vocational schooling in particular can benefit men and women in the form of raised earnings. This hints at the need to effectively develop institutions that undertake this important mechanism of skills training in the country.

Additionally, much of the debate in the international literature has focused on the relative merits of general versus vocational or other training. However, our evidence implies that training confers benefits independent of general schooling. Thus, providing quality training at different exit points from general education can improve labor market outcomes, especially for women. However, this should not detract us from the fact that more quality empirical research is needed to understand the optimal mix of general schooling and occupation-specific training in order to better evaluate the relative advantages of different types of skills acquisition.

Existing studies on TVE in Pakistan have, time and again, called for the need to spread quality technical and vocational schooling in the country to reduce unemployment and boost economic growth (Pakistan, Ministry of Education, & UNESCO, 2009). These studies emphasize the need to revamp existing TVE institutions and create inter-linkages between these institutions and the industry. Kazmi (2007) argues that public expenditure on vocational education needs to be increased manifold from the current level. She also notes that institutional arrangements need to be strengthened to address governance issues and public-private partnerships created to end the reliance of the existing TVE system on the public sector, which may be hindering both access and effective skills development.

Finally, it is worth reiterating that, as Fasih (2008) points out, while improving the quality and quantity of skills should be part of a good

educational policy package, these need to be combined with effective labor market policies that address the issue of job creation. Without enough quality jobs that match the skills created with labor market needs, educational packages—no matter how comprehensive and dynamic—will not succeed.

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Table A1: MNL model: Men aged 15–60, using literacy and numeracy scores

	Probability of being...									
	Out of the labor force		Unemployed		Unpaid		Self-employed		Wage-employed	
	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value
Short maths	0.003	0.56	-0.001	-0.11	-0.017	-3.17 ***	0.013	0.99	0.001	0.11
Short literacy	0.000	-0.10	0.007	1.77 *	0.006	1.70 *	-0.004	-0.50	-0.009	-1.02
Age	-0.005	-1.27	-0.008	-2.22 **	-0.007	-1.52	0.025	2.78 ***	-0.005	-0.59
Age <sup>2</sup>	0.000	2.35 **	0.000	2.07 **	0.000	0.16	0.000	-1.95 **	0.000	0.03
Kidsunder15	-0.001	-0.60	0.000	0.16	0.006	3.77 ***	0.004	0.87	-0.009	-1.89 *
Eldove60	0.016	1.81 *	-0.005	-0.61	0.007	1.04	-0.004	-0.19	-0.015	-0.79
Married	-0.047	-1.92 *	-0.070	-2.90 ***	-0.022	-1.37	0.062	1.56	0.077	1.97 **
Punjab	-0.063	-3.55 ***	-0.030	-2.11 **	0.024	2.14 **	0.044	1.44	0.025	0.82
Urban	0.001	0.04	-0.009	-0.77	0.002	0.15	-0.039	-1.29	0.046	1.48
Ever trained	-0.013	-0.88	-0.014	-1.15	-0.047	-4.03 ***	0.043	1.36	0.030	0.96
N	1,449									
Pseudo-R <sup>2</sup>	0.100									
p (chi-squared)	0.000									

**Note:** Robust z-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better. Base category = out of the labor force. Short maths = score on short math tests, ranging from 0 to 5. Short literacy = score on short literacy test, ranging from 0 to 5.

Table A2: MNL model: Women aged 15–60, using literacy and numeracy scores

	Probability of being...									
	Out of the labor force		Unemployed		Unpaid		Self-employed		Wage-employed	
	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value
Short maths	-0.060	-4.89 ***	0.023	2.48 **	0.006	1.21	0.004	0.84	0.027	4.63 ***
Short literacy	0.017	2.56 **	0.001	0.15	-0.016	-4.43 ***	-0.004	-1.73 *	0.002	0.68
Age	-0.021	-3.38 ***	0.006	1.38	-0.001	1.89 *	0.006	2.44 **	0.009	3.36 ***
Age <sup>2</sup>	0.000	3.29 ***	0.000	-1.47	0.000	0.23	0.000	-2.37 **	0.000	-2.88 ***
Kidsunder15	-0.012	-3.92 ***	0.005	2.46 **	0.005	3.60 ***	-0.001	-0.56	0.003	2.47 **
Eldove60	0.022	1.71 *	0.004	0.41	0.003	0.45	-0.007	-1.27	-0.022	-3.69 ***
Married	0.142	4.94 ***	-0.057	-2.61 **	0.002	0.13	-0.038	-2.84 ***	-0.048	-3.26 ***
Punjab	-0.185	-9.15 ***	0.023	1.57	0.102	9.08 ***	0.034	4.28 ***	0.026	3.08 ***
Urban	0.078	3.52 ***	-0.027	-1.78 *	-0.072	-6.69 ***	0.020	1.99 **	0.003	0.29
Ever trained	-0.151	-5.87 ***	-0.009	-0.57	0.032	2.64 ***	0.085	5.23 ***	0.044	3.48 ***
N	1,922									
Pseudo-R <sup>2</sup>	0.131									
p (chi-squared)	0.000									

**Note:** Robust z-statistics; \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better. Base category = out of the labor force. Short maths = score on short math tests, ranging from 0 to 5. Short literacy = score on short literacy test, ranging from 0 to 5.

**Table A3: Household fixed-effects estimates for wage- and self-employed individuals (aged 15–60) by gender**

Ln(earnings)	Male		Female	
	Coefficient	t-value	Coefficient	t-value
Education	0.002	0.16	0.036	1.00
Age	0.096	4.03 ***	0.035	0.66
Age <sup>2</sup>	-0.001	-3.84 ***	0.000	-0.58
Ever trained	0.100	0.95	0.443	1.76 *
Constant	9.148	22.85 ***	9.001	10.20 ***
Number of observations	751		78	
Number of groups	328		35	
R <sup>2</sup>	0.100		0.100	

**Note:** \* = significant at 10 percent, \*\* = significant at 5 percent, \*\*\* = significant at 1 percent or better. Base category = out of the labor force.

## **Analyzing the Market for Shadow Education in Pakistan: Does Private Tuition Affect the Learning Gap between Private and Public Schools?**

**Bisma Haseeb Khan\* and Sahar Amjad Shaikh\*\***

### **Abstract**

*Over the past decade, Pakistan has seen the rapid growth of a third sector in education: shadow education. According to the Annual Survey of Education Report (2013), 34 percent of private school students and 17 percent of public school students undertake private tuition in Punjab. Anecdotal evidence suggests that private tuition has a positive impact on learning outcomes. Keeping this in view, it is possible that private tuition, rather than a difference in schooling quality, is driving the observed learning gap between public and private schools? This study employs a fixed-effects framework, using panel data from the Learning and Educational Achievement in Punjab Schools (LEAPS) survey, to quantify the impact of private tuition on learning outcomes in public and private schools. We analyze the demand and supply dynamics of the shadow education market in Punjab, and find that private tuition has a positive significant effect on learning outcomes, specifically for public school students. For English, much of the learning gap between public and private schools is explained by the higher incidence of private tuition among private school students, but this is not the case for mathematics and Urdu. We also find that private tuition is predominantly supplied by private school teachers, but that they do not shirk their regular class hours to create demand for their tuition classes, as is normally believed. On the demand side, private tuition acts as a substitute for receiving help at home. Moreover, it supplements formal education rather than substituting for low-quality formal schooling.*

**Keywords:** Public versus private education, education quality, tutoring, Pakistan.

**JEL classification:** I00, I21, I28.

### **1. Introduction**

The growth of low-fee private schools in Pakistan has changed the dynamics of the country's education sector. According to the literature,

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private schools outperform public schools in terms of learning outcomes (Aslam, 2009; Andrabi, Das, & Khwaja, 2002). This learning gap raises concerns about the standard of education provided by public schools and the associated equity effects, and led to serious debate on the relationship between education expenditure and academic performance.

Existing studies have, however, largely ignored a third emerging sector in education: shadow education. Shadow education is defined as extra, paid private tuition classes given after school hours, either one-to-one at the student's home or in larger groups or at tuition academies. Evidence shows the growing prevalence of such classes in Pakistan with approximately 11 percent of students in rural areas and 54 percent in urban areas opting for private tuition. Moreover, a higher proportion of private school students are found to engage in private tuition than government school students (Annual Status of Education Report, 2013).

Keeping this in view, it is possible that private tuition, rather than a difference in schooling quality, is driving the observed learning gap between public and private schools. The literature on Pakistan is silent in this regard, and the international literature on shadow education provides mixed evidence on the impact of private tuition on academic performance. There is a dearth of research examining the demand and supply of private tuition classes, leaving a number of questions open to debate, particularly in the context of less developed countries.

This paper attempts to fill these gaps in the literature by examining the dynamics of the private tuition market in Punjab, Pakistan. We analyze the impact of private tuition on academic performance, looking particularly at whether it can explain the observed learning gap between public and private schools and whether private tuition can help bridge this gap. On the demand side, we analyze whether private tuition serves as a substitute for low-quality formal schooling or supplements in-school learning, and if it acts as a substitute for help received at home. On the supply side, we identify the main providers of private tuition and determine whether the mainstream schoolteachers that provide private tuition do so at the cost of in-school teaching.

The initial descriptive analysis examines the characteristics of private tutors and their tutees. The literature suggests a variety of reasons for the upspring of private tuition classes: a corrupt public schooling system where teachers are poorly monitored and shirk their classes, forcing students to undertake paid tuition after school (Gurun & Millimet, 2008); a

supplement to quality education used to gain an edge over other students; or a form of remedial classes for low-performing students.

In the case of Punjab, our descriptive analysis suggests that private tuition is, in fact, a supplement undertaken by already high-achieving students. Further, private school teachers and students are more likely to engage in these classes than public school students. This suggests that the private tuition phenomenon does not necessarily result from poor-quality public schools. The analysis also indicates that private tuition serves mainly as a substitute for help received at home. A random-effects analysis using data from the Learning and Educational Achievement in Punjab Schools (LEAPS) panel, confirms these findings.

We also examine the switchers in our sample (those who take up private tuition during the period of analysis) in a gains formulation, looking at the value that a year's private tuition adds to a student's learning outcomes. Fixed-effects estimation is carried out to account for possible endogeneity in the regression equation caused by unobserved, time-invariant, individual-specific variables that affect both tuition uptake and student performance. The model is fitted separately for private and public school students (those who did not switch schools during the survey period) in order not to confound the effect of private tuition with that of switching between schools.

Our findings suggest that private tuition has a positive impact on academic performance, specifically for public school students. The effect differs by subject. For mathematics and Urdu, the learning gap between public and private schools remains even after accounting for private tuition, but can be bridged by providing more such tuition classes to public school students. In English, the gap is significantly reduced once tuition is controlled for as private tuition significantly affects private school students' performance (but not that of public school students in this case).

The relationship between academic achievement and private tutoring calls into question the level of effort of private school teachers (the main providers of these tuition classes) during school hours. If teachers are deliberately shirking their duties during school hours to force their students to undertake these extra classes, then private tuition can be said to reduce welfare. If this is not the case and such classes enhance learning in addition to regular schooling, then a case can be made for regulating and even encouraging this sector; a combination of free public schooling and private tuition would benefit parents who cannot afford to send their children to private schools. Our findings suggest the latter: based on observable

characteristics measuring teacher effort in class, we find no significant difference between teachers who provide tuition and those who do not.

The remaining paper is organized as follows: Section 2 provides a brief overview of the literature; Section 3 looks at the dataset used in this study and provides a descriptive analysis of the private tuition sector. Section 4 explains the empirical strategy used in the regression analysis and Section 5 gives the results of this analysis. Section 6 discusses the main findings and concludes the paper.

## **2. Literature Review**

With the rising privatization of education and upspring of low-fee private schools in Pakistan, a vast body of literature has emerged looking at the impact of private schools on students' academic performance. Most studies on Pakistan find a positive and significant learning gap between private and public schools (Andrabi, Khwaja, Zajonc, & Vishwanath, 2007). The international literature attributes much of the difference in educational outcomes among students to factors such as their socioeconomic background and parental education (Lloyd, Mete, & Sathar, 2005).

In the context of Pakistan, the learning gap between private and public schools overrides any differences attributed to such factors (Andrabi et al., 2002; Andrabi et al., 2007). According to Das, Pandey, and Zajonc (2006), the private-public learning gap is 12 times as large as that between rich and poor students and five times the gap between literate and illiterate mothers. This gap is explained in terms of differences in school quality with low-quality public schooling attributed to the lack of monitoring and accountability of public school teachers and to high teacher absenteeism (Aslam, 2003). However, these studies fail to account for a rapidly emerging third sector: shadow education. Despite the high incidence of private tuition in Pakistan, there is limited evidence on the determinants of private tuition and its impact on academic performance, particularly whether it might explain the learning gap between private and public schools.

The international literature indicates two types of demand for private tuition: (i) as remedial education for low-performing students (Jacob & Lefgren, 2004), and (ii) as additional help for high-performing students to give them an advantage over their counterparts (Dang & Rogers, 2008). Both types are growing all around the world, including economically and culturally diverse countries such as the US, Cambodia, Vietnam, Japan, India, and South Africa (Dang & Rogers, 2008). Even within countries, private tuition is not just the preserve of the rich living in



urban areas, it is also evident in rural areas among less well-off families (Asankha, 2011). Neither is it limited to higher levels of schooling: in some countries, even preschool students undertake private tuition (Watson, 2008). Nevertheless, income and living in urban areas are found to be positively associated with private tuition uptake (Bray & Lykins, 2012).

Other factors positively associated with the demand for private tuition include parental education, class level, low-quality public schooling, and the institution of competitive exams at different levels of education, including exams for university placement (Kang, 2007; Barro & Lee, 2010; Glewwe & Kremer, 2006). Household size, on the other hand, negatively affects the demand for private tuition (Tansel & Bircan, 2006). Some parents invest in private tuition classes to better their children's learning and consequent labor market outcomes. They feel that the longer their child stays in the education system and the better the quality of that education, the greater will be the prospects of enhanced lifetime earnings for that child (Bray & Lykins, 2012). On the other hand, some parents send their children to private tuition classes merely due to peer pressure (in certain cultures, it is even considered prestigious) and not because of any perceived learning benefits (Bray, 2007).

Much less work has been done on the supply side of private tuition and thus little is known about those who provide such tuition. The literature identifies different types of private tuition supply, ranging from one-to-one study sessions at the student's house to larger classes held at tuition academies specifically set up for this purpose (e.g., the *juku* in Japan) (Bray & Silova, 2006). Tutors themselves also vary in age, training, socioeconomic background, and other characteristics. In most countries, poorly paid classroom teachers provide private tuition to supplement their meager earnings (Dawson, 2009; Benveniste, Marshall, & Santibañez, 2008). At other times, mainstream teachers force tuition on their students by deliberately leaving out parts of the curriculum during regular school hours and covering it in private tuition classes. Thus, when teachers provide private tuition to their own students, it might have a detrimental effect on mainstream schooling. University students or retired teachers may also engage in tuition to supplement their income (Bray, 2007).

Finally, the consequences of private tuition in terms of its impact on academic performance are also ambiguous. The literature provides mixed results ranging from a positive, significant effect on academic performance (Ha & Harpham, 2005) to an insignificant effect (Lee, Kim, & Yoon, 2004). Some studies even find it has a negative effect on learning outcomes. For

instance, Cheo and Quah (2005), looking at secondary school students in Singapore, find that private tuition has a negative, significant impact on academic performance. They attribute this to the overburdening of students, resulting in negative marginal utility from private tuition.

In some cases, private tuition uptake might not affect academic performance, but higher expenditure on private tuition *conditional* on undertaking tuition may lead to increased academic performance. For instance, Gurun and Millimet (2008) find that, in Turkey, private tuition uptake has a negative effect on university placement while higher expenditure on tuition conditional on its uptake has a positive, significant impact on university placement. These results should, however, be interpreted with caution: treating expenditure on private tuition as exogenous is suspect because unobserved factors such as motivation and the child's ability can affect both private tuition uptake and academic performance, leading to endogeneity in the regression equation.

Such endogeneity can be controlled for either by conducting a randomized control trial or using other statistical techniques such as fixed-effects estimation using panel data or instrumental variable analysis. Most studies rely on the instrumental variable approach; commonly used instrumental variables include the tutoring fees charged in an area (Dang, 2007) and whether a child is firstborn (Kang, 2007). In the case of Vietnam, Dang finds that private tuition has a positive significant impact on reading ability but an insignificant impact on arithmetic test scores. Kang finds a similar result and uses parametric bounds to test the sensitivity of the findings. Again, these results should be interpreted with caution because they do not control for the type of private tuition undertaken (one-to-one or in larger classes). Different types of tuition can affect academic performance in different ways.

To our knowledge, no study to date has assessed the impact of private tuition on academic performance, particularly the learning gap between public and private schools in Punjab, while controlling for possible endogeneity. We seek to fill this gap by analyzing the determinants of private tuition and using the fixed-effects approach to quantify its impact on academic performance in rural Punjab.

### **3. Data and Descriptive Statistics**

This section describes and analyzes the dataset used.

### **3.1. Data**

The LEAPS survey provides a rich and unique dataset for the purposes of this study. It is a panel dataset collected for the years 2003, 2004, and 2005 and is unique in that it combines information from household surveys, school surveys, and tests scores for rural areas of Punjab. The LEAPS dataset spans three districts from distinct regions: Attock in northern Punjab, Faisalabad in central Punjab, and Rahimyar Khan in southern Punjab. Within these districts, 112 villages were randomly selected from a subset of villages that had a private school. It surveyed and tested approximately Grade 3 students in 2003 and followed them over time, testing them again in 2004 and 2005.

Our sample comprises children on whom information was available for all three years on test scores, and school-level and household-level characteristics. In 2003, 12,000 children were tested from a representative sample of 838 public and private schools. Based on the household survey data, we can gauge for each child his/her family's socioeconomic status, whether he/she undertook private tuition in a given year, the type of school he/she attends, parental literacy, health status, and parents' perceptions of various dimensions of their child's schooling, such as child quality (whether he/she is hardworking and intelligent) and the class teacher's level of absenteeism and teaching skills.

The school survey provides information on school-level variables for the child's school, in particular student-teacher ratios (STRs), teacher absenteeism, and the provision of basic infrastructure and amenities. The LEAPS data gauges educational achievement by testing students in three subjects: mathematics, Urdu, and English. The results are then evaluated using item response theory and standardized to give z-scores.

On the supply-side investigation of the private tuition market, the survey's unit of analysis is the teacher. In the descriptive analysis, we find that private tuition is mainly provided by mainstream schoolteachers. Using the data on whether or not a teacher provides private tuition (available from the school survey), we develop a detailed profile of who supplies these private tuition classes in rural Punjab. The variables available in the teacher roster include the type of school the teachers teach at, their monthly earnings from teaching, years of teaching experience, nature of contract (relevant for public school teachers), incentive structure, and other characteristics (gender, marital status).

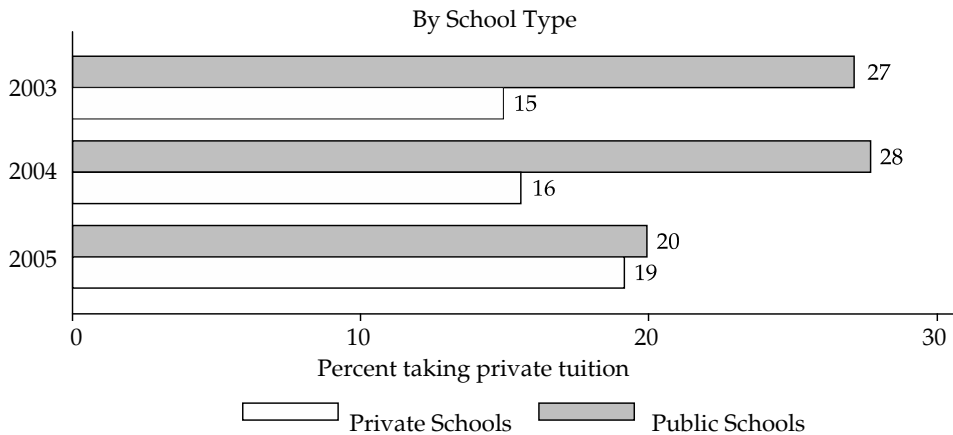
### 3.2. Descriptive Statistics

#### 3.2.1. The Demand Side

This section provides an insight into the dynamics of the demand for private tuition. The incidence of private tuition is higher among private school children compared to those enrolled in public schools. However, this changes in our sample over time: in 2003, 27 percent of private school students and 15 percent of public school students were undertaking private tuition; in 2005, the corresponding figures had changed to 20 percent for private school students and 19 percent for public schools students (see Figure 1). However, this could also be because of the changing public-private school composition in our sample. Figure 2 shows the relationship between private to public school switching and private tuition uptake.

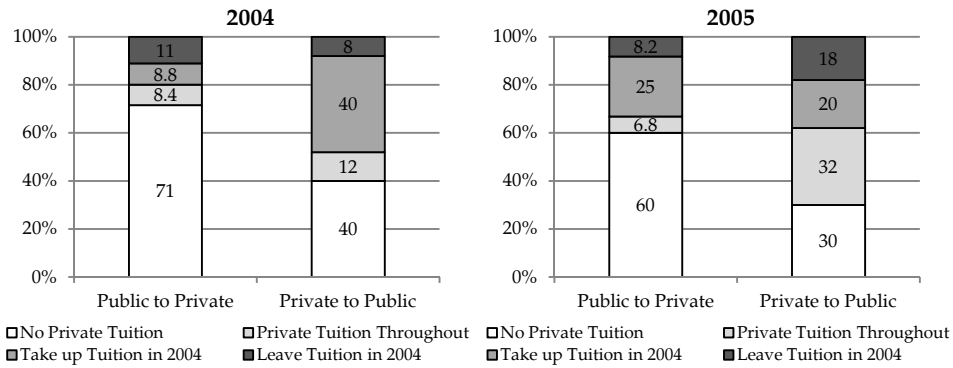
Most students that shifted from public to private schools during the period of analysis did not report undertaking private tuition (71 percent in 2004 and 60 percent in 2005). Students who switched from private to public schools, on the other hand, were either already engaged in private tuition (32 percent in 2005) or started once they had shifted to public schools (40 percent in 2004 and 20 percent in 2005). This implies that students who shift from private to public schools supplement any consequent loss in learning (due to the perceived lower quality of public schooling) by taking up private tuition.

**Figure 1: Private tuition incidence over time**



Source: LEAPS Data 2003 - 2005

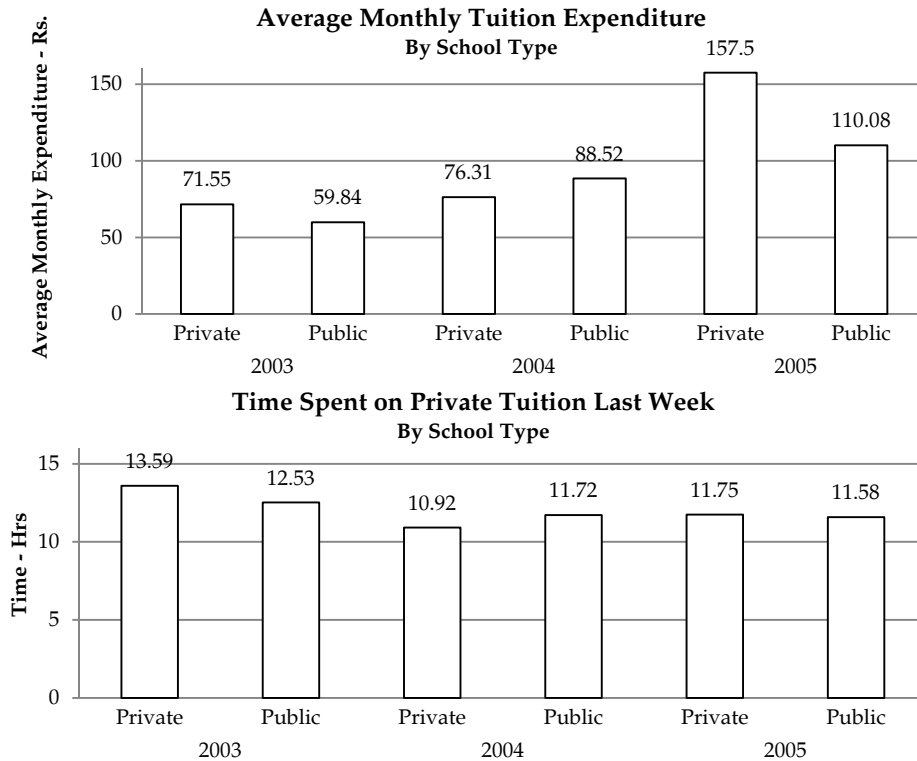
**Figure 2: Private tuition uptake and school switchers**



Source: LEAPS Data 2003 - 2005

Conditional on engaging in private tuition, the expenditure on such classes is not significantly different for private and public school students in 2003 and 2004 (see Figure 3). However, in 2005, there is a statistically significant difference between public and private school students' expenditure on tuition classes conditional on undertaking tuition.<sup>1</sup> This suggests that, even though the difference in the incidence of private tuition between public and private schools decreased in 2005, there might be a difference in the quality of the private tuition (as indicated by its cost) undertaken by these two categories of students. The average time in a week spent on private tuition, on the other hand, remains comparable across school type and over time, with students spending approximately 12 hours on average engaged in tuition classes each week.

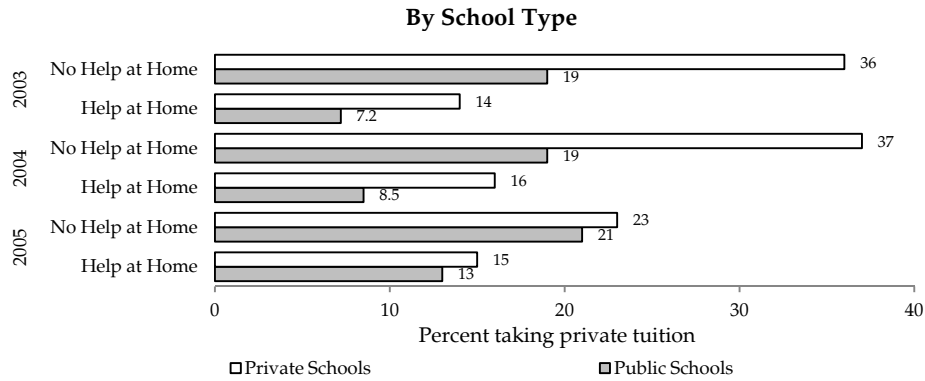
<sup>1</sup> Figure 3 shows the expenditure figures, but the results of the t-test are not given due to space constraints.

**Figure 3: Monthly expenditure and weekly time spent on private tuition**

Source: LEAPS Data 2003 - 2005

Not surprisingly, we find that private tuition is sought less when the child is receiving help at home. The uptake of private tuition is approximately 10 percent lower for public school students who receive help with their schoolwork at home, and approximately 20 percent lower for private school students who receive help at home (see Figure 4). This difference remains steady over time.

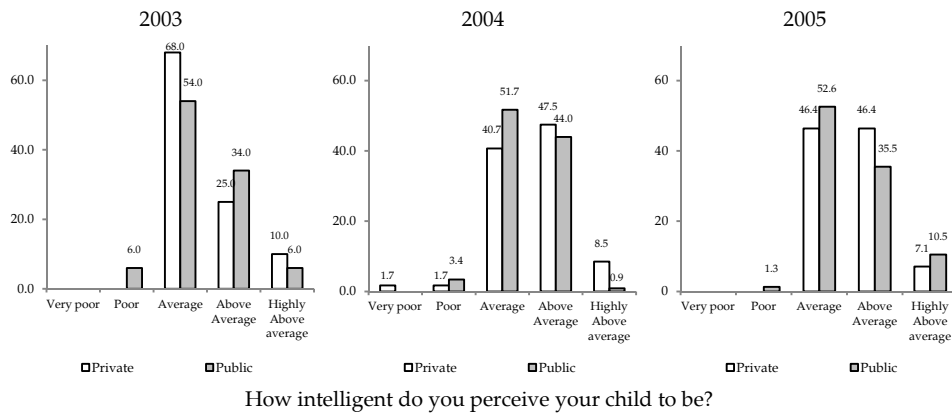
**Figure 4: Help received at home and private tuition uptake**



Source: LEAPS Data 2003 - 2005

Interestingly, the distribution of private tuition for both types of schools is skewed toward students who are perceived by their parents to have average or above-average intelligence (see Figure 5). This trend holds over time, suggesting that private tuition is not a form of remedial education; rather, it is sought by parents to supplement the performance of children whom they perceive as capable of doing well.

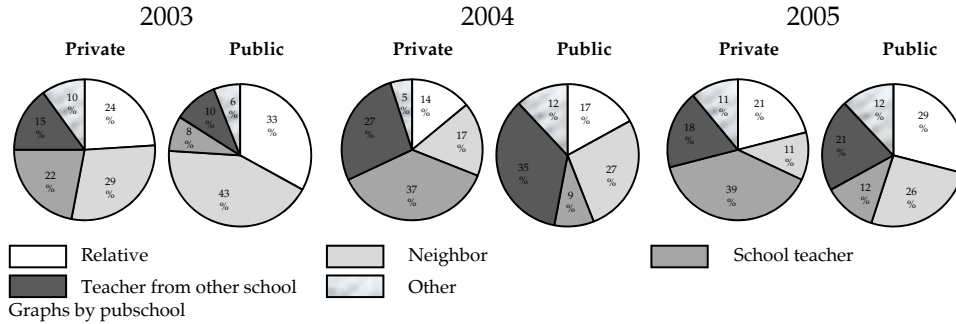
**Figure 5: Distribution of tutees by perceived intelligence**



Source: LEAPS Data 2003 - 2005

Last, we look at who these tutors are. Figure 6 shows the distribution of private tutors to public and private school students. In both cases, private tuition is provided mainly by mainstream teachers, with this trend increasing over time. In private schools, most of these teachers belong to the student’s own school; in public schools, they tend to be from other schools.

**Figure 6: Who provides private tuition?**



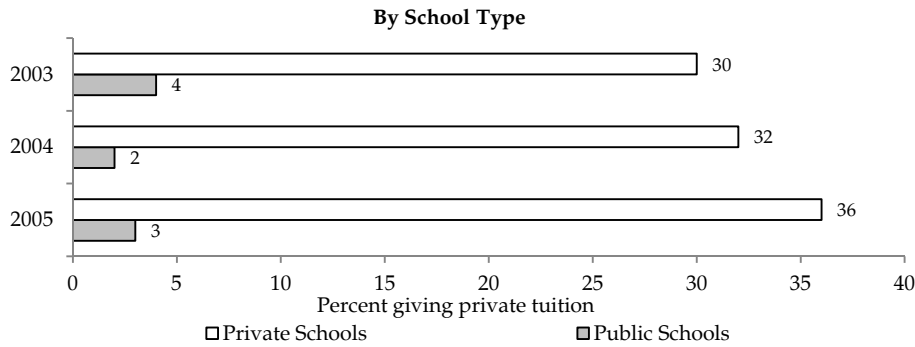
Source: LEAPS Data 2003 - 2005

3.2.2. The Supply Side

In the analysis of private tuition, it is also critical to investigate the factors determining its supply. As shown above, schoolteachers are the main providers of private tuition. This section reports descriptive statistics on these mainstream teachers, providing a comprehensive profile of those who decide to engage in the private tuition market.

Figure 7 shows that private school teachers engage in private tuition far more than their public school counterparts, with this difference increasing over time. This, taken in conjunction with the above result, suggests that private school students generally undertake tuition from their own teachers whereas public school students engage private school teachers. This leads to the concern that these private school teachers may be shirking their duties during formal school hours, forcing their students to take extra classes with them after school.

**Figure 7: Private tuition incidence over time**

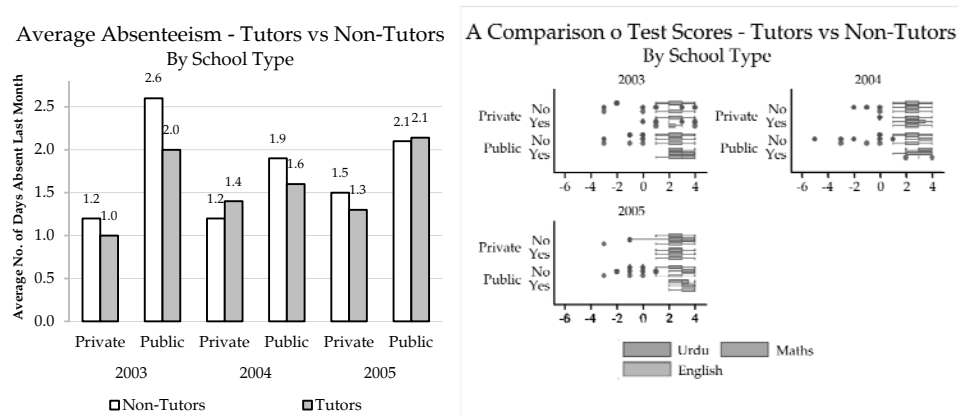


Source: LEAPS Data 2003 - 2005



To test this, we compare the mean levels of absenteeism and knowledge scores of tutors and nontutors. These variables measure the observable levels of effort and teacher quality. Figure 8 shows no significant difference in levels of absenteeism and knowledge scores between tutors and nontutors in both types of schools. T-tests performed on these variables over time for both types of schools, support this finding.<sup>2</sup>

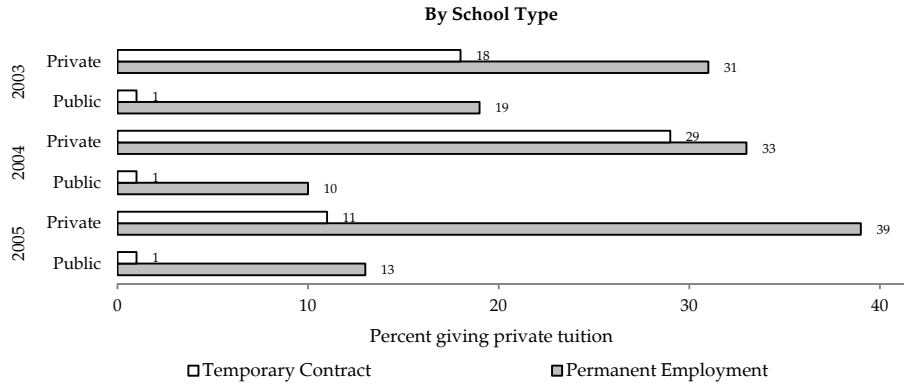
**Figure 8: Absenteeism and test scores**



Source: LEAPS Data 2003 - 2005

If not teacher quality, then what explains why some teachers opt to supply private tuition and not others? To investigate this, we compare the nature of employment of tutors and nontutors across school types. Figure 9 shows that teachers with nonpermanent contracts (and hence lower salaries and less job security) are more inclined to provide private tuition than those with permanent contracts. This result, taken together with the finding that a higher proportion of private school teachers provide private tuition (given that they earn less than public school teachers), suggests that low salaries could be why these teachers engage in the private tuition market. Tuition classes are a means to supplement their income from mainstream teaching.

<sup>2</sup> The results of the t-tests are not given due to space constraints.

**Figure 9: Supply of private tuition by employment status**

Source: LEAPS Data 2003 - 2005

#### 4. Empirical Strategy

The descriptive analysis gives a good picture of the incidence of private tuition in Pakistan and its composition. However, in order to isolate its demand and supply determinants and assess its impact on academic performance, we need to carry out a regression analysis. We estimate three regression models: demand- and supply-side random-effects models for the determinants of private tuition and a fixed-effects probit model for the impact of private tuition on academic performance, estimated separately for public and private schools.

##### 4.1. Determinants of Private Tuition

The following model estimates the **demand-side determinants** of private tuition:

$$P_{it} = \beta_0 + \beta_1 \text{pubschool}_{it} + \beta_2 \text{hhldwealth}_{it} + \beta_3 \text{age}_{it} + \beta_4 \text{age}_{it}^2 + \beta_5 \text{female}_i + \beta_6 \text{helpathome}_{it} + \beta_7 X_i + \beta_8 W_j + \alpha_i + \varepsilon_{it} \quad (1)$$

$P_i$  is a binary variable measuring the incidence of private tuition;  $P_i$  is equal to 1 if the child undertakes private tuition and 0 otherwise. Here, private tuition is defined as paid after-school classes, and is not restricted to any one type of tuition class (one-to-one, tuition academies, etc.) nor to a particular type of provider (mainstream teacher, village elder, neighbor, etc.). The independent variables include *pubschool* (a binary variable equal to 1 if the child attends public school and 0 otherwise), *hhldwealth* (principal components analysis [PCA] wealth index), *age*, *age*<sup>2</sup>, *female* (a binary

variable equal to 1 if the child is female), and *helpathome* (a binary variable equal to 1 if the child receives help with his/her schoolwork at home).

The household wealth index is calculated using the LEAPS methodology and is based on household assets rather than income or consumption (Andrabi et al., 2007).<sup>3</sup> The variables  $X_i$  and  $W_i$  are vectors containing other child-level and school-level variables, respectively. The child-level variables include the child's height measured in standard deviations from the mean height for that child's age group (used as a measure of the child's health), class, and parents' perception of the child's intelligence. The two school-level variables measure school quality: the STR and a basic infrastructure index.<sup>4</sup> These allow us to estimate whether poor-quality formal schooling leads to the uptake of private tuition.

The panel nature of the LEAPS data allows us to estimate the above model using random effects to account for any unobserved, time-invariant, child-level characteristics ( $\alpha_i$ ) that might affect private tuition uptake. We use a random-effects rather than fixed-effects model as we are interested in looking at child-level characteristics that affect private tuition but that might not vary considerably over time, such as the child's gender, household wealth, etc. Fixed-effects estimators absorb these characteristics in the constant term whereas random-effects estimators allow us to account for these time-invariant characteristics. Moreover, using random effects also allows the inferences of the model to be generalized beyond the sample used for the estimation (Wooldridge, 2002).

A random-effects estimator makes the stronger assumption that the unobserved omitted variables are not correlated with the independent variables in the regression equation, and that the independent variables are strictly exogenous, i.e.:

$$E(x_{it}u_{is}) = 0 \text{ for } s = 1, 2, \dots, t$$

Under these conditions, the random-effects estimator is both consistent and efficient. A Breusch-Pagan test conducted to test the existence of random effects confirms their presence. As the random-effects model allows us to account for individual heterogeneity while estimating

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<sup>3</sup> PCA is used to construct the asset index, and includes assets owned by the household.

<sup>4</sup> Following Andrabi et al.'s (2007) methodology, the basic infrastructure index is calculated using PCA and measures the number of desks per student, classrooms per student, toilets per student, and the total number of blackboards a school contains. Higher values of the index correspond to better infrastructure.

the impact of time-invariant, individual-level characteristics on private tuition attendance, we fit a random-effects probit model to estimate equation (1). The marginal effects and post-estimation predicted probabilities are then calculated to quantify the magnitude of the impact of the variables of interest on tuition uptake. Village fixed effects and time fixed effects are also accounted for in the model. As a robustness check, the model is re-estimated using a logit model and pooled OLS framework.<sup>5</sup>

The following model estimates the supply-side determinants of private tuition:

$$GP_{it} = \beta_0 + \beta_1 pbschool_{it} + \beta_2 lsalary_{it} + \beta_3 age_{it} + \beta_4 age_{it}^2 + \beta_5 absenteeism_{it} + \beta_6 experience_{it} + \beta_7 contract_{it} + \beta_8 localteach_{it} + \beta_9 decisionmaking_{it} + \beta_{10} X_i + \alpha_i + \varepsilon_i \quad (2)$$

This model measures the supply of private tuition provided by mainstream teachers and not by other tuition providers, such as village elders or relatives. It does not, however, distinguish between the types of tuition provided. The dependent variable is *GP*, a dummy variable measuring whether a teacher provides private tuition. The controls included are *pbschool* (a binary variable measuring whether the teacher teaches at a public school), *lsalary* (the log of the monthly salary earned by the teacher from his/her regular school), *age*, *age*<sup>2</sup>, *absenteeism* (measures the number of days the teacher was absent in the last month), *experience* (years of experience as a teacher), *contract* (a binary variable measuring whether the teacher is a contract teacher or a permanent teacher), *localteach* (a binary variable measuring whether the teacher lives in the same village in which he/she teaches), and *decisionmaking* (measures whether the teacher has decision-making power over teaching style and curriculum).  $X_i$  is a vector containing other teacher characteristics, such as the teacher's gender and marital status.

For the reasons cited above, we apply a random-effects probit model to the teacher data panel to estimate equation (2), and then estimate the marginal effects to quantify the impact of these variables on the decision to offer private tuition. Village fixed effects and time effects are controlled for in the model, and robustness checks are conducted by estimating a logit and pooled OLS model.

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<sup>5</sup> Results not reported due to space constraints.

#### 4.2. Impact of Private Tuition on Academic Performance

We determine the impact of private tuition on academic performance by examining individuals who switched between undertaking tuition and not undertaking tuition over the three rounds of the survey. In order not to confound the impact of private tuition with that of students switching between public and private schools, we estimate the following three equations separately for public and private school students:

$$\text{Engscore} = \beta_0 + \beta_2 P_{it} + \beta_3 X_{it} + \beta_4 W_{it} + \alpha_i + \varepsilon_{it} \quad (3)$$

$$\text{Urdu score} = \beta_0 + \beta_2 P_{it} + \beta_3 X_{it} + \beta_4 W_{it} + \alpha_i + \varepsilon_{it} \quad (4)$$

$$\text{Mathscore} = \beta_0 + \beta_2 P_{it} + \beta_3 X_{it} + \beta_4 W_{it} + \alpha_i + \varepsilon_{it} \quad (5)$$

In the above equations, the dependent variables are the test score theta values computed from the LEAPS English, Urdu, and mathematics tests, respectively.<sup>6</sup> The independent variable of interest,  $P_{it}$ , is a dummy variable measuring whether a student undertakes private tuition. The other independent variables include child-level, household-level ( $X_i$ ), and school-level ( $W_i$ ) time-variant characteristics that might affect academic performance, such as whether the child receives help with his/her schoolwork at home, parents' perception of the child's intelligence, household wealth index, the STR in the child's school, and the infrastructure index for the school.

A fixed-effects model is fitted to account for unobserved individual characteristics, such as student motivation and ability, which might affect both learning outcomes and the demand for private tuition, making private tuition endogenous in the regression equation (Gurun & Millimet, 2008). The fixed-effects estimator allows us to assess the within-individual impact of undertaking private tuition in a gains formulation.

In our sample, approximately 22 percent of students switched between undertaking and not undertaking private tuition in 2004, and 32 percent switched between these categories in 2005. One way to assess whether private tuition has an impact on the learning gap between private and public schools would be to include a variable measuring both public school attendance and tuition attendance in the regression equation. In

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<sup>6</sup> Theta values were computed in the LEAPS data using item response theory and following international testing protocols. These theta values correctly account for the different difficulties of test questions in computing an overall score (Andrabi et al., 2007, pp. xiv).

such a formulation, if the coefficient of the public school dummy becomes insignificant when private tuition is controlled for, one would conclude that private tuition explains much of the learning gap between public and private schools.

However, private tuition uptake and private school attendance in our data is highly correlated, so controlling for both would inevitably lead to one or the other variable becoming insignificant. Instead, we run separate fixed-effects regressions for private and public school attendees. We look only at those students who did not shift between schools during the period of analysis to ensure that the impact on academic performance is not confounded by school-switching behavior. The results imply that, if a private school student who takes up private tuition in a given year gains more from this tuition than his/her public school counterpart, then at the baseline public and private schools are equal in terms of academic performance and it is the additional year of private tuition that has led to the learning gap between the two groups.

## 5. Results

This section discusses the results obtained from our model.

### 5.1. Determinants of Private Tuition

#### 5.1.1. The Demand Side

Table A1 in the Annex gives the demand-side determinants of the incidence of private tuition. The results largely confirm the findings of our descriptive analysis. As shown, public school students are less likely to engage in private tuition than their private school counterparts, even after controlling for child-level and household-level characteristics. The average marginal effect of switching from a private to public school for the same individual and across individuals is  $-0.317$ .

The predicted probability of a public school student undertaking private tuition (keeping all the other variables at their mean value) is 15.7 percent, whereas it is 36.2 percent for private school students. Moreover, whether a child receives help at home with his/her schoolwork significantly decreases the child's likelihood of undertaking private tuition: those receiving help at home have a predicted probability of 15.4 percent and those not receiving help at home have a predicted probability of 36 percent. The average marginal effect of getting help at home for the same individual and across individuals is  $-0.802$ .

Schooling quality also affects private tuition uptake, but not in the direction one would expect. According to the random effects analysis, attending a school with a high STR leads to a higher probability of undertaking private tuition. This suggests that students supplement formal schooling with private tuition rather than using it as a substitute for poor-quality schooling.

Gender and household wealth do not seem to have an impact on the demand for private tuition. This implies that there is no gender bias in tuition demand and that there are no equity issues involved in terms of access to paid tuition classes. However, we should make these inferences with caution, having specified neither the type of tuition undertaken (whether one-to-one classes or in a larger academy setting) nor the tuition provider (neighbors or mainstream teachers, etc.). The type of tuition class as well as the type of tutor has implications for the quality of tuition provided. It could be that students from a lower socioeconomic background attend lower-quality tuition classes offered by a neighbor or relative, which may have fewer benefits in terms of academic performance. Further investigation is needed to address this issue.

### 5.1.2. *The Supply Side*

Table A2 in the Annex gives the results of the random-effects estimation for the supply-side determinants of private tuition. The average marginal effect of teaching at a public school for the same individual and across individuals is  $-1.539$ . This implies that private school teachers have a higher probability of offering private tuition than teachers in public schools. This is also evident from the descriptive analysis. Further, being a contract teacher positively affects the decision to provide private tuition. Studies show that contract teachers are paid a quarter of the salary paid to permanent teachers (Aslam, 2003; Das & Bau, 2011), making it likely that these teachers supplement the meager income earned through mainstream schooling by engaging in the private tuition market.

A gender difference is also seen in the tutor labor market. Male teachers have a higher probability of providing private tuition than their female counterparts. In terms of teacher autonomy at school, the coefficient of the dummy variable measuring average autonomy in school is positive and significant, indicating that teachers with an average level of autonomy in school have a higher probability of providing private tuition than those with below-average autonomy. However, having above-average and extremely high levels of autonomy in school have no significant effect on

the probability of providing tuition. In terms of teacher quality, as measured by teacher absenteeism and experience, there is no significant difference between tutors and nontutors. This indicates that the mainstream teachers who provide tuition do not shirk their duties during school hours to create the demand for their after-school tuition classes.

### ***5.2. Differential Impact of Private Tuition on Academic Performance for Public and Private School Students***

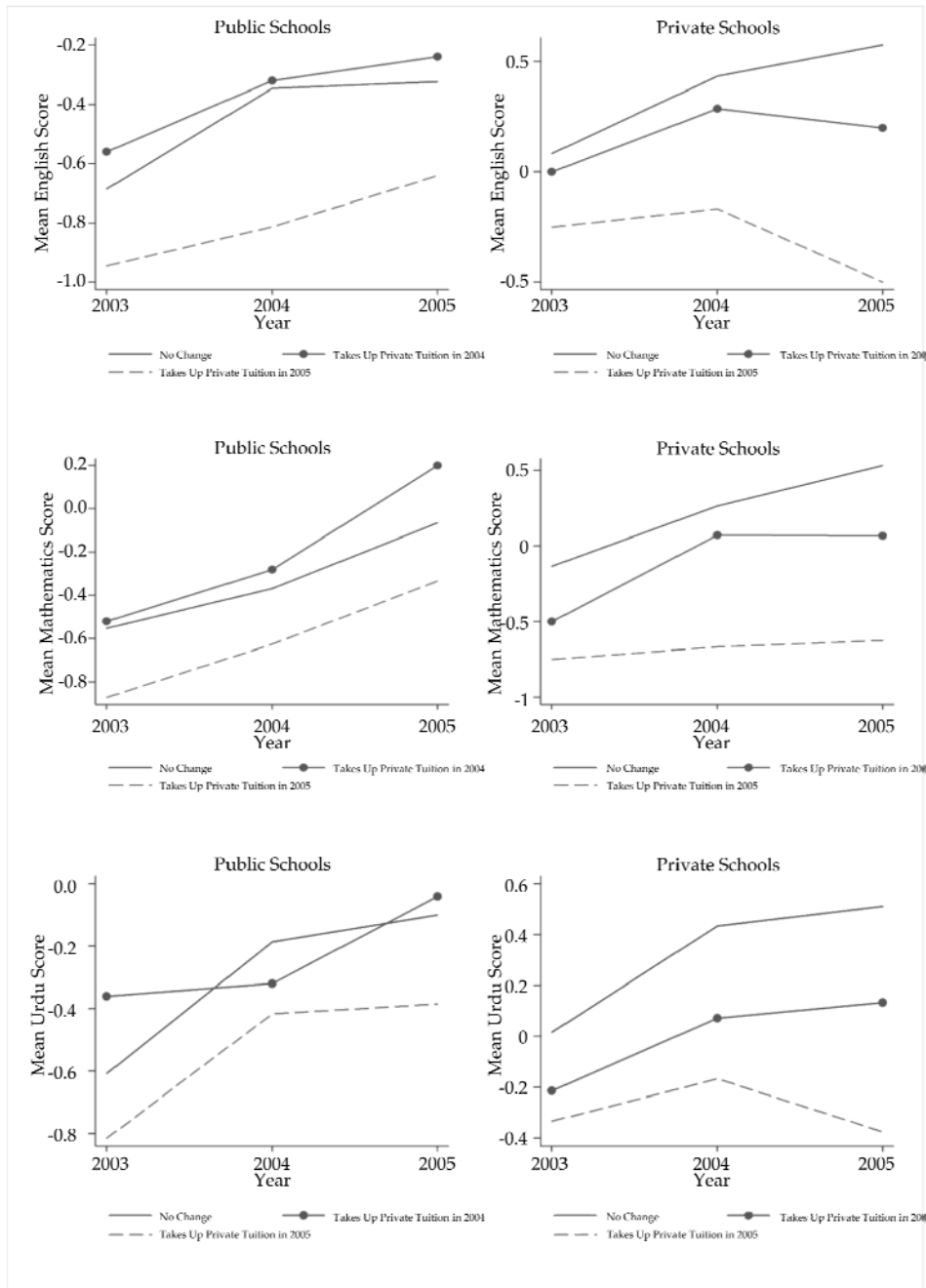
Before estimating the fixed-effects model, we perform a graphical analysis of the academic performance over time of switchers and nonswitchers. Figure 10 shows the trajectories of those students who stayed in public or private schools, respectively and (i) did not take up private tuition through the period of interest or (ii) took up private tuition in 2004, or (iii) took up private tuition in 2005.

The graphs show differing trajectories for public and private schoolchildren who took up private tuition during the period of analysis. In public schools, those students that took up private tuition in 2004 had higher test scores in 2003 than those who did not take up private tuition through the period of interest. In private schools, on the other hand, students who took up private tuition in 2004 started with lower test scores than those who did not take up private tuition in 2004.

This is in tandem with our analysis of the determinants of the demand for private tuition as it implies that, in public schools, students who are already performing well are more likely to take up private tuition to supplement their learning than weak students who take it up as remedial education. In private schools, which have a more competitive environment, students falling behind their peers may opt for private tuition as a form of remedial education. Students who take up private tuition in Grade 4 (2005) generally start with lower test scores than their counterparts both in private and public schools. For public schools, this indicates that consistently low-performing students (near Grade 5) about to sit the Punjab Examination Commission exam take up private tuition to supplement their formal schooling and perform as well as their peers in the exam.



**Figure 10: Achievement over time for children who changed private tuition attendance**



Source: LEAPS Data 2003 - 2005

The slopes of the lines indicate a positive gain in academic performance for public school students who took up private tuition in 2004. Although test scores seem to rise over time even for those students who did not take up private tuition in any period, those who took up private tuition in 2004 face a starker rise, especially in 2005, suggesting positive gains from tuition that are realized with time. This is not the case for private school students, suggesting that private tuition has little impact on their academic performance. Further, both public and private school students who took up private tuition in 2005 gained little in terms of academic performance; private tuition even had a negative effect on the latter. However, this could be because the gains from tuition classes take time to be realized and, as the students were tested during half-term, they might not have fully realized these gains.

Thus, Figure 10 provides preliminary evidence for the gains from private tuition for public school students. However, unobserved factors affecting both academic performance and private tuition uptake can confound the results above. To control for this, we estimate a fixed-effects model, the results for which are given in Table A3 in the Annex. For a given public school student, private tuition has a positive significant impact on the student's mathematics and Urdu test scores and an insignificant impact on his/her English test score.

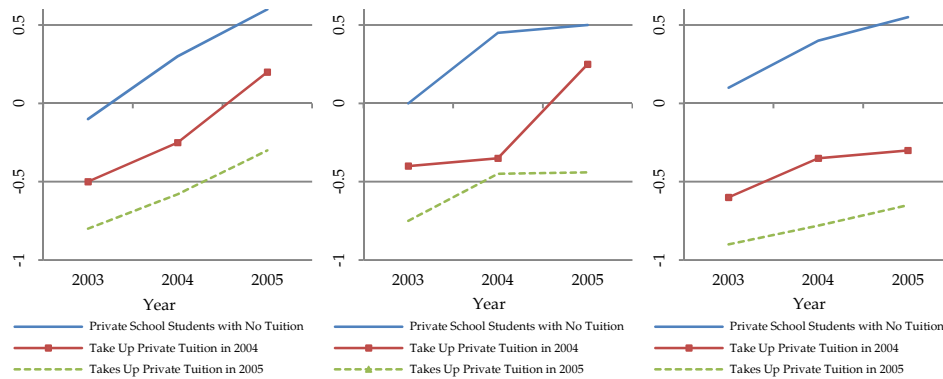
For a given private school student, the model yields the opposite result: private tuition uptake has a positive significant effect on the English test score and an insignificant effect on both the mathematics and Urdu test scores. Thus, for mathematics and Urdu, the learning gap between public and private school students remains even after accounting for private tuition since it does not significantly affect private school students' performance. This gap could, however, be bridged by providing tuition to public school students as these students gain significantly from such extra classes.

On the other hand, private tuition accounts for much of the learning gap between private and public schools in English test scores as private school students benefit significantly from private tuition while public school students do not. This is an interesting finding as the largest learning gap between public and private schools is in English (approximately 1.5 times more than in other subjects) (Das et al., 2006). This implies that, as private school students engage significantly more in private tuition than public school students, the gap might be considerably reduced once tuition is accounted for.

Since the regression does not account for which subject the student is being tutored in, it could be that private school students take up tuition specifically in English whereas public schools students do not. Private schools tend to be English-medium schools and, prior to 2011 (and thus during the period of study), all public schools were Urdu-medium. It is, therefore, highly plausible that this is the case since students might well need extra help to understand a curriculum delivered in English in private schools.

Figure 11 provides further evidence that private tuition uptake can serve to reduce the learning gap between public and private school students in mathematics and Urdu but not in English. Again, we consider only those students who did not switch between schools during the period of study. The red line maps the learning outcomes of private school students over time, the blue line shows the learning outcomes of public school students who started private tuition in 2004, and the green line shows the learning outcomes of public school students who started private tuition in 2005.

**Figure 11: Learning gaps between private and public schools**



## 6. Discussion and Concluding Remarks

This study has established the strong presence of a third education sector in Pakistan: shadow education. Given that the data used is restricted to primary students in certain rural districts of Punjab, the prevalence of this sector is likely to have been underestimated as anecdotal evidence suggests a higher incidence of private tuition in urban areas and at secondary and upper levels of schooling (Aslam & Mansoor, 2011). Overall, we find that the private tuition market is dominated by the private

education sector: not only are private school students more likely to take up private tuition, private school teachers are also more likely to provide it.

As receiving help at home is negatively correlated with the demand for private tuition, the latter is also perceived as a substitute for parental help. This could be because parents do not have either the time or the knowledge to help their children and, hence, prefer to invest in private tuition instead. Private tuition is not seen as a form of remedial education, at least in public schools, where it is more common among high-performing students to supplement their learning. Further, it supplements quality formal schooling. This is indicated by the result that private school students (private schools being considered of a higher quality than public schools) have a higher probability of taking up private tuition; as the quality of the school rises (as measured by its STR), so does the probability of its students taking up private tuition.

On the supply side, private school teachers have a higher probability of providing private tuition than public school teachers. Contract teachers also have a higher probability of offering private tuition than permanent teachers. Given that both contract and private school teachers earn less than their public school counterparts, an opportunity to earn additional income could be what drives these teachers to engage in the private tuition market.

As shown in Section 3, a higher proportion of students take up private tuition with their own teachers at private schools, and from teachers at other schools in public schools. This could mean either that teachers at private schools do not deliver the expected level of effort in class, forcing their students to take up private tuition, or that these teachers deliver the same level of effort in class as those who do not provide private tuition and that after-school tuition simply complements the learning received during school hours.

We find evidence to support the latter claim as tutors and nontutors are not significantly different in terms of observable measures of teacher in-school performance. This suggests that tuition complements rather than substitutes for in-school learning and that banning private tuition will not increase the learning achieved during school hours but instead lead to a welfare loss as students will not benefit from the value addition that such classes give their academic performance.

Our panel estimation provides significant evidence to support the claim that learning gaps between public and private schools cannot be attributed wholly to higher tuition incidence among private school students since private tuition does not add significant value to their in-school learning. However, such classes do add value for public school students and a combination of private tuition and public schooling might, therefore, help close the learning gap between public and private schools.

The main policy implication of this study is that the private tuition market should be regulated and made accessible to public school students, who would benefit most from such classes, allowing them to catch up with their private school counterparts. Further, since we have established that private tuition does not affect the in-class performance of mainstream teachers, banning it would not enhance welfare but lead to a net welfare loss instead. However, we need to keep in mind that we have not controlled for the different types of private tuition ranging from one-to-one sessions to larger classes at tuition academies. Whether one type is better than another and whether a certain type is driving the positive effects of private tuition, are questions that are left for future research.

Finally, this study has accounted only for primary school students, and the private tuition market dynamics may be considerably different for higher classes where such tuition is more prevalent. These dynamics need to be considered to effectively capture the demand and supply determinants of private tuition as well as to fully gauge the impact of tuition on academic performance. Evidence on the nature of private tuition needs to be explored to fully understand this rapidly growing third sector of education and to develop an appropriate policy toward it. This study is a step toward understanding the private tuition phenomenon and contributes to the literature by providing novel evidence on the workings of the private tuition market and its effect on public and private school dynamics.

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*Annex***Table A1: Determinants of the demand for private tuition**

	(1)	(2)
	Private tuition	Insig2u
child_female	-0.0629 (0.115)	
class	-0.0252 (0.142)	
age	0.117 (0.260)	
age <sup>2</sup>	-0.00872 (0.0123)	
helppathome	-0.802*** (0.126)	
_Iperceived_2	-0.692 (1.035)	
_Iperceived_3	-0.276 (1.011)	
_Iperceived_4	-0.277 (1.012)	
_Iperceived_5	-0.629 (1.032)	
ch2_heightscore	-0.0206 (0.0352)	
pubschool	-0.317** (0.143)	
STR	-0.00499* (0.00281)	
basicinfindex	0.0456 (0.0747)	
hhldwealth	0.0249 (0.0398)	
Constant	-0.789 (1.730)	-1.465*** (0.528)
Observations	1,574	1,574
Number of childcode	718	718

**Notes:** Time effects and village fixed effects not included to save space. Marginal effects; robust standard errors in parentheses. \*\*\* =  $p < 0.01$ , \*\* =  $p < 0.05$ , \* =  $p < 0.1$ .

**Source:** Authors' estimation using LEAPS data (2003–05).

**Table 2: Determinants of the supply of private tuition**

	(1) Give tuition	(2) Insig2u
experience	-0.0195 (0.0377)	
male	1.109*** (0.356)	
pubschool	-1.539*** (0.515)	
lsalary	-0.527 (0.333)	
contract	1.815*** (0.427)	
married	0.177 (0.369)	
age	-0.158 (0.103)	
agesq	0.000819 (0.00150)	
localteach	-0.472 (0.296)	
_Idecisionm_2	-0.437* (0.259)	
_Idecisionm_3	-0.317 (0.455)	
_Idecisionm_4	-0.492 (0.476)	
absenteeism	0.0264 (0.0540)	
Constant	3.469 (2.931)	1.219*** (0.358)
Observations	2,344	2,344
Number of teachercode	1,470	1,470

**Note:** Time effects and village fixed effects not included to save space. Marginal effects; robust standard errors in parentheses. \*\*\* =  $p < 0.01$ , \*\* =  $p < 0.05$ , \* =  $p < 0.1$ .

**Source:** Authors' estimation using LEAPS data (2003–05).

**Table 3: Impact of private tuition on academic performance: Fixed-effects estimation**

	(1) UrduScore	(2) EnglishScore	(3) MathsScore
<b>Public schools</b>			
Private tuition	361.9* (186.4)	-111.4 (175.7)	334.8* (189.6)
Constant	-481.2** (230.9)	-408.0* (244.0)	-280.0 (256.8)
Observations	1,146	1,146	1,146
R-squared	0.115	0.086	0.106
Number of childcode	551	551	551
<b>Private schools</b>			
Private tuition	-38.76 (249.3)	348.8* (201.7)	192.6 (232.1)
Constant	-750.3** (293.7)	-749.0** (308.0)	-436.8* (255.5)
Observations	431	431	431
R-squared	0.199	0.138	0.220
Number of childcode	215	215	215

**Note:** Other independent variables suppressed (including time effects).

Robust standard errors in parentheses (clustered at the village level).

\*\*\* =  $p < 0.01$ , \*\* =  $p < 0.05$ , \* =  $p < 0.1$ .

**Source:** Authors' estimation using LEAPS data (2003–05).

## **Measuring the Differential Economic Impact of Education across Income Groups and Provinces in Pakistan: A Model-Consistent Approach**

**Fahd Rehman\* and Russel J. Cooper\*\***

### **Abstract**

*Engel's Law states that the share of food in household expenditure declines with households' total expenditure—a regularity that is clearly evident in Pakistani household income and expenditure data. This study uses an "Engel curve" to incorporate additional social effects—including the impact of education on welfare—to infer the differential impact of education on measures of household wellbeing across income groups and provinces. Our Engel curve specifications close the gap between economic theory and empirical applications critical to evaluating the effects of education on economic wellbeing. The results show that net primary and matriculation education enrolment ratios can bring about a significant improvement in people's welfare. Accordingly, there is a need to specifically redirect resources to Balochistan where access to educational opportunities is rather low; and to increase access to such opportunities in Sindh and Khyber Pakhtunkhwa. Data for the period 2008–11 shows that households in the two lowest income groups are worst off in terms of access to educational opportunities. Efforts should thus be stepped up to enhance their access to educational opportunities at the primary and matriculation levels. The study's predictions are intended to guide policymakers in terms of where to concentrate their efforts and reduce economic distortions, and move the economy onto a sustainable path in the long run.*

**Keywords:** Modified Almost Ideal Demand System, Pakistan, education, hedonic prices.

**JEL classification:** P24, I131.

### **1. Introduction**

Improvements in education indicators are central to economic development as people pay a great deal of attention to their families'

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education. Schultz (1988) shows that additional years of schooling have strong effects on an individual's enhanced earnings, and education has prime importance in sustaining income growth. Sen (1999) argues that better educated people are efficient producers and more likely to make informed choices. Bardhan and Udry (1999) hold that income inequality is the result of lack of attainment of education in poor countries. Considering the link between education and income, access to educational opportunities could prove a sound policy instrument for uplifting a beleaguered economy such as Pakistan.

Access to educational opportunities is pivotal to promoting the equitable distribution of resources among different groups in a society. One of the biggest challenges facing provincial governments in Pakistan is their inability to redirect resources to provide even coverage and access to educational opportunities to a large population (United Nations Development Programme, 2011a, 2011b). The lack of access to educational opportunities and the scarcity of existing resources in the context of a developing country such as Pakistan call for a proper diagnosis of the problem such that resources are redirected to improve people's wellbeing.

In studying these important issues, we apply econometric analysis to a model already well grounded in theory. This allows us to maximize the compatibility between our statistical estimation and the economic implications we draw. The literature that informs our research centers on the consumer demand system, especially studies that have estimated regular demand systems capable of providing the basis for robust economic analysis. Specifically, Barnett and Serlitis (2008) have conducted a survey of consumer choice in a static framework, and argue for the importance of global regularity in empirical demand systems. They also use an Engel curve in making welfare comparisons across different groups and determining the properties of demand systems. They point out that standard empirical demand systems do not provide an accurate picture of observed behavior across income groups, which can, however, be captured using an Engel curve. Additionally, Cooper and McLaren (1992) have developed a model known as the Modified Almost Ideal Demand System (MAIDS), which satisfies the global regularity condition and fits the Engel curve very well.

Much of the literature shows that there are often indirect effects as the economy benefits from growth and that these benefits pass through the circular flow of income. To capture and evaluate the full effects on household wellbeing, we use an indirect approach that measures

consumers' wellbeing by observing their spending patterns. We then link this to various factors that contribute to access to educational opportunities by constructing a *hedonic price* explanator; this index is used to estimate consumption behavior.

Specifically, we base our analysis of household behavior on a decision-making model driven by households' understanding of their real expenditure position, which we think of as their effective real expenditure position or their "true" standard of living defined within a utility-maximizing economic paradigm. The effective real expenditure position of a household is what drives its consumption behavior and, hence, underpins its Engel curve characteristics in our model. This effective real expenditure is defined as nominal expenditure divided by a household-specific price deflator that takes into account the impact of the household's educational level on the quality of its consumption prospects. This, in turn, introduces the level of education as an explanator of the "true" (quality-adjusted) prices faced by the household.

Engel's Law, an empirical regularity observed for around 200 years, states that the share of food in household expenditure declines with households' total expenditure (income). Technically, this means that the income elasticity of demand for food is less than unity. This phenomenon is the predicted outcome of an economic model based on individual consumers' (or households') rational attempts to maximize their economic welfare (or *utility*) subject to a budget constraint—provided that their preferences are specified as *nonhomothetic*, i.e., that their preferences are different at different levels of income. Household budget data enables us to estimate an Engel curve, which is a function describing how a consumer's purchase of a particular good changes with variations in his/her income.

What is the expected effect of an improvement in living standards on consumers' food budget shares? We hypothesize that this will lead to one of two effects in terms of the Engel curve representation of consumer behavior. If the change in standard of living is reflected in the data-based measures of total real expenditure, then the consumer effectively "slides" down the food Engel curve. This would then lead to an expected, observed reduction in the food expenditure share (in favor of a greater expenditure share on "luxuries" relative to the necessity, food).

On the other hand, if the improved living standard is not immediately reflected in verifiable income changes, we will still expect the same consumer behavior even though the real income change could not be

measured. In many cases, with data based on household expenditure surveys—particularly in developing countries such as Pakistan—reliable estimates of household income are not available, especially when economic activity takes place partly or wholly in the informal sector. We therefore need to allow for this scenario and be able to model the Engel curve for food as shifting downward with improvements in the standard of living.

To our knowledge, the development economics literature has not used the empirical regularity expressed in Engel's Law to infer measures of household wellbeing from observations on food budget shares or assessed the impact of access to educational opportunities on wellbeing in this context. The literature also fails to consider access to education as the ability to purchase things. Our study is thus a novel approach to measuring the impact of education on wellbeing by exploiting Engel's Law.

In the consumer demand literature, the application of MAIDS has been restricted mainly to individual household datasets. Here, however, we apply MAIDS to aggregate data to show that it is equally suitable for handling aggregate datasets. Another contribution of this approach is that it uses the available secondary sources with a limited amount of aggregate data to draw meaningful conclusions. Our approach makes a theoretical contribution because it combines several modern economic approaches in a manner not hitherto attempted. To our knowledge, no existing study that is fully consistent with theory combines hedonic pricing with consumer demand systems to deal with a situation where official differential prices are not available and to actually estimate and use differential effective prices.

The empirical regularity expressed in Engel's Law is clearly present in Pakistan's Household Integrated Economic Survey (HIES) datasets. However, it has not been used to infer measures of household wellbeing from observations on food budget shares; our paper addresses this gap. This is a model-consistent approach as we attempt to reduce the gap between economic theory and practice by carefully adapting the model after having studied the data and invoked the role of economic agents. In principle, our approach provides differentiated evaluations for citizens from different walks of life and who may live in different provinces. Determining the differential impact is critical to evaluating the impact of initiatives on the growth of a more cohesive and inclusive society.

Section 2 presents a theoretically consistent MAIDS model. Section 3 describes the data and statistics used. Section 4 estimates our MAIDS model and gives its results. Section 5 concludes the paper with policy recommendations and areas suggested for future research.



**2. A Theoretically Consistent MAIDS**

We represent household preferences by an indirect utility function of the form:

$$\left( M / \prod_{i=1}^N p_i^{\beta_i} \right) \ln \left( M / \prod_{i=1}^N p_i^{\alpha_i} \right) \tag{1}$$

where  $\sum_{i=1}^N \alpha_i = 1$ ,  $\sum_{i=1}^N \beta_i = 1$  and  $M$  represent total consumer expenditure, i.e.,  $M = \sum_{i=1}^N p_i q_i$ . Specification (1) is a special case of Cooper and McLaren’s (1992) model. Applying Roy’s Identity (see, for example, Barnett & Serlitis, 2008, for details) under the neoclassical static utility-maximizing paradigm implies a consumer demand system of the form:

$$s_i = \frac{\alpha_i + \beta_i \ln \left( M / \prod_{i=1}^N p_i^{\alpha_i} \right)}{1 + \ln \left( M / \prod_{i=1}^N p_i^{\alpha_i} \right)}, \quad i = 1, \dots, N \tag{2}$$

where  $s_i = p_i q_i / M$ , the share of product  $i$  in total expenditure  $M$ .

Estimating (2) completely requires nonlinear methods because of the presence of the explicit price index  $P_A \equiv \prod_{i=1}^N p_i^{\alpha_i}$  in both the numerator and denominator of the fractional specification for each product share. Given, however, the limited data available—and especially the little or no direct information on price variability across our observations—we propose some carefully constructed modifications to the above scheme to aid estimation in the context of our aggregative household data set.

First, noting the unavailability of observationally differentiated data on  $p_i$ , we employ a specially constructed price index for  $P_A$  in (2). Denoting this special index (described in Section 3) as  $P_S$ , our estimating form becomes:

$$s_i = \frac{\alpha_i + \beta_i \ln \left( M / P_S \right)}{1 + \ln \left( M / P_S \right)}, \quad i = 1, \dots, N \tag{3}$$

Second, provided that  $P_S$  is constructed from exogenous data prior to estimation, we can now rearrange (3) into a convenient linear estimation form by utilizing the following nonlinear transform for real expenditure:

$$Z = \frac{\ln(M / P_s)}{1 + \ln(M / P_s)} \quad (4)$$

Note that  $Z$  is bounded from above by unity. It is also possible to scale the data such that  $M$  and  $P_s$  are both normalized to unity either at or below the lowest real expenditure observation in the data. This means that  $Z$  can also be bounded from below by 0. Now, using (4), (3) can be rewritten as:

$$s_i = \alpha_i + \delta_i Z \text{ where } \delta_i = \beta_i - \alpha_i, i = 1, \dots, N \quad (5)$$

This gives a very straightforward simple linear regression specification for household demands for each product share. The original parameter restrictions  $\sum_{i=1}^N \alpha_i = 1$ ,  $\sum_{i=1}^N \beta_i = 1$ , which imposed linear homogeneity on the price indexes in the indirect utility function, show up empirically in (5) as the cross-equation restrictions  $\sum_{i=1}^N \alpha_i = 1$ ,  $\sum_{i=1}^N \delta_i = 0$ . However, as is well known for consumer demand systems, these restrictions need not be explicitly imposed but can be enforced simply by excluding one of the  $N$  equations in (5) from estimation.

Third, again in response to data availability, we concentrate on household demands for two simple aggregate items—food, on the one hand, and all other products on the other. Letting the subscript  $F$  denote food and the subscript  $R$  denote the remaining aggregative product, we can simplify (5) further to a two-equation system:

$$\begin{aligned} s_F &= \alpha_F + \delta_F Z & \text{where } \delta_F &= \beta_F - \alpha_F \\ s_R &= (1 - \alpha_F) - \delta_F Z \end{aligned} \quad (6)$$

Note that  $s_F$  and  $s_R$  fully represent all budget shares at this level of aggregation, and hence  $s_F + s_R = 1$ .

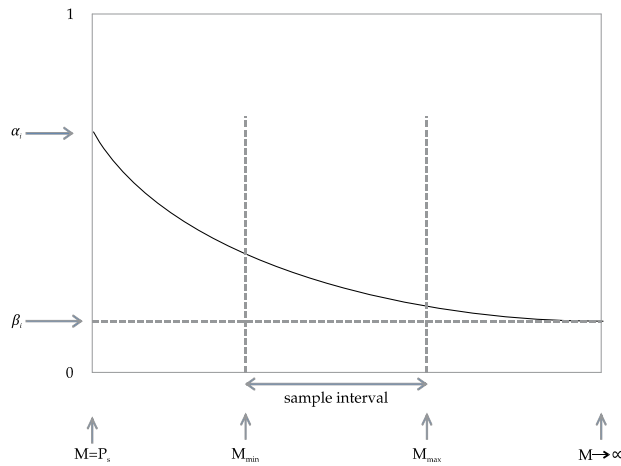
At this level of aggregation, food is a necessity. According to the well-established empirical validity of Engel's Law, we expect the share of food to fall as real income rises. Since we also expect real income to be monotonically related to our  $Z$  measure, we can interpret (6) as follows. The parameter  $\alpha_F$  represents the share of food in the budget for a very poor household—either the lowest real-income household in the sample if we normalize  $M / P_s$  to unity for this household, or an even poorer

household in principle if we normalize such that  $M / P_s > 1$  for the lowest income in the sample.

If one looks back to the system in (3), it is clear that  $\beta_i$  denotes the asymptotic share—the proportion of the budget spent on product  $i$  as income grows indefinitely. In terms of (6), Engel’s Law suggests that  $\beta_F < \alpha_F$ , so that the budget share of the necessity, i.e., food, falls as  $Z$  rises. Hence,  $\delta_F < 0$  for the food equation.

Figure 1 illustrates the Engel curve for food: in part (a), shown as a linear function of  $Z$ , and in part (b), shown as the equivalent nonlinear function of  $M$ .

**Figure 1: Share of food as a nonlinear function of  $M$**



Empirically, we estimate the Engel curve for food in the form of (5), using household expenditure survey data. Since food is a necessity, we expect the general shape of the Engel curve to be as illustrated in Figure 1. However, the question that arises is whether one food Engel curve will suffice to explain the behavior of all consumers. Essentially, we want to know whether we should be estimating a different Engel curve for a subclass of members of a consumer group if those subclass members have a different degree of access to educational opportunities. We also want to know whether the results differ across provinces.

We examine these issues by constructing a different measure of  $P_s$  depending on the degree of access that households have to educational

opportunities. A different value of  $P_s$  for two households with the same  $M$  would mean that they face different quality-adjusted prices, due to different educational opportunities. This would be represented in Figure 1a by two different points on the curve as  $Z$  differs between the households.

In terms of Figure 1b, such a difference in educational opportunities but not in nominal total expenditure would be represented by a shift in the curve. The initial point  $\alpha_F$  and the asymptotic final point  $\beta_F$  would not themselves change, and a "shift" in the case of Figure 1b needs to be understood as a change in the degree of curvature of the nonlinear function. The essential point though is that there is a different nonlinear curve of the type given in Figure 1b for households facing different educational opportunities. However, we can estimate all relevant parameters by the one linear relationship, given in Figure 1a.

### 3. Data and Descriptive Statistics

Our approach aims to provide a modeling structure that will aid informed policymaking with minimal resource requirements over the currently available data sources. For this reason, we concentrate on using household expenditure surveys, which are normally completed within a short time period to ensure that households face almost identical prices. We have, therefore, used pooled data from secondary sources such as the HIES and Pakistan Social and Living Standards Measurement (PSLM) surveys for the analysis. Both surveys are conducted under the aegis of the Pakistan Bureau of Statistics (PBS) and their questionnaire design, sampling techniques, data collection, data entry, table production, data analysis, report writing, and publication are thus consistent with each other.

We employ household expenditure data on average monthly consumption expenditure by commodity groups and quintiles for Pakistan both at an aggregate level<sup>1</sup> and further classified by province (Punjab, Sindh, Khyber Pakhtunkhwa [KP], and Balochistan). The data contains the basic background information for the Engel curves in a simple form as the share of food items in total expenditure falls with increases in income. The sample consists of 15,512 households with an average household size of 6.58 for 2007/08 across Pakistan. The average household size shows a decreasing trend from the first to the fifth quintile, indicating that the richest households are smaller than the middle-income and poor

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<sup>1</sup> Household consumption expenditure refers to all money expenditure by the household and individual members on goods intended for consumption and expenditure on services. It also includes the value of goods and services received "in kind" or "own-produced" that are consumed by the household.

households. The average household size varies across provinces and is 6.33, 6.50, 7.63, and 7.75 for Punjab, Sindh, KP, and Balochistan, respectively (PBS, 2009a).

The average household size is 6.38 across Pakistan for 2010/11; this shows a slight reduction in average size from 2008 to 2011. The sample consists of 16,341 households and the average household size varies across provinces—6.16, 6.39, 7.17, and 7.08 for Punjab, Sindh, KP, and Balochistan, respectively (PBS, 2011a). Again, the average household size across all the provinces is slightly smaller than for 2008.

We match this data against quintiles from PSLM survey for 2007/08 and 2010/11, using provincial and income quintiles. The first quintile contains individuals with the lowest consumption level, whereas the fifth quintile contains individuals with the highest consumption level. Similarly, the net primary<sup>2</sup> and net matriculation<sup>3</sup> level enrolment ratios are further classified by province and quintile (PBS, 2009b, 2011b). Combining the PSLM with the HIES, which are both useful datasets, enables us to differentiate the effective prices of quality-adjusted expenditures.

### **3.1. Key Educational Statistics and Pooled Data**

Table 1 presents the key educational statistics for all provinces for 2008 and 2011. On average, Punjab fares better than the other provinces in terms of net primary enrolment (NPE) and net matriculation enrolment (NME) ratios. Its NPE exceeds that of Sindh, KP, and Balochistan by 10, 12, and 20 percentage points, respectively, in 2008, and by 8, 10, and 14 percentage points in 2011. However, while Punjab's NPE indicators remain more or less constant over this period, the gap between Punjab, Sindh, KP, and Balochistan shrinks from 2008 to 2011.

All four provinces record a dismally low NME for 2008 (Table 1). Punjab leads once again, with a 13 percent enrolment rate, surpassing Sindh, KP, and Balochistan by 2, 7, and 8 percentage points. The NME gap between Punjab and Sindh remains small, but increases with reference to KP and Balochistan. Punjab's NME for 2011 increases to 14 percent, surpassing that of Sindh, KP, and Balochistan by 3, 7, and 8 percentage points. The gap between Punjab and Sindh increases slightly by 1 percentage point, but remains the same for KP and Balochistan.

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<sup>2</sup> Net primary enrolment ratio = [number of children aged 5–9 years attending primary school (classes 1–5) divided by the number of children aged 5–9 years] multiplied by 100.

<sup>3</sup> Net matriculation enrolment ratio = (number of children aged 13–14 years attending matriculation level divided by number of children aged 13–14 years) multiplied by 100.

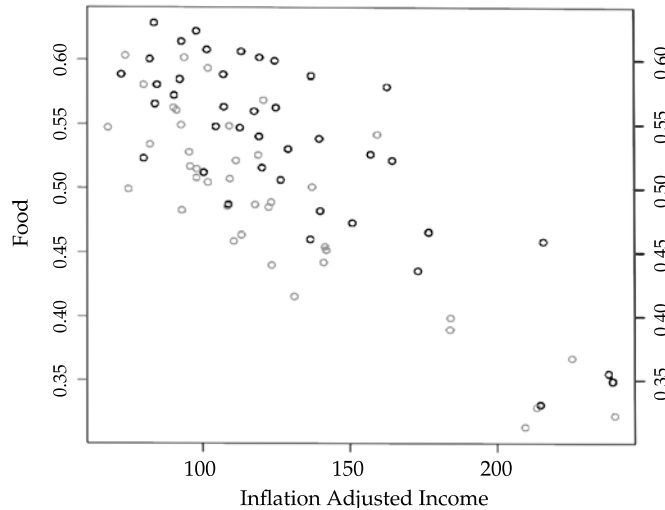
**Table 1: Summary of key educational statistics across provinces**  
(percentage)

2007/08	Punjab	Sindh	KP	Balochistan
NPE ratio	61	51	49	41
NME ratio	13	11	6	5
2010/11				
NPE ratio	61	53	51	47
NME ratio	14	11	7	6

*Source:* Pakistan Bureau of Statistics.

In order to achieve sufficient degrees of freedom and allow for some province-specific effects, we pool the data for 2008 and 2011 across all four provinces. The distributional information is available from the income quintiles and provinces. Pooling the data requires inflation-adjusted expenditure, so the expenditure data for 2008 is divided by the combined consumer price index of 100, while the data for 2011 is divided by 146.5 (constructed by the PBS). Figure 2 provides a scatter plot of food against inflation-adjusted income for 2008 and 2011.

**Figure 2: Scatter plot of food against income, 2008 and 2011**



**Note:** Dark circles = data points for 2008, light circles = data points for 2011.

**Source:** Authors' calculations based on data from the Pakistan Bureau of Statistics.

This scatter plot provides very useful qualitative information. The data points for 2008 are lower than those for 2011, showing that the share of food in total expenditure increased over this period. This indicates that,

on average, people were worse off from 2008 to 2011 as they spent more on necessities (food) and less on luxuries. We then calculate the following:

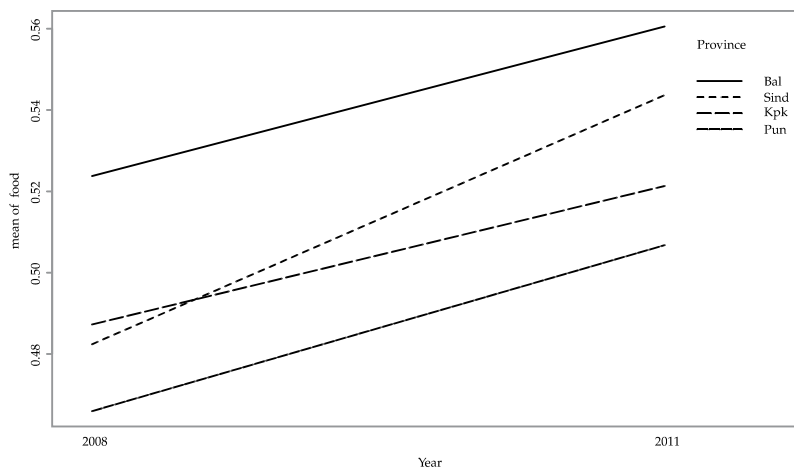
- Food ratio = food share in 2008/food share in 2011
- Income ratio = inflation-adjusted income in 2008/inflation-adjusted income in 2011

The average food ratio becomes 1.09 percent while the average income ratio is 1.05 percent. A comparison of these ratios shows that food expenditure outpaced inflation-adjusted expenditure from 2008 to 2011, indicating, on average, a decline in people’s living standards in Pakistan.

The scatter plot given in Figure 2 should be compared directly with the theoretical Engel curve in Figure 1b. It is immediately apparent that, in terms of our model, the nonlinear Engel curve viewed as a function of *M* has actually risen over the relevant years. This implied deterioration in the standard of living is something we investigate further with special interest in the differences in degree of deterioration across provinces.

The interaction plot of the mean of food and provinces against year in Figure 3 shows consumers’ behavior. Generally, consumers are worse off from 2008 to 2011. It also shows the relative performance of consumers across the provinces on average: those in Balochistan are worst off, while those in Punjab remain better off than the others. One interesting feature is that consumers in Sindh appear to be even worse off than those in KP.

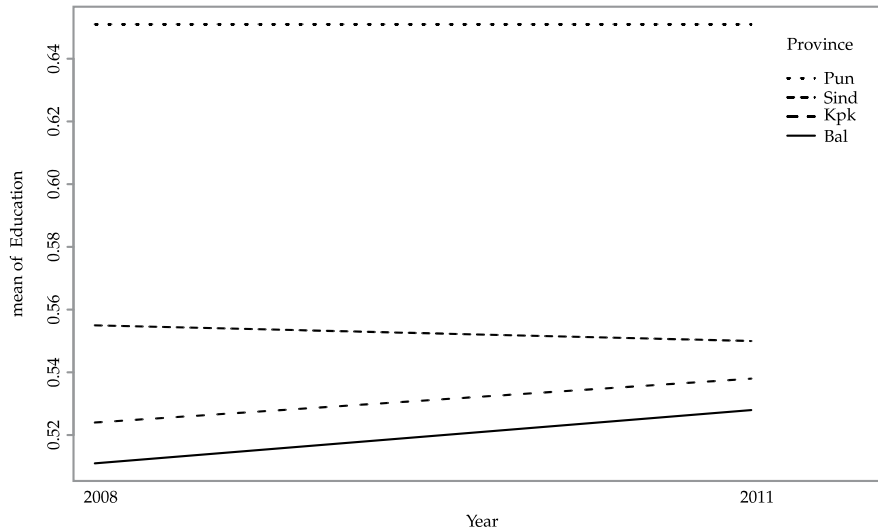
**Figure 3: Interaction plot of provinces and food against year**



Source: Authors’ calculations based on data from the Pakistan Bureau of Statistics.

The interaction plot of the geometric means of the NPE and NME ratios and provinces against year in Figure 4 reflects the education situation. The geometric mean captures the difference in the enrolment ratios well. The interaction plot shows the relative indicators of education across the four provinces. Punjab is in a far better position than all the other provinces; Balochistan remains at the bottom. The education indicators in KP improve somewhat, while those in KP deteriorate slightly. These figures are a good guide to precise modeling.

**Figure 4: Interaction plot of provinces and geometric mean of education against year**



*Source:* Authors' calculations based on data from the Pakistan Bureau of Statistics.

### 3.2. Adapting the Model to Handle Data Availability

Our cross-sectional data does not contain information on price variability. Ideally, we want to use quality-adjusted prices, by which we mean that households with greater educational opportunities are likely to have access to higher-quality products and, thus, in quality-adjusted terms, to have the benefit of facing lower prices. We therefore use information on educational opportunities to construct a price index that is inversely related to these opportunities—the hedonic approach to pricing.

Given the Engel curve dataset with which we are working, we have assembled two possible measures of educational opportunity that match our observations: the NPE ratio and the NME ratio. NPE and NME are constructed directly from the ratios given in the PBS data and expressed as



percentages. Normalizing the minimum levels of NPE and NME in our dataset, we construct the following simple indexes:

- Normalized NPE =  $NPE - \text{minimum (NPE)}$
- Normalized NME =  $NME - \text{minimum (NME)}$

These normalized indexes range upward from 0 and indicate increasing educational opportunity. To construct price equivalents, given that we envisage increased quality-adjusted price as being associated with less opportunity, we define two possible price indexes:

- $PPE = 1 - \text{normalized NPE}$
- $PME = 1 - \text{normalized NME}$

Note that, as the raw price indexes representing the standard of living, these prices are unity for those in the provinces with the lowest level of educational opportunity. They are lower, reflecting a higher standard of living, for those households that have greater educational opportunities.

It is not clear which of these two measures would best represent the impact of educational opportunities on quality-adjusted prices. Arguably, both are somewhat relevant. Therefore, in addition to trying both alternatives, we also form a geometric mean price index for the two possible measures. This gives us our final measure of  $P_s$ .

$$P_s = \text{geometric mean price index } (PPE, PME) = PPE^{0.5} PME^{0.5} \quad (7)$$

To summarize, we consider a naïve model in which we set  $P_s = 1$ , denoted as Model 1. We then consider the two alternatives  $P_s = PPE$  (Model 2) and  $P_s = PME$  (Model 3). Finally,  $P_s$  constructed as in (7) is denoted as Model 4.

#### 4. Estimation and Results

This section develops a series of models to consider different measures of educational opportunity.

#### 4.1. The Basic Model

Following convention, we append an additive disturbance term to the food equation given in (6). Our estimating form is:

$$s_F = \alpha_F + \delta_F Z + v \quad (8)$$

We make the usual assumptions that  $v \sim N(0, \sigma^2)$ . This is something of an approximation because the dependent variable is restricted to the (0, 1) range. However, so is the deterministic component of the model and, hence, within-sample errors can be expected to be similarly restricted. There is no *a priori* reason to assume the presence of large positive or negative disturbances that would violate the (1, 0) bound in practice, even though this is possible in principle with a normality assumption. We test for evidence on whether normality is likely to be violated. If it were, we could consider estimation under a log-ratio transformation, but this would require nonlinear estimation. We begin with a simple linear estimation of (8) by least squares and generally find that normality cannot be rejected.

As mentioned above, in order to thoroughly consider different measures of educational opportunity, we estimate several versions of the model. In the first version, which we refer to as the simple model, we ignore the effect of educational opportunities. Essentially,  $P_s$  is set at unity for all provinces in this model. The results for 2008 are given in Table 2.

**Table 2: Results of simple Engel curve for 2008**

Model 1	$\alpha$	$\delta$	$\beta$
	0.63***	-0.44***	0.19***
R-squared	0.59		
Breusch-Pagan p-value	0.84		
Shapiro-Wilk normality p-value	0.54		

Note: \*\*\* = significant at 1 percent.

The estimate of the  $\alpha$  intercept is 0.63, while the slope,  $\delta$ , is  $-0.44$ . We calculate the  $\beta$  coefficient to be 0.19 as  $\beta_F = \delta_F - \alpha_F$  ( $\beta = \delta - \alpha$ ). Since food is a necessity,  $\alpha$  is greater than  $\beta$ , which is consistent with our earlier proposition. Moreover, the  $\alpha$  coefficient measures the intercept of the Engel curve, while the  $\beta$  coefficient measures the asymptotic value of the food share as expenditure increases along the expenditure axis. The Breusch-

Pagan and Shapiro-Wilk tests are used to check the robustness of the results, and give no evidence of heteroskedasticity or nonnormality.

#### 4.2. Developing the Model

The simple Model 1 is then adapted to handle the availability of data as explained in Section 3. This yields Model 2, which takes into account the effect of NPE on food share. The NPE ratio enters the equation as the hedonic price index and converts nominal expenditure into real expenditure. The real expenditure variable describes the movement along the Engel curve. The estimates of  $\alpha$  and  $\beta$  are 0.67 and 0.24, respectively, and the model satisfies the diagnostic criteria. Model 3 caters for the effect of NME on food share.  $\alpha$  and  $\beta$  are 0.65 and 0.22, respectively, and the model satisfies the robustness criteria stated above.

The coefficients  $\alpha$  and  $\beta$  in Models 2 and 3 have useful implications. By introducing the NPE ratio in Model 2 as the hedonic price index for education, the movement along the Engel curve is captured by the  $\beta$  coefficient. The curve also shifts upward in economic terms as in Figure 1, as measured simultaneously by  $\alpha$  and  $\beta$ . This hedonic price index also shows that education improves real expenditure, which can be called quality-adjusted expenditure.

Similarly, the NME ratio is introduced in Model 3 as the hedonic price index, and the Engel curve moves slightly upward as depicted by  $\alpha$  and  $\beta$ . The values of the coefficients imply that the NPE ratio has a smaller effect on welfare than the NME ratio in 2008. This welfare improvement is depicted by an improvement in households' real expenditure through education. These results are intuitive: additional years of schooling enhance welfare and those households with greater access to educational opportunities are better off.

In Model 4, the education variable enters the equation via the price index  $P_S$  in the form of the hedonic geometric mean price index (7). Again, this turns nominal into real expenditure. Through this model, we attempt to capture the joint effect of the NPE and NME ratios, but with one advantage: it captures both effects with a single geometric mean price index. The values of  $\alpha$  and  $\beta$  are 0.66 and 0.23, respectively, which fall in between those of Model 2 and Model 3 (see Table 3).

**Table 3: Results with hedonic price index for 2008**

<b>Model 2</b>	$\alpha$	$\delta$	$\beta$
NPE	0.67***	-0.43***	0.24***
R-squared	0.66		
Breusch-Pagan p-value	0.95		
Shapiro-Wilk normality p-value	0.28		
<b>Model 3</b>			
NME	0.65***	-0.43***	0.22***
R-squared	0.66		
Breusch-Pagan p-value	0.76		
Shapiro-Wilk normality p-value	0.31		
<b>Model 4</b>			
Geometric mean price index	0.66***	-0.43***	0.23***
R-squared	0.67		
Breusch-Pagan p-value	0.78		
Shapiro-Wilk normality p-value	0.18		

Note: \*\*\* = significant at 1 percent.

The basic results of the simple Engle curve for 2011 are shown in Table 4. The estimate of the  $\alpha$  intercept is 0.65, while the slope  $\delta$  is  $-0.38$ . Again, the relationship between  $\alpha$  and  $\delta$  becomes hyperbolic as already shown in Figure 1, so the slope is negative. We calculate the  $\beta$  coefficient to be 0.27 as  $\beta_F = \delta_F - \alpha_F$  ( $\beta = \delta - \alpha$ ). Food is a necessity so  $\alpha$  is greater than  $\beta$ , which is consistent with our earlier assumption. The Breusch-Pagan and Shapiro-Wilk tests are used to check the robustness of the model at a conventional significance level, and do not indicate any heteroskedasticity or nonnormality.

**Table 4: Results of simple Engel curve for 2011**

<b>Model 1</b>	$\alpha$	$\delta$	$\beta$
	0.65***	-0.38***	0.27***
R-squared	0.48		
Breusch-Pagan p-value	0.092		
Shapiro-Wilk normality p-value	0.58		

Note: \*\*\* = significant at 1 percent.

Similarly, Model 2 shows the effect of the NPE ratio on food share in 2011 (Table 5). The NPE ratio enters the equation as the price index and converts nominal into real expenditure. The estimates of  $\alpha$  and  $\beta$

coefficients are 0.69 and 0.32, respectively, and the model satisfies the diagnostic criteria. Model 3 caters for the effect of NME on food share. The  $\alpha$  and  $\beta$  coefficients are 0.67 and 0.28, respectively, and the model satisfies the diagnostic testing procedure at a conventional level of significance.

In Model 4, the education variable enters the equation via the price index  $P_s$  in the form of the hedonic geometric mean price index (7), again converting nominal into real expenditure. This model helps us estimate the joint effect of the NPE and NME ratios. The values of  $\alpha$  and  $\beta$  are 0.68 and 0.30, respectively, which fall in between those of Model 2 and Model 3. The results are given in Table 5.

Comparing the values of  $\alpha$  and  $\beta$  for 2008 and 2011 across Model 4 indicates the clear upward movement of the Engel curve after incorporating the effect of access to educational opportunities.  $\alpha$  moves upward from 0.66 to 0.68 and  $\beta$  moves even further, from 0.23 to 0.30. This is a substantial shift upward and slightly flattens the Engel curve. However, this model needs to be refined to address two underlying issues. First, inflation needs to be adjusted from 2008 to 2011. Second, we are interested in the differential impact across income groups and provinces, and this leads to the models shown in Tables 6 and 7.

**Table 5: Results with hedonic price index for 2011**

<b>Model 2</b>	$\alpha$	$\delta$	$\beta$
NPE	0.69***	-0.37***	0.32***
R-squared	0.53		
Breusch-Pagan p-value	0.12		
Shapiro-Wilk normality p-value	0.19		
<b>Model 3</b>			
NME	0.67***	-0.39***	0.28***
R-squared	0.55		
Breusch-Pagan p-value	0.09		
Shapiro-Wilk normality p-value	0.61		
<b>Model 4</b>			
Geometric mean price index	0.68***	-0.38***	0.30***
R-squared	0.54		
Breusch-Pagan p-value	0.11		
Shapiro-Wilk normality p-value	0.28		

Note: \*\*\* = significant at 1 percent.

Model 5 adapts Model 4 by applying it to the pooled dataset. Table 6 gives the results of inflation-adjusted pooled data further deflated by the quality-adjusted geometric mean price index for education. The model shows quality-adjusted expenditure to measure the true cost of living. We constrain the values of the  $\beta$  coefficient for 2008 and 2011 on the assumption that wealthy households will have similar access to educational opportunities across different provinces and times; the estimate of  $\beta$  is 0.26. We allow the value of the  $\alpha$  coefficient to change from 2008 to 2009 through the introduction of a time dummy. The result shows that the time dummy is statistically significant and positive. Model 5 satisfies the diagnostic criteria at a conventional level of significance of 5 percent.

**Table 6: Results for pooled data with time dummy variable**

Model 5	$\alpha$	$\delta$	$\beta$	Time dummy
	0.65***	-0.39***	0.26***	0.08***
R-squared		0.63		
Breusch-Pagan p-value		0.36		
Shapiro-Wilk normality p-value		0.08		

Note: \*\*\* = significant at 1 percent.

The time dummy variable takes a value of 0 for 2008 and 1 for 2011. The purpose of adding a time dummy variable is to determine the differential economic impact of education across different income groups. The time dummy variable adds to the  $\alpha$  coefficient, while the  $\beta$  coefficient remains unchanged as it is deliberately constrained. The positive magnitude of the time dummy variable reflects the upward movement of the Engel curve, suggesting that households in the two lowest quintiles were worse off in terms of access to educational opportunities over this period. The quantitative results corroborate the earlier qualitative evidence in Figure 2.

#### **4.3. Differential Economic Impact of Education across Provinces**

Model 6 in Table 7 is an adaptation of Model 5 in Table 6. We construct provincial dummy variables for the pooled data, which take the value of 0 for 2008 and 1 for 2011. The year 2008 is considered the base period and the relative performance of the geometric mean educational indicators is measured across the provinces for 2011. Again, the value of the  $\beta$  coefficients is constrained on the assumption that wealthy households have similar access to educational opportunities across different provinces.

The estimates of  $\alpha$  and  $\delta$  are 0.65 and  $-0.39$ , respectively, and the model satisfies the diagnostic criteria as shown in Table 7.

**Table 7: Results of differential economic impact of education on provinces through hedonic prices**

Model 6	$\alpha$	$\delta$	$\beta$	Punjab dummy	Sindh dummy	KP dummy	Balochistan dummy
Education	0.65***	-0.39***	0.26***	0.03	0.10***	0.08***	0.11***
R-squared		0.66					
Breusch-Pagan p-value		0.59					
Shapiro-Wilk normality p-value		0.15					

Note: \*\*\* = significant at 1 percent.

The results obtained through this model capture quality-adjusted expenditure against food for 2011. Since the price index for access to educational opportunities deflates inflation-adjusted expenditure, this again becomes a hedonic approach to prices. We observed that the food share increased from 2008 to 2011 in Figure 2, and Model 6 highlights the economic impact of education across the provinces through the provincial dummies. Apart from Punjab, all the provincial dummies turn out to be positive and highly significant. Their positive magnitudes suggest the upward movement of the  $\alpha$  coefficient.

Access to educational opportunities decreases from 2008 to 2011 in the case of Balochistan; the coefficient of the provincial dummy is larger and positive. Households in Sindh are worse off, as shown by its coefficient, followed by those in KP. This implies that households in Sindh and Balochistan are worse off since 2008 in terms of access to educational opportunities. Although the coefficient of the Punjab dummy remains positive, it is statistically insignificant, suggesting that access to educational opportunities remains almost the same from 2008 to 2011.

**5. Conclusion, Policy Recommendations, and Future Areas of Research**

Our approach contributes to the theoretical literature because it combines several modern economic approaches in a manner not hitherto attempted. Specifically, the existing literature does not combine hedonic pricing with consumer demand systems to deal with the situation where official differential prices are not available, and to actually estimate the

differential economic impact across income groups and provinces in a theoretically consistent manner by invoking the role of economic agents.

These results are consistent with the finding that additional years of schooling enhance individuals' income earnings. We contribute to this by according greater significance to education, considering it the ability to purchase things, i.e., households with greater access to educational opportunities are better off. The behavior of economic agents further implies increasing uncertainty in the economy over the period of study.

The upward movement of the Engel curve from 2008 to 2011 shows that, on average, households were worse off. The NME ratio has a significantly greater impact than the NPE ratio. The results also show that households across the two lowest income quintiles were worse off from 2008 to 2011 in terms of access to educational opportunities. Similarly, the upward movement of the Engel curve across different provinces shows that households in Balochistan, Sindh, and KP were worse off, while Punjab remained unaffected.

### *5.1. Policy Recommendations*

Differential access to educational opportunities across income groups and provinces calls for astute policymaking. Based on our findings, we recommend the following measures:

1. Households that fall in the two lowest income groups were worse off in terms of access to educational opportunities from 2008 to 2011. Efforts should be stepped up to enhance access to educational opportunities at the primary and matriculation levels across these lowest-income groups. This could play a significant role in reducing the rising educational inequality, which, in turn, could lead to income inequality over a period of time.
2. There is a need to specifically redirect resources to Balochistan where access to educational opportunities at the primary and, specifically, the matriculation level is rather low. Access to educational opportunities should also be increased in Sindh and KP.
3. The simple Engel curve moved upward from 2008 to 2011, which is a reliable indicator of the increase in poverty because the consumption of food in total expenditure increased. Efforts should thus be made to reduce the level of poverty.



4. As the impact of the NME ratio is significantly greater than that of the NPE ratio, efforts should be made to increase enrolment rates at the matriculation level.
5. The sampling frames for urban areas were updated in 2003 while those for rural areas were based on the population census of 1998 for HIES data. These need to be upgraded such that the sampling frames for urban and rural areas are consistent enough to obtain well-informed predictions.

## **5.2. Future Areas of Research**

We have estimated the food Engel curve for 2008 and 2011 across income groups, but we have not provided money-metric measures of welfare differentials due to the uneven socioeconomic distribution of educational opportunities across income groups. The provision of rigorously derived measures of the compensating and equivalent variations (as defined in Hicksian welfare analysis) from 2008 to 2011 for various income groups and in different provinces could be a future area of research.

Although we have estimated the differential economic impact of education across income groups and provinces, there is a need to extend this modeling structure across districts and rural and urban regions, which would require data at the quintile and district level. This could prove a possible area of research by employing individual household datasets. Moreover, the average household size varies from 2008 to 2011, implying that further demographic extensions are possible for estimation and inference by looking closely at the individual household data.

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## **Patronage in Rural Punjab: Evidence from a New Household Survey Dataset**

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### **Abstract**

*The intervention of local elites is often cited as an impediment to policy implementation in many developing countries. In this paper, we present initial results from an original primary household dataset from eight tehsils of rural Punjab, Pakistan. We examine descriptive statistics on patron–client interaction and correlations between household characteristics and that relationship. The study raises some key findings. First, households report connections with a range of officials; they interact most heavily with local officials, but a large number of households also report interacting with their provincial and national politicians. Second, many households report receiving active assistance both from local officials and from provincial and national politicians in accessing certain state services, in particular in applying for national identity cards. Third, households report links with many patrons outside their own biraderi or clan. Fourth, vulnerable households, such as landless and female-headed households, appear less likely to interact with and less likely to receive assistance from patrons, suggesting that patronage activity could increase the inequality of outcomes. Fifth, better-off households appear more likely to assist patrons in a range of areas. Finally, local officials and politicians had tended to recommend candidates in the last election, and rural households were strongly convinced that their vote was not secret from their patrons or officials. This is possibly consistent with patronage-based politics and bloc voting.*

**Keywords:** Patron, client, rural, Pakistan.

**JEL classification:** P16, D7.

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## 1. Introduction

The activity of local elites, such as powerful landlords, is frequently cited as a major challenge to social and development interventions in rural areas of many developing countries. Local elites are sometimes said to block efforts at rural development or social assistance because their power is threatened by others helping “their” villagers. Alternatively, they are described as diverting the benefits of social or government programs to those in their families or social networks (elite capture). They may also play a role in wider distribution while reaping the personal or political benefits of acting as a benefactor in securing goods and services from donors or the central government on behalf of their clients. Rural Pakistan is thought to be a prime example of such relationships: indeed, it is even frequently described as a “feudal” society. Analytical work in political economy substantiates these concerns: Cheema, Mohmand, and Patnam (2009) have demonstrated the importance of local elites in this context, and the persistence of their power to resolve disputes and mediate between citizens and the state from the colonial period to the present.

However, donor and government programs often fail to take this apparently very significant feature of rural societies into account when designing interventions. For example, Mansuri and Rao (2004), in their critical review of community-driven development initiatives, point out that the question of how the “community” is represented in decision making is critical and underscrutinized. In general, the decisions taken are highly subject to local power dynamics that might completely escape the funder’s attention. The relationships between local elites and other community members may, however, play a major role not only in these types of decentralized programs but also in the de facto distribution of more centralized state programs through patronage networks of interaction between political actors and local elites.

Conversely, and potentially harder to observe, patrons may play a role in wider distribution while reaping the personal or political benefits of presenting themselves as benefactors providing goods and services. Thus, interventions can affect local power dynamics in ways that donors and central governments might not be sufficiently aware. Labonne (2012) finds that local elected officials received the political credit for a World Bank conditional cash transfer program, benefiting significantly at the ballot box in areas where it was implemented, even though they were not, in fact, responsible for its implementation.

A better understanding of the mechanisms of these relationships and the circumstances under which they are strengthened or weakened is essential to ensuring that governments and donors design and implement effective programs to benefit the poor. To that end, we aim to shed light on the following research question: how do patron–client relationships affect which households gain access to state-provided goods and services?

Our working definition of patron–client relationships is any “vertical” social connection, i.e., between parties with unequal resources or power, in which flexible assistance or services may be provided that are not specified contractually.

In this paper, we present preliminary results from a newly collected household dataset from Punjab, Pakistan, which can be used to help answer this question. We first review the literature to demonstrate why microdata on political patronage are needed and how these data fit in with the existing work in this area. We then describe the dataset and its collection, and present descriptive statistics and a simple analysis of the results. After this, we focus on a few key issues: (i) Do patrons help relatively privileged or underprivileged households? (ii) How do clients gain access to patrons? (iii) What is the role of *biraderi* (kinship) in these patron–client relationships? (iv) What is the relationship between patronage and electoral activity? Finally, we present plans for more extensive analytical research.

## **2. Literature Review**

There is a well-developed body of literature on interlinking contracts in rural areas of developing countries. These contracts, in which two or more factors of production are traded within a single relationship, may provide a partial solution to market failures. For example, landlords who frequently provide credit to their tenants are in a better position to determine creditworthiness (solving information asymmetry) and enforce repayment (addressing moral hazard). In many regions, including South Asia, much more far-reaching relationships have been observed in which laborers may be “tied” to a given landlord and may provide many services (not clearly specified in advance) in exchange for broad patronage and protection, including, for example, risk smoothing or protection from threats.

Scott (1972) discusses how patron–client relationships characterized by social or economic imbalances lead to exchanges between the patron and client (which are solidified by personal interaction). Platteau (1995a)

typologizes such relationships and, from this framework, develops theoretical predictions about the important factors determining whether these types of comprehensive relationships will persist or break down. Among these, he identifies the opportunity costs of the laborers (e.g., market labor opportunities) and the landlords (e.g., returns to higher education or entering business in the city); the labor-intensiveness of existing or newly introduced production technology; and the ability of the patrons to use social (or state) enforcement mechanisms.

Shami (2010b), who uses mixed qualitative and quantitative methods to study a small sample of villages in Hafizabad, Pakistan, finds a significant difference in landlord–tenant relationships in villages near a recently constructed motorway. The residents of more accessible villages report less resistance and even significant assistance from their landlords in providing public goods such as improved drainage. She argues that tenants’ outside option to pursue market-based work (provided by access to the motorway) improved their bargaining power and changed their landlords’ behavior. In the interlocking contracts language, the latter were prompted to provide better services as part of their contract.

Another related stream of literature examines the political economy of resource distribution, in particular, “pork-barrel” politics. This aims explicitly to understand the behavior of elected officials in bringing state resources to their constituencies, in particular to a level that results in inefficiently high local public goods provision. Legislators forego more useful national or regional projects in favor of bringing home something tangible that local voters will see and give them credit for.<sup>1</sup> For example, Keefer and Khemani (2009) study the Constituency Development Fund in Indian states and examine circumstances under which legislators put more effort into “pork.” The authors find this occurs where party affiliation is stronger.

Related to this is the literature on “clientelism,” which is defined by Brusco, Nazareno, and Stokes (2002) as a situation in which voters trade votes for immediate payoffs as opposed to forward-looking choices over programs and backward evaluation of previous performance. Robinson and Verdier (2001) discuss how high levels of income inequality and

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<sup>1</sup> Analyzing these questions is challenging because of the difficulty of distinguishing between useful and effective constituency representation and rent seeking. One can test empirically whether politically powerful areas receive more public goods and thus answer a distributional question, but to say anything about efficiency—i.e., whether excessive local public goods are being delivered—requires that one analyze the marginal returns of such projects, which may be difficult.

hierarchical social relations tend to lead to clientelist politics. Wantchekon (2002) finds that clientelist platforms have a significant impact on voting behavior with the strongest effect for local and incumbent candidates.

This political economy literature is highly relevant when analyzing patron–client relationships because the structure of local patrons delivering their community’s votes to a politician in return for local services or personal favors may well involve some of this delivery of local public goods. However, this literature tends to focus on local public goods rather than private goods and benefits. It also focuses on how electoral dynamics, and not social networks, affect decisions about the distribution of resources. We focus on the distribution of individual-level benefits and how this is influenced by both electoral dynamics and the access households have to different types of patrons through social networks.

A separate body of literature examines elite capture of programs and benefits, and asks whether powerful individuals influence the design and delivery of local public or semi-public goods, or direct the delivery of private goods and benefits, to gain more of the benefits for themselves or those in their social networks. A newer strand of this literature specifically examines who benefits from elite capture and distribution, in terms of the social networks of patrons and office holders. Caeyers and Dercon (2008) use household survey data from Ethiopia to study the relationship between local officials whom a household reports knowing and receipts of food aid. They find that those who are socially connected to elected officials are more likely to be awarded the program and receive benefits in excess of the official levels. Fafchamps and Labonne (2012) use familial relationships, observed through naming traditions, to test whether those related to elected officials are more likely to receive public health insurance or enter public employment, finding a significant effect on the latter.

Endogeneity is a major challenge for many possible empirical approaches here. In particular, endogenous reporting of relationships (e.g., a more helpful relative in office may be more likely to be reported than a less helpful one) is a problem. Distinguishing information flows from direct favoritism is also challenging. Fafchamps and Labonne (2012) use household survey data from before a recent election to test the relatives of current elected officials against those of future officials (i.e., those who were elected after the survey took place) to rule out systematic differences in the families of office holders causing the effect. However, the differential spread of information, rather than direct favoritism, could still potentially drive these results.

However, this body of literature has an important and policy-relevant gap we hope to help address: there is limited quantitative work on the interaction between social networks, local sources of power such as land, and the mediation and diversion of state-provided goods and services. To what extent is access to state services included as part of the package of services that a landlord/patron offers his tenants/clients? To what extent does the ability to mediate access to state resources affect a patron's bargaining power? What is the relationship between landlords and elected or state officials and how do each of these groups mediate access to state services? Additional microdata can help develop an understanding of the mechanisms of elite capture and intermediation of state goods, of who benefits, and under what circumstances patrons will be stronger and weaker in distributing resources.

There is rich material in the qualitative literature to develop the questions we have raised here—even if we restrict our attention to qualitative work on Pakistan. For example, Martin (in press), who has studied areas of Punjab and Swat (Khyber Pakhtunkhwa) through ethnographic fieldwork, describes how a generation of landlords increases their wealth levels, move to the city to pursue business interests, and are eventually overturned as patrons by a newer group.

This is consistent with the outside option for landlords as a key variable in Platteau's (1995a) theoretical framework, but adds a dimension describing the change over time: who fills the vacuum, if anyone, when the relationship changes from a patronage-based one to an absentee landlord relationship? Khan (in Khan & Jomo, 2000) develops a qualitative theory on patronage in which he cites examples from Pakistan and other countries in Asia to demonstrate differing outcomes depending on whether patronage systems work within or outside the state bureaucracy (this raises the question of how these systems develop in different ways).

### **3. Description of Survey**

The unique dataset we have used to analyze patron–client relationships was collected as part of the Privatization in Education Research Initiative (PERI) survey conducted in April 2011. The survey was based on the Punjab government's Multiple Indicator Cluster Survey (MICS), which is a household survey conducted at the district level for Punjab. The PERI survey revisited a random sample of the 2007/08 MICS survey households, creating a panel.



The original MICS household survey was conducted in 2003/04. It was followed up by the next round conducted in 2007/08 by the Punjab government in collaboration with UNICEF, the objective being to gather information on critical development indicators for women and children in Punjab and relate this information to targets set by the Millennium Development Goals. Covering 35 districts in Punjab (with both rural and urban households in the sample), the survey gathered detailed household-level information as well as detailed health-related information on women and children under five in each household.

The PERI survey revisited 1,024 of the MICS households in 64 rural villages in eight *tehsils* across northern, southern, and central Punjab in 2011. Given the survey's research objectives, it focused on rural Punjab (excluding western Punjab, which had been largely affected by floods). The survey's household-level questions were identical to those asked in the MICS questionnaire, though the MICS modules that focused on women and children under five were not included. Besides household-level information, the survey also collected information on the household's relationship with a range of government and nongovernment officials and landlords.<sup>2</sup> Note that the survey questionnaire and enumerators never referred to these individuals as "patrons" but simply asked about household members' relationships and interactions with individuals in particular offices or roles. The survey also asked questions about the assistance provided by these "patrons" over a range of dimensions, and the assistance provided by the household to the patrons.

We now present descriptive statistics and a basic analysis of the household-level data gathered on these patron–client relationships.

#### **4. Descriptive Statistics**

Every household in the survey named at least one contact from the categorized list of potential patrons that enumerators used to elicit responses. As Table 1 shows, a significant number of respondents named the local *numberdar* (26 percent) or *imam masjid* (21 percent) as their patron, followed by national assembly members or candidates (15 percent) and provincial assembly members or candidates (9 percent). Interestingly, members and candidates of the national and provincial assemblies were named almost as often as the local *numberdar*.

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<sup>2</sup> Since the survey had several purposes, it included new modules (different from the MICS) on education quality and school choice, women's assets and decision-making, households' experience of natural disasters, and financial transfers and insurance.

Table 1: Patrons named as contacts by survey respondents

Landlords	No. of HHs with contact	Politicians	No. of HHs with contact	Local officials	No. of HHs with contact	Higher-level officials (tehsil to national)	No. of HHs with contact	NGO and religious leaders	No. of HHs with contact	Other	No. of HHs with contact
Local landlord owning > 50 acres	50	National assembly member	167	<i>Patwari</i>	63	DCO	1	NGO staff/ staff of trust or organization	7	Trader/ <i>arhi</i>	20
Local landlord owning < 50 acres	23	National assembly candidate	79	<i>Numberdar</i>	393	District <i>nazim</i> / <i>naib nazim</i>	27	<i>Imam masjid</i>	324	<i>Sahookar</i> / money trader	1
Farmer <sup>a</sup>	32	Provincial assembly member	115	Member of <i>zakat</i> committee	19	Tehsil <i>nazim</i> / <i>naib nazim</i>	40	Spiritual guide/ <i>pir</i> / <i>gaddi nasheen</i>	18	Chairman <sup>a</sup>	2
		Provincial assembly candidate	26	Member of <i>jirga</i> / <i>punchiyat</i>	20	Police personnel	14			Businessman <sup>a</sup>	3
		Political worker <sup>a</sup>	2	Union council member	39	Army personnel	9			Schoolteacher <sup>a</sup>	1
				Union <i>nazim</i> <sup>a</sup>	1	Judge or sessions judge	8	Priest <sup>a</sup>	1	Trader <sup>a</sup>	1
				<i>Mohallah</i> member <sup>a</sup>	1	Other provincial govt. rep.	1			Social worker <sup>a</sup>	1
				Councilor <sup>a</sup>	1	Judicial worker <sup>a</sup>	4				

**Note:** a = respondent-named categories were not in the prompted list but were named by respondents when asked whether they knew any other person in each category listed.

### Glossary

*Imam masjid* = male prayer leader in a mosque.

*Jirga* (occasionally *jargah*) = Tribal assembly of elders that takes decisions by consensus. It is similar to that of a town meeting in the US or a regional assembly in the UK, where important regional matters are addressed among the people of the area.

*Mohallah* (or town) committee = Civil society initiative that includes town residents and police officers. Its role is to maintain functioning relationships between the various ethnicities and between the residents and the police.

*Nazim* = Coordinator of a city or town in Pakistan; the Urdu title of the chief elected official of a local government in Pakistan, such as a district, tehsil, union council, or village council.

*Numberdar* = Liaison person between the village and administrative officials who keeps village records and assists in tax collection. Larger villages have more than one numberdar.

*Patwari* (variously known as *talatti*, *karnam*, *adhikari*, etc.) = Village accountant; an administrative government position found in rural parts of the Indian Subcontinent.

Union or village council = Elected local government body consisting of 21 councilors, and headed by a nazim (equivalent to a mayor) and a naib nazim (deputy). Union councils are the fifth tier of government in Pakistan and the area represented by a union council usually comprises a large village and the surrounding areas, often including nearby small villages. The term can also be used for localities that are a part of cities.

*Zakat* = Annual tax on Muslims to aid the poor in the Muslim community. It is collected through a decentralized and voluntary system, under which zakat committees are established to help collect and distribute zakat funds.

Table 2 presents the results of a descriptive regression to identify correlates of a household's contact with a patron. "Contact" is defined as the household reporting that they know a person who holds a particular position, broken down by patron type. Wealthier households, i.e., those who own their own dwelling/agricultural land, are more likely to know many types of patrons, while female-headed households, who are typically more vulnerable, are less likely to know some of them. The patterns also differ by region, with households in northern Punjab about 20 percent more likely to report knowing politicians (as compared to central Punjab, the reference category), but far less likely to report knowing religious leaders (likely driven in part by the prominence of *pirs*, or hereditary religious leaders, in central and southern Punjab).

**Table 2: Correlates of household link with patrons**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LPM: Household reports knowing one or more of the following individuals:							
VARIABLES	Landlords owning > 50 acres	Politicians	Local officials	Tehsil, district, or provincial officials	Police or army personnel	Religious leaders	Market players	NGOs
Owns dwelling	0.0368** (0.0167)	0.0893** (0.0297)	0.139 (0.0886)	0.0393 (0.0245)	0.0136** (0.00548)	0.189** (0.0750)	-0.0196 (0.0120)	0.000804 (0.00564)
Owns agricultural land	0.0243 (0.0225)	0.134*** (0.0432)	0.0837** (0.0378)	0.0326* (0.0171)	0.0145 (0.0132)	0.0329 (0.0238)	0.0243** (0.0104)	0.00553 (0.00685)
Female-headed	-0.0709*** (0.0223)	0.0498 (0.0732)	0.00194 (0.0570)	0.0584 (0.0331)	-0.0101 (0.0191)	-0.0999*** (0.0269)	0.0153 (0.0138)	-0.00671* (0.00340)
Northern Punjab	-0.0489 (0.0305)	0.216*** (0.0660)	-0.133 (0.148)	-0.0751** (0.0304)	-0.00192 (0.0121)	-0.259* (0.142)	0.0417 (0.0331)	0.00992 (0.00583)
Southern Punjab	0.0180 (0.0476)	0.0458 (0.0816)	0.0238 (0.0989)	-0.0844** (0.0303)	-0.0197 (0.0115)	-0.0351 (0.0767)	0.00300 (0.00629)	-0.00149 (0.00510)
Constant	0.0393* (0.0185)	0.0427 (0.0437)	0.336*** (0.0922)	0.0690** (0.0269)	0.0120 (0.00865)	0.248*** (0.0809)	0.0124 (0.0118)	0.00257 (0.00378)
Observations	1,012	1,012	1,012	1,012	1,012	1,012	1,012	1,012
R-squared	0.022	0.081	0.038	0.042	0.010	0.085	0.027	0.005

**Notes:** Cluster-robust standard errors (clustered at national assembly constituency level) in parentheses; \*\*\* =  $p < 0.01$ , \*\* =  $p < 0.05$ , \* =  $p < 0.1$ .

## 5. Access to Patrons

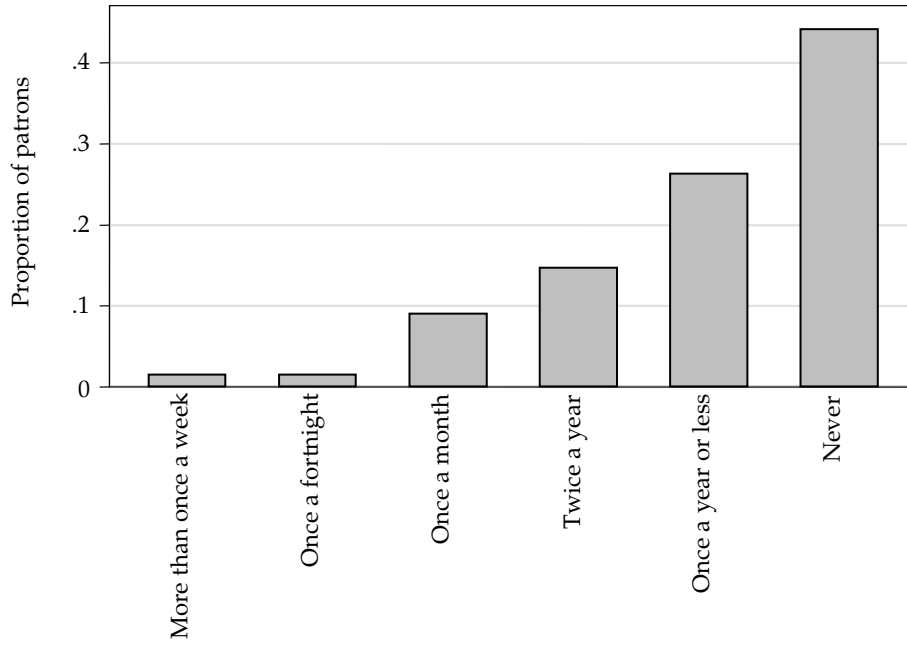
We now explore more detailed data on the level of access that households have to various patrons. The ease with which clients can contact patrons may determine the extent of assistance the client receives from the patron. However, that access itself is likely to reflect differences in the social, political, and economic status of the client and the patron. In addition, reciprocity in the relationship may drive the frequency of contact: if a landlord needs laborers to work on his land regularly, then he may meet clients far more frequently than a politician who only needs to obtain votes from clients every few years.

Measuring the level of interaction (as discussed by Scott, 1972) is a feature of the social networks literature, and incorporating it distinguishes our approach to patronage from traditional political economy approaches. We also asked survey respondents about more concrete measures of access, such as whether the household has access to the patron, more reliable than hypothetical questions, including:

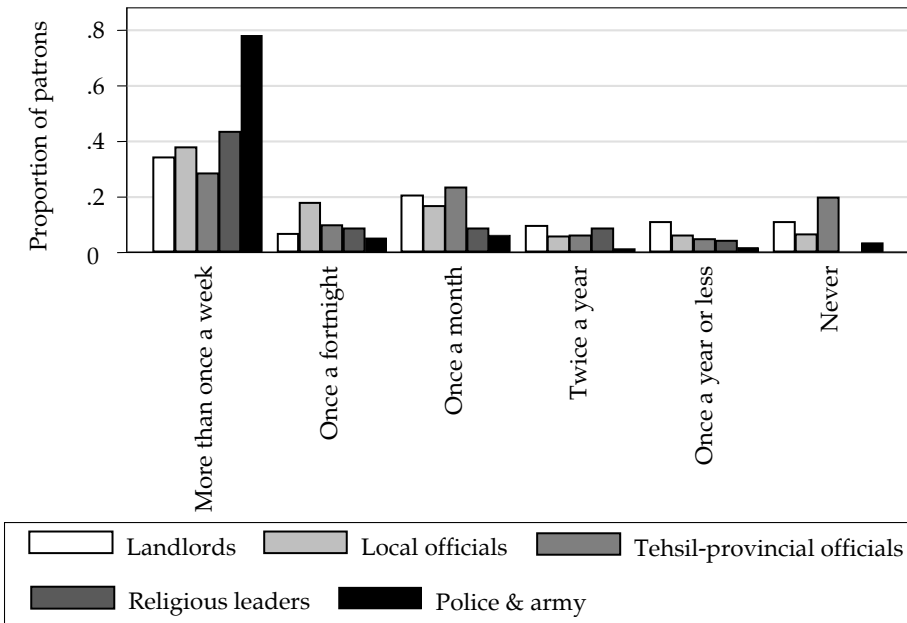
- How often the household members meet the patron
- How the household could get in touch with the patron if needed (whether they have a telephone number for the patron or a number for someone who can reach him, or if they could visit the patron's house or office without an appointment, etc.)

Figures 1–4 show the breakdown of the frequency of interaction and means of accessing each category of patron. The results for politicians and other common categories are shown separately to highlight the very different patterns these follow. Although many households reported knowing a politician, most of them interacted with him or her infrequently. About 40 percent of households indicated that they could meet the politician in person at his or her home or office; most of the rest said they could not initiate contact at all (for example, they could only meet him or her if he or she visited their village). For all other categories of patron, even those other than locally-based officials, such as district-level officials and police and army officers, households reported much more frequent meetings and the ability to contact or visit without an appointment.

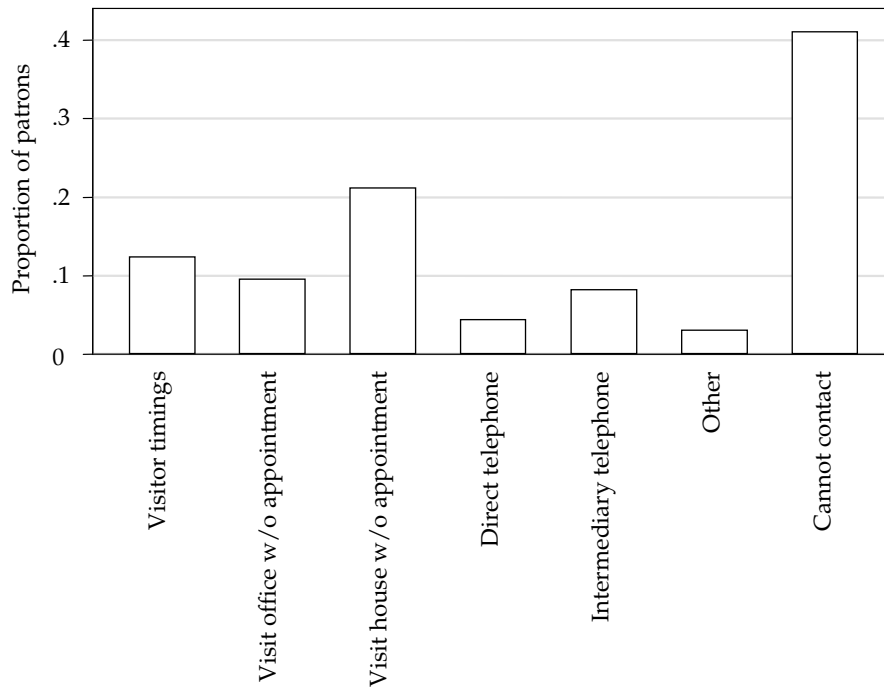
**Figure 1: Frequency of meeting patrons: Politicians**



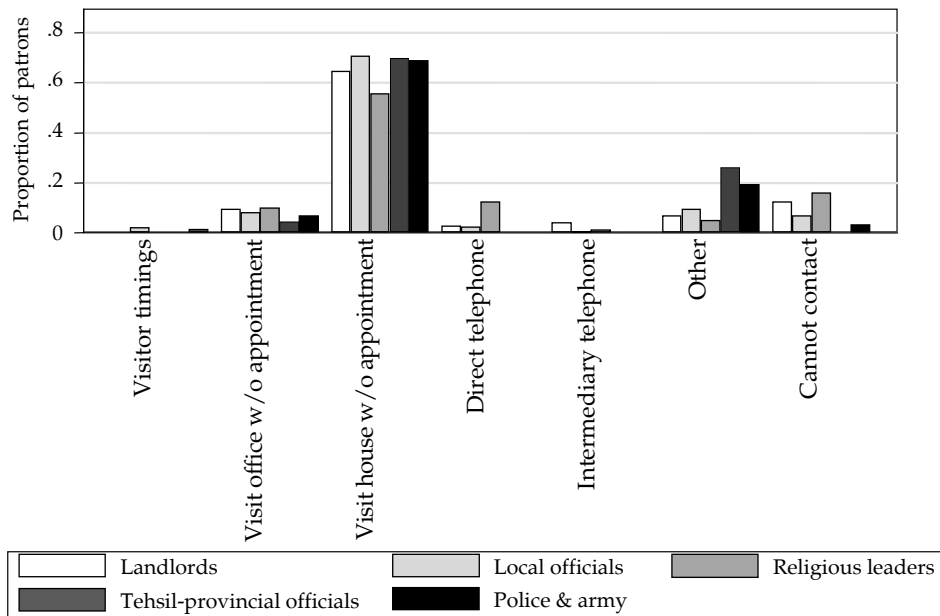
**Figure 2: Frequency of meeting patrons: Other major categories**



**Figure 3: Ability to contact patrons: Politicians**



**Figure 4: Ability to contact patrons: Other major categories**

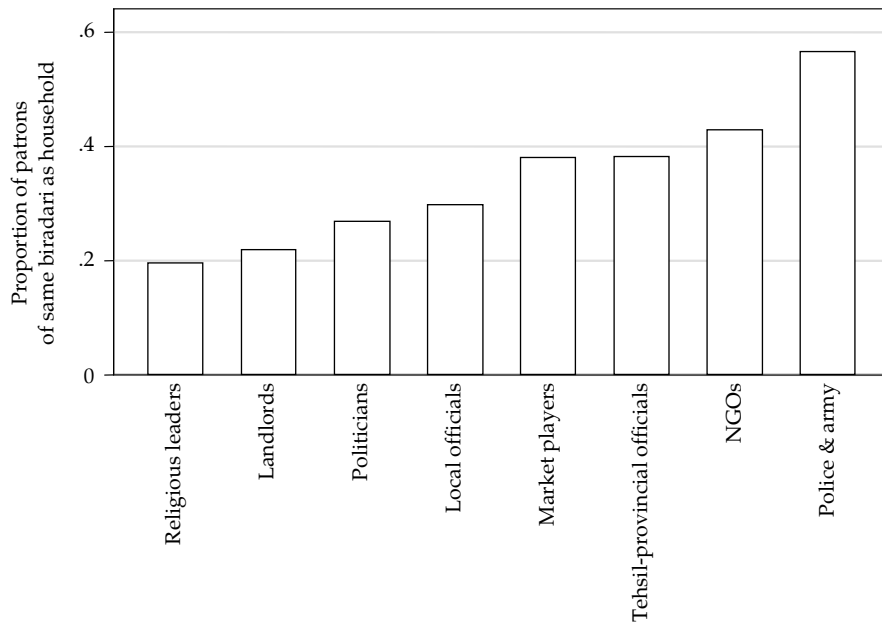




Mohmand and Gazdar (2007) discuss how “biraderi” or clans in Punjab are kinship groups based on lineage and how these biraderis can be ranked in terms of socioeconomic importance within rural communities. Thus, relationships within and across biraderis are important determinants of the position in the socioeconomic hierarchy, and these relationships have been reinforced over time. However, Mohmand and Gazdar (2007) and Cheema (2007) discuss certain factors that have reduced the central role of biraderi in rural patron–client relations, such as (i) the local population’s reduced dependence on land, (ii) increased availability of nonfarm labor opportunities, and (iii) party-based political processes.

As Figure 5 shows, the majority of individuals that households named in each of our patron categories belong to a different biraderi from that of the household. However, this varies substantially between the different categories. Individuals in positions that might involve broad-based interaction, such as religious leaders, large local landlords, and politicians, were most likely to be named by households of a different biraderi than their own. Forthcoming work examines patterns of assistance and government services delivery by biraderi affiliation.

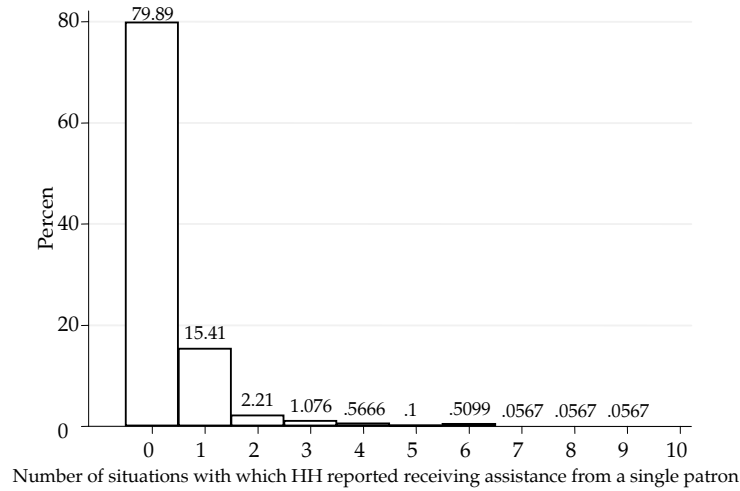
**Figure 5: Patron and client biraderi**



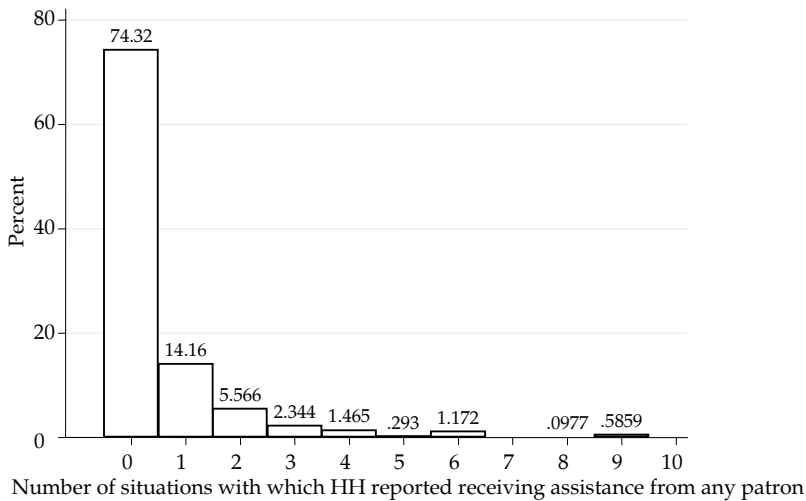
### 6. Assistance from Patrons to Households

A quarter of the households surveyed reported receiving assistance in at least one of the areas identified in the questionnaire. Figures 6–7 show the number of areas in which households reported receiving assistance from a single patron or from any patron. Most households did not report receiving assistance in any of the areas identified in the survey, but a small percentage of those who did, reported receiving assistance in several areas.

**Figure 6: Households that reported receiving assistance from a single patron**

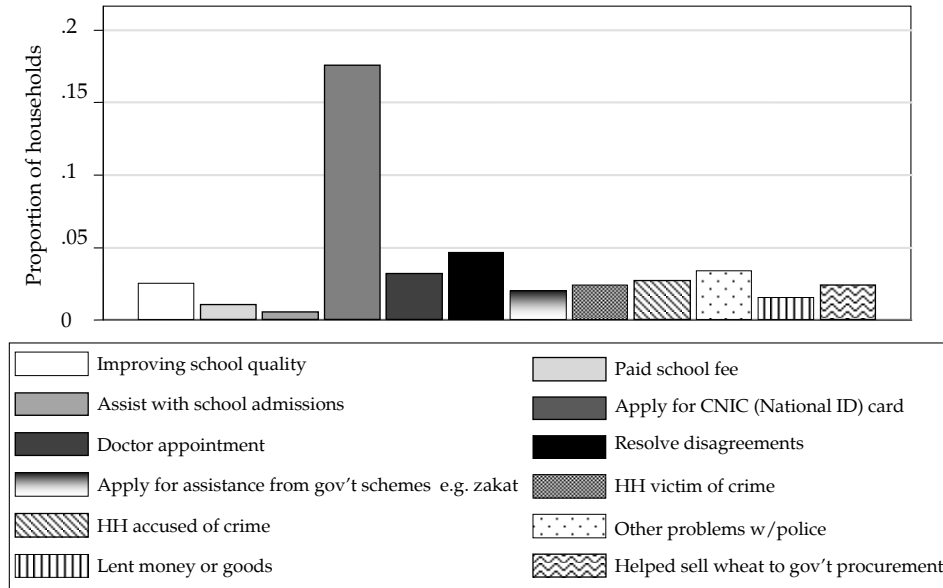


**Figure 7: Households that reported receiving assistance from any patron**



As shown in Figure 8, by far the most common area in which households receive assistance is in applying for a national identity card. This card is required for many private and public functions, such as opening a bank account or receiving certain government safety net program benefits, but it is also required to vote. This could be consistent with patrons assisting clients purely as a service to them or as part of pre-election campaigning.<sup>3</sup>

**Figure 8: Patron assistance to clients**



One of the major questions raised by the issue of patronage is whether these vertical social networks tend to assist households in need—for example, by helping them bypass poorly functioning public service delivery mechanisms—or if they privilege those who are both better resourced and better connected, leaving out the vulnerable. Simply because vulnerable households are likely to need more assistance, we would expect the measures of assistance to be biased toward these households, even if all households have equal opportunities to access patron assistance. However, the descriptive regressions in Table 3 suggest the opposite: households likely to be vulnerable, such as landless and female-headed households, appear less likely to receive assistance from patrons, suggesting that patronage activity might increase inequality of outcomes.

<sup>3</sup> The data were collected midway between elections, so this might be expected to increase dramatically in the run-up to an election.

As the results show, the landless have a lower chance of receiving assistance from a patron while female-headed households have the same chance of receiving assistance as other households. So the evidence implies that vulnerable households are less likely to receive assistance from patrons, suggesting that patronage activity could increase inequality of outcomes.

The majority of households did not report receiving assistance from the patron with whom they were connected. However, this does not reveal whether they simply did not need assistance in any of these areas, or rather were unable to activate it. This is sometimes addressed in surveys in one of two ways:

1. Asking hypothetical questions such as “who/how many people could you rely on to help if...?” This is often used in studies on social networks (e.g., Caeyers & Dercon, 2008). It raises a number of respondent bias issues. For example, when households have dealt with recent shocks and challenges, they may have in mind more (or potentially fewer) people they can reliably call on for assistance.
2. Asking whether assistance was sought unsuccessfully. This has the major disadvantage of excluding respondents who decided not to seek assistance because they *anticipated* they would be unsuccessful.

Instead, we asked questions aimed at comparing relatively objective measures of need with whether the household received assistance. These include household characteristics that can proxy for advantage or disadvantage, such as the value of the physical property or whether the household is female-headed, etc. However, the survey also included questions that could match specific needs with assistance in specific areas. For example, in the case of medical attention, one module of the survey asked households about their illnesses and visits to the doctor. This can be matched with responses to questions on whether patrons assisted the household secure an appointment with a doctor. The results from these matched questions will be analyzed in future work.

The questions about all areas of need preceded and were separate from the module on patron assistance in order to reduce potential bias in the answers from other questions about patron activity.

Table 3: Correlates of assistance from patrons

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LPM: Household reports receiving assistance from one or more of the following individuals:								
	Landlords owning > 50 acres	Politicians	Local officials	Tehsil, district, or provincial officials	Police or army personnel	Religious leaders	Market players	NGOs
VARIABLES								
Owens dwelling	0.00784 (0.0167)	0.0167 (0.0143)	0.0531 (0.0343)	0.0186* (0.00926)	0.00493** (0.00192)	0.00562 (0.0132)	-0.0107 (0.00729)	0.00398 (0.00256)
Owens agricultural land	0.0160 (0.0205)	0.0485 (0.0295)	0.0166 (0.0127)	0.0163** (0.00564)	0.00882 (0.00749)	0.0215** (0.00743)	0.0224* (0.0123)	-0.00154 (0.00124)
Female-headed	-0.0410** (0.0137)	-0.0205 (0.0282)	-0.0106 (0.0573)	-0.00166 (0.0198)	-0.00947* (0.00493)	-0.0342*** (0.00753)	0.00808 (0.0122)	-0.00227 (0.00241)
Northern Punjab	-0.0239 (0.0210)	0.0839* (0.0385)	-0.0472 (0.0642)	-0.0363** (0.0139)	-0.00459 (0.00789)	-0.0326*** (0.00723)	0.0373 (0.0252)	0.0112 (0.00641)
Southern Punjab	-0.0132 (0.0249)	-0.00576 (0.0203)	-0.0506 (0.0380)	-0.0378** (0.0130)	-0.0111 (0.00651)	-0.0263** (0.00881)	0.00398 (0.00257)	0.000194 (0.000251)
Constant	0.0358** (0.0152)	0.00441 (0.0204)	0.122*** (0.0287)	0.0225** (0.00934)	0.00511 (0.00496)	0.0325** (0.0118)	-0.000458 (0.00891)	-0.00250 (0.00154)
Observations	1,012	1,012	1,012	1,012	1,012	1,012	1,012	1,012
R-squared	0.008	0.044	0.011	0.024	0.008	0.016	0.035	0.009

**Notes:** Cluster-robust standard errors (clustered at national assembly constituency level) in parentheses. Regressions are for any assistance from a patron (i.e., not conditional on knowing the patron). \*\*\* =  $p < 0.01$ , \*\* =  $p < 0.05$ , \* =  $p < 0.1$ .

## 7. Assistance from Clients to Patrons

Following the discussions in Platteau (1990) and Scott (1972) cited above, we also examine how patrons might seek assistance from their clients. Respondents were asked about a range of unpaid services they might have performed for each patron. As Figure 9 shows, by far the most common area of assistance—with about 30 percent of households assisting at least one patron—was that of events, such as weddings, funerals, or religious festivals. The second most common was political activity. Unpaid agricultural and construction labor were uncommon. As shown in Table 4, it is actually the better-off households who appear to assist patrons, i.e., those households that own their own home and land.

**Figure 9: Client assistance to patrons**

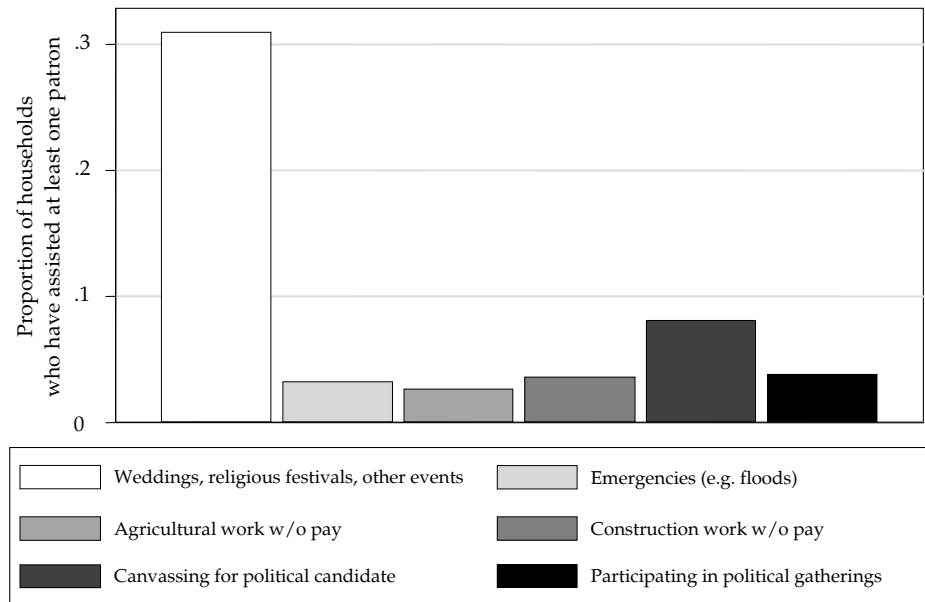


Table 4: Households' assistance to patrons

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LPM: Household reports assisting patron in one or more areas:								
VARIABLES	Landlords owning > 50 acres	Politicians	Local officials	Tehsil, district, or provincial officials	Police and army personnel	Religious leaders	Market players	NGOs
Owns dwelling	0.0107 (0.0162)	0.0319** (0.0105)	0.112** (0.0433)	0.0179* (0.00861)	0.00222 (0.00188)	0.135** (0.0520)	-0.00618 (0.00615)	0.00673* (0.00321)
Owns agricultural land	0.0283* (0.0143)	0.0633* (0.0333)	-0.000256 (0.0312)	0.0123 (0.0145)	-0.00164 (0.00143)	-0.0278 (0.0172)	0.00214 (0.00328)	0.00183 (0.00589)
Female-headed	-0.0434** (0.0168)	-0.00893 (0.0213)	0.0705 (0.0651)	0.0257 (0.0275)	0.0150 (0.0152)	-0.0721 (0.0476)	0.0104 (0.0123)	-0.00599* (0.00319)
Northern Punjab	-0.0544** (0.0235)	0.0141 (0.0501)	-0.104 (0.0612)	-0.0430* (0.0205)	0.000962 (0.00107)	-0.178 (0.117)	-0.000513 (0.00444)	0.00645 (0.00735)
Southern Punjab	-0.0335 (0.0227)	-0.0362 (0.0335)	-0.0349 (0.0813)	-0.0345 (0.0204)	0.00441 (0.00314)	-0.111 (0.0841)	0.00190 (0.00534)	-0.000996 (0.00508)
Constant	0.0405** (0.0153)	0.0219 (0.0234)	0.107** (0.0364)	0.0263 (0.0152)	-0.00284 (0.00262)	0.181** (0.0799)	0.00789 (0.00617)	-0.00106 (0.00266)
Observations	1,012	1,012	1,012	1,012	1,012	1,012	1,012	1,012
R-squared	0.027	0.031	0.032	0.024	0.018	0.058	0.003	0.004

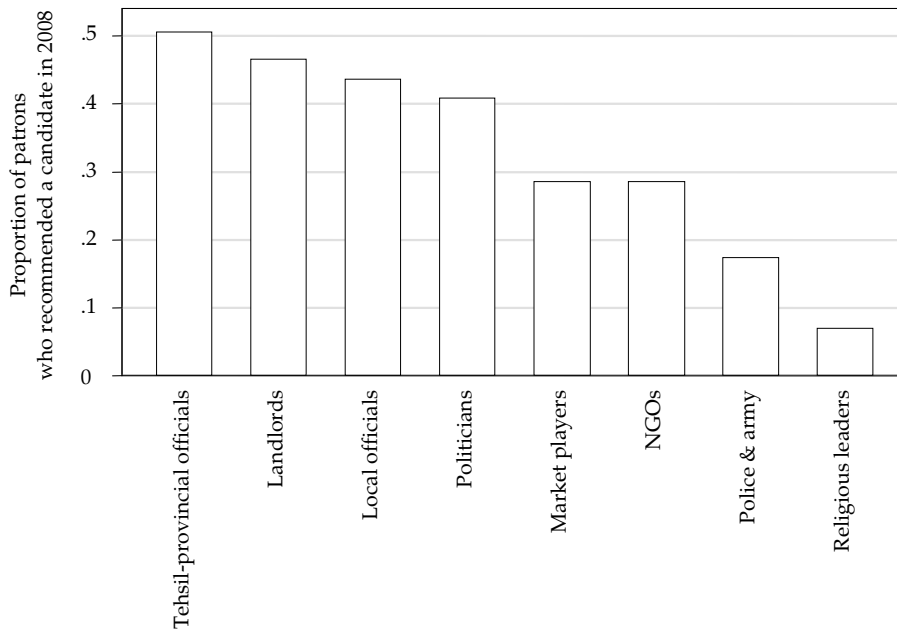
Note: Cluster-robust standard errors (clustered at national assembly constituency level) in parentheses. \*\*\* =  $p < 0.01$ , \*\* =  $p < 0.05$ , \* =  $p < 0.1$ .

## 8. Patronage and Politics

One way that the literature suggests clients may be expected to reciprocate could be for them to vote for particular patrons or candidates endorsed by patrons, who in turn deliver state services to the patrons individually as well as to their communities. Figures 10–11 break down which patrons recommended that a household vote for a specific candidate in the last election (2008). Very large proportions (40 to 50 percent) of local and higher-level officials and landlords recommended candidates; of the local government officials, the local numberdar is the most likely to have recommended a candidate (not shown). Religious leaders appear to be the least involved in direct endorsement of political candidates.

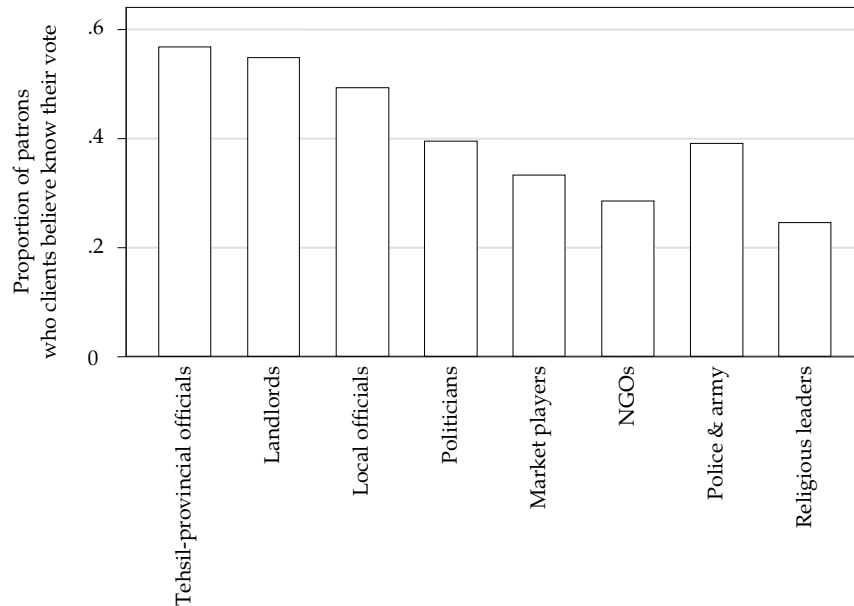
These results are consistent with clientelist campaigning through local leaders, and with the bloc voting activities observed in qualitative work on rural Punjab, where local leaders determine the candidate choice for an entire group of people, e.g., by *biraderi*. This evidence suggests that households may not feel their vote choice is secret enough to deviate from the candidate chosen for their bloc. Future work will include formal modeling of the bloc voting process and relationship between politicians and local influentials.

**Figure 10: Patron recommendations for clients' votes**





**Figure 11: Patron knowledge of clients' votes**



## 9. Conclusions

The intervention of local elites is frequently cited as an impediment to development policy implementation in many countries. In a descriptive analysis of an original household dataset from rural Punjab, we have found that:

1. Households report connections with a range of officials and interact most commonly with local officials. A large number of households also report interacting with their provincial and national politicians.
2. Many households report receiving active assistance both from local officials and provincial and national politicians in accessing certain state services, particularly in applying for national identity cards.
3. Households report links with many patrons outside their own biraderi or clan.
4. Vulnerable households, such as landless and female-headed households, appear less likely to interact with and less likely to receive assistance from patrons, suggesting that patronage activity could increase inequality of outcomes.
5. Better-off households appear more likely to assist patrons in a range of areas.

6. Local officials and politicians tended to recommend candidates in the last election and rural households were strongly convinced that their vote was not secret from the patrons or officials; this is possibly consistent with patronage-based politics and bloc voting.

Future work will include formal modeling and econometric testing of the underlying factors that strengthen or weaken the influence of the patron–client relationship and the delivery of particular state-provided goods and services.

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## **Historical Inequality and Intergenerational Educational Mobility: The Dynamics of Change in Rural Punjab**

**Ali Cheema\* and Muhammad Farooq Naseer\*\***

### **Abstract**

*We analyze educational attainment over three generations in rural Punjab, Pakistan, to determine if the fruits of post-independence development have translated into comparable rates of educational and social opportunities for all strata in the village economy. We show that the differences in class status institutionalized at the time of colonial village settlement lead to a sustained divergence in the rate of intergenerational educational mobility, with limited mobility for nonproprietary and marginalized groups compared to proprietary groups. Inter-class differences in the rate of mobility are higher in proprietary landed estates where the colonial state had concentrated land rights and governance in the hands of landowners compared to crown estates that had a more egalitarian arrangement of land rights and governance. We find that the divergence in inter-class mobility is worrying, so much so that the current generation of marginalized households appears to have fallen a generation behind in terms of educational attainment, even though it resides in the same villages as the proprietary households.*

**Keywords:** Inequality, education, development, Pakistan.

**JEL classification:** I21, I25.

### **1. Introduction**

This paper measures the extent of intergenerational persistence in educational mobility across propertied and nonpropertied social groups in rural Punjab. Differences in mobility across social groups would imply persisting or widening inequality in opportunities across groups. Inequality in opportunities across groups in society is important as differences in opportunity, if they exist, imply a lopsided rise in fortunes and worsening long-run inequality. Thus, measuring intergenerational

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mobility is important to gauge the economic inequality across social groups. This is because measures of “intergenerational mobility are intrinsically connected to the extent of economic inequality in a society” (Azam & Bhatt, 2012, p. 2). This paper provides rigorous evidence on the long-run inequality in opportunities in rural Punjab, which we hope will stimulate a debate on the acceptable levels of long-run inequality that the Pakistani polity is willing to tolerate.

Rural Sargodha provides an excellent context in which to analyze intergenerational mobility for two reasons. First, colonial village settlements in this area created deep social divisions where ownership and control of agricultural and residential land and village common property were assigned to families belonging to specific *quoms* (lineage groups) (Nelson, 2002; Rouse, 1988; Ahmad, 1977; Macnabb, 1934; Leigh, 1917). This stratified the village society into propertied and nonpropertied *quoms* and families, where nonpropertied *quoms* were typically associated with poor economic and social outcomes. This institutional context allows us to analyze the relationship between historic inequality and intergenerational mobility, which has not been possible in many contexts because of a paucity of data. Specially, we ask whether persistence in educational mobility is positively correlated with belonging to a historically propertied or nonpropertied *quom*.

Second, rural Sargodha has undergone massive structural changes in the last 130 odd years that have transformed it from a low-productivity pastoral economy to a highly productive agrarian economy (Agnihotri, 1996; Ali, 1988; Pray, 1984; Wace, 1933). This context enables us to ask whether the transformation has been able to reduce the historic inequality of opportunities and catalyze intergenerational mobility across social groups. Low rates of mobility across social groups in central Punjab would be extremely worrying because they would imply that the problem is likely to be far worse in the more stagnant agrarian regions of western Punjab and rural Sindh. Providing evidence on this question is also important as the literature is not clear whether positive changes in performance and structural change catalyze equality of opportunities (Banerjee & Duflo, 2003) or whether historic inequality in opportunities persists in the face of agrarian transformations.

The issue of intergenerational mobility has received less empirical attention in the developing country context largely because of the paucity of suitable data. Azam and Bhatt (2012) argue that existing studies on developing countries (see, for instance, Jalan & Murgai, 2008; Maitra &



Sharma, 2009; Hnatkovska, Lahiri, & Paul, 2012) tend to suffer from biases related to the use of nonrepresentative samples as they rely on co-residence conditions within cross-sectional data to identify father-son pairs. We are able to address this issue by constructing a primary dataset that is not limited to co-resident household members.

We contribute to the literature on intergenerational mobility by providing micro-evidence on the relationship between historic inequality and intergenerational mobility—an under-researched area in the literature. While there is a burgeoning body of literature on the consequences of inequality for growth, health, and education, our understanding of the association between historic inequality and intergenerational mobility remains limited. We hope that the evidence presented here will provide valuable insights into this issue.

Additionally, this paper makes the following important contributions to the literature on the Pakistan economy. First, it provides rigorous evidence on the extent of intergenerational mobility in educational outcomes in rural Punjab and shows how this mobility has changed over the long run. This evidence will inform policymakers about the overall levels of mobility in rural Punjab, and ask whether it is an area that should concern policymakers by comparing it with findings from India. Second, we provide evidence on differential patterns of education mobility across propertied and nonpropertied groups. We hope that the evidence on intergenerational educational deficits across social groups will improve the understanding of policymakers mandated to operationalize Article 25-A of the Constitution<sup>1</sup>—which pertains to a child’s right to education—and help them target their efforts better.

We find evidence of increasing intergenerational mobility in educational attainment across three generations of rural males in district Sargodha. However, we also find significant differences in mobility between historically propertied and nonpropertied groups, with the former experiencing far less long-run mobility. This indicates the worsening long-run equality of opportunities for households whose families were at the bottom of the village social hierarchy during the colonial period. It also suggests that the agrarian transformation in the district has resulted in a lopsided rise in fortunes.

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<sup>1</sup> Article 25A (*The Constitution of the Islamic Republic of Pakistan, 1973*) states: “Right to education. ...The State shall provide free and compulsory education to all children of the age of five to sixteen years in such manner as may be determined by law.”

The paper provides two stark findings on intergenerational education mobility. First, while impressive gains have been made by the propertied in terms of school transitions, households at the bottom of the historic social hierarchy continue to have extremely low rates of transition to school *in spite* of increased provision of schools in the district's villages. The outcome is that households whose ancestors were at the bottom of the village hierarchy have fallen a generation behind in terms of educational attainment compared to groups at the top and in the middle.

What is extremely worrying is that a significant proportion of households in the nonpropertied group have had zero change in educational attainment across three generations. The fact that this stagnation is occurring in villages *with* schools suggests that it is these households' demand for education that is the most serious challenge to the government's stated aim of universalizing education.

The paper is organized as follows. Section 2 describes the data and the social stratification and outcome measures used. Section 3 outlines our empirical strategy and presents the regression results for intergenerational mobility in rural Sargodha and across historically propertied and nonpropertied groups. Section 4 provides estimates of transitions to school. Section 5 analyzes educational mobility using quantile plots. Section 6 presents some conclusions.

## 2. Data and Measures

We use data from the Sargodha Village and Household Survey (SVHS)—a district-representative primary survey of rural households designed and constructed by Cheema, Mohmand, and Naseer in 2007/08. Sargodha is appropriate for our purposes as it is neither an underdeveloped district nor is it one of the more highly developed districts in the province. The SVHS is a representative survey of a random sample of households in 35 randomly drawn villages in the district. The survey was conducted between November 2007 and March 2008, and collected detailed household- and member-level information on education, historical *quom* status, occupation, marital status, land and family history, wealth, household assets and expenditures, demographics, social capital, and civic and political engagement. In addition, it collated information on the education, occupation, and land ownership of the household head as well as his father and sons.

A *multistage stratified random sampling* technique was adopted for this survey. The 35 sample villages were randomly selected based on the 1998 Population Census listing of all revenue villages (*mouazzas*) in Sargodha. Villages were first stratified by the type of initial colonial settlement using databases of *misl haqiats*<sup>2</sup> and colonial inspection reports conducted by British colonial officers during 1915–1920.<sup>3</sup>

In the first stage, a complete mapping and census of all households was carried out for each sample (revenue) village by a team of professional surveyors. The census form contained several questions on the economic and demographic attributes of each household, such as its landholdings, type of residential structure, and the household head's age and *quom*. Along with this, a detailed community survey was conducted and a physical mapping exercise carried out for each village. In the second stage, a random *quom*-stratified household sample was drawn for each village based on the household census data.

There are two major advantages to using the SVHS data<sup>4</sup> to study intergenerational education mobility over and above the standard large-scale Pakistani household income and expenditure survey data. First, the SVHS provides intergenerational data on the household head's father and sons irrespective of whether they are co-residents; this helps mitigate sample selection issues associated with identifying father-son pairs using the co-residence condition. Second, the SVHS contains data on actual years of schooling rather than the level of schooling completed, and therefore avoids the discontinuities associated with the use of categorical data on educational attainment.

### 2.1. Historic Quom-Based Social Stratification

As our interest is in the historical social position of each family, we use the colonial classification<sup>5</sup> of lineage groups in Sargodha to categorize households into historically *zamindar*<sup>6</sup> (landholding) *quoms* located at the top of the rural social hierarchy, artisanal *quoms* in the middle, and historically depressed<sup>7</sup> *quoms* at the bottom. The latter two belong to the

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<sup>2</sup> The village record of rights.

<sup>3</sup> This database was constructed from the district of Sargodha revenue archive by the authors in collaboration with Dr Shandana Mohmand of the Institute of Development Studies.

<sup>4</sup> Azam and Bhatt (2012) find similar advantages associated with the Human Development Survey of India, 2005.

<sup>5</sup> The classification is given in detail in the Sargodha district gazetteers (various issues).

<sup>6</sup> *Zamindar quoms* comprise both landowners and land cultivators.

<sup>7</sup> Colonial sources classify this group as menials and place them at the bottom of the social hierarchy.

historically nonpropertied population and the *zamindar quom* constitutes the propertied group.

We can identify the historical social position of existing households by mapping their *quom* status enumerated through the household census against the colonial classification of the three main social groups based on information given in the district gazetteers and the database of colonial inspection reports. Given that the historical *quom* status of the household is prone to reporting bias, the information collected on each household through the census was triangulated with key local respondents as well as through a community verification exercise. Inconsistencies in information between these sources were resolved through interviews with village elders.

## 2.2. Preferred Outcome Measure

We use educational attainment as the proxy for intergenerational economic mobility instead of earnings or wealth as it is less likely to be prone to serious errors of measurement. It is also less likely to suffer from lifecycle biases as most individuals complete their education by the second decade of their lives. More importantly, the literature on developing countries and Pakistan shows that this measure is highly correlated with higher earnings and wealth, movements out of poverty, better health, higher skills, and better labor market outcomes (Arif, 2003, 2006; Black & Devereux, 2011). Finally, this measure has assumed considerable importance in its own right in the Pakistani context after the recent passage of Article 25-A of the country's Constitution.

## 3. Empirical Strategy and Results

We start by providing evidence on the extent of intergenerational mobility in rural Sargodha across three generations in a family. The regression model we estimate is:

$$educ_{i,f} = \alpha + \beta educ_{i-1,h} + u_h, i \in \{2, 3\}, f = 1, 2, \dots, 417 \quad (1)$$

where subscript  $f$  denotes the family,  $i$  denotes the generation, and  $educ_{i,f}$  denotes the years of schooling of generation  $i$  in family  $f$ .  $\beta$  is the coefficient of interest and measures persistence in educational attainment for generation  $i$ , where higher values imply greater persistence. Alternatively,  $(1 - \beta)$  is a measure of intergenerational mobility across

generations with lower values indicating less mobility. We have reported the results for both these measures.

In order to ensure balance in our panel, we define the following three generational cohorts for each of the 417 households in our sample:

- Generation 1 (“grandfather”): individuals aged 65+ years in the survey year 2008
- Generation 2 (“father”): individuals aged 40–65 years in 2008
- Generation 3 (“son”): individuals aged 20–40 years in 2008

We estimate equation (1) above for successive pairs of these generational cohorts. Table 1 reports the results for the two pairs of generational cohorts. It shows that the father’s education in each generational pair has an economically and statistically significant effect on the child’s years of schooling. It also shows a pronounced decline in persistence across generations, with the estimated coefficient  $\beta$  declining from 0.875 for the grandfather-father pair to 0.413 for the father-son pair. This provides evidence for increased educational mobility in rural Sargodha—an expected trend that is consistent with the gains in educational attainment reported through aggregate data.

**Table 1: Intergenerational educational mobility in Sargodha**

	Dependent variable	
	Father’s years of schooling	Eldest son’s years of schooling
Grandfather’s/father’s years of schooling	0.875** (0.074)	0.413*** (0.04)
Mobility	0.125	0.587
Observations	417	417
R-squared	0.154	0.204

Note: Standard errors clustered at the village level reported in parentheses. \*\*\* = 1 percent significance level, \*\* = 5 percent significance level.

Source: Sargodha Village and Household Survey (2007/08).

The real question, which is central to this paper, is whether there is a significant difference in the degree of intergenerational mobility across the three social groups that comprised the historical village hierarchy in

rural Sargodha. We address this question by estimating the following regression model:

$$educ_{i,f,q} = \alpha + \beta educ_{i-1,h,q} + u_{h,q}, i \in \{2, 3\}, f = 1, 2, \dots, 417 \quad (2)$$

In equation (2),  $q$  is the *quom* of the household head's family and corresponds to *zamindar*, artisanal, or historically depressed *quoms* (see Section 2.1). The variable  $educ_{i,f,q}$  denotes the years of schooling of generation  $i$  in family  $f$  and *quom*  $q$ . We estimate this equation for each of the three *quoms* and for the two pairs of successive generational cohorts.

Table 2 shows that there is a negative trend in the value of the  $\beta$  coefficient across the generational pairs. The coefficient on the father and grandfather's education term is economically and statistically significant for successive generational pairs across all three *quoms*. However, we find much higher rates of educational mobility among *zamindars* than artisans and historically depressed *quoms*. While the estimated coefficient of  $\beta$  declines sharply from 0.802 for the grandfather-father pair to 0.279 for the father-son pair in the case of *zamindar quoms*, its decline is far less pronounced in the case of artisanal and historically depressed *quoms*.

This evidence points to significant differences in the degree of intergenerational mobility across social groups, with historically nonpropertied groups experiencing far less long-run mobility in educational attainment than propertied groups. This indicates worsening long-run inequality of opportunities among the propertied and nonpropertied groups in rural Sargodha, and suggests that the agrarian transformation in the district is causing a lopsided rise in fortunes between these social groups.

**Table 2: Intergenerational educational mobility by *quom* in Sargodha**

	Dependent variable	
	Father's years of schooling	Eldest son's years of schooling
<i>Zamindar quom</i>		
Grandfather's/father's years of schooling	0.802***	0.279***
	(0.087)	(0.061)
Mobility	0.198	0.721
Observations	228	228
R-squared	0.157	0.120
<i>Artisanal quom</i>		
Grandfather's/father's years of schooling	0.910***	0.506***
	(0.149)	(0.090)
Mobility	0.090	0.494
Observations	79	79
R-squared	0.167	0.294
<i>Historically depressed quom</i>		
Grandfather's/father's years of schooling	0.680	0.525***
	(0.459)	(0.094)
Mobility	0.320	0.475
Observations	108	108
R-squared	0.058	0.179

Note: Standard errors clustered at the village level reported in parentheses. \*\*\* = 1 percent significance level.

Source: Sargodha Village and Household Survey (2007/08).

How does the difference in educational mobility between historically propertied and nonpropertied groups in Pakistan compare with the differences in mobility among higher, intermediate, and lower caste<sup>8</sup> groups in India? The comparison is instructive, given the two countries' shared historical and colonial experience.

<sup>8</sup> In rural India, historical caste status defined the historical social status of individuals and their families (Munshi & Rosenzweig, 2009; Rosenzweig & Munshi, 2006; Azam & Bhatt, 2012). It is unclear to whether the correspondence between caste and proprietary status in the Hindu-majority

Tables 3 and 4 report Azam and Bhatt's (2012) results for the pattern of intergenerational education mobility for four different social groups—high castes, Other Backward Castes (OBCs), Scheduled Castes, and Muslims—in India. We compare our results (Table 2) and theirs (Tables 3 and 4) in order to put our findings on differences in intergenerational mobility across social groups into regional context.

Tables 3 and 4 report their findings for sons who were born during the periods 1961–65 or 1981–85 as these correspond broadly to the birth period of our father-son generational pair. The Azam and Bhatt (2012) study is useful because it uses a similar regression model to measure intergenerational mobility. However, since this comparison is not based on a well-specified cross-country regression model, its results should, at best, be seen as providing only indicative evidence.

**Table 3: Intergenerational educational mobility by social group in India (I)**

Dependent variable: Son's years of schooling		
	<i>Son's birth cohort</i>	
	1961–65	1981–85
	<i>Higher Hindu castes</i>	
Grandfather's/father's years of schooling	0.510 ***	0.406 ***
	(0.025)	(0.021)
Mobility	0.490	0.594
Observations	1,474	2,018
R-squared	0.271	0.271
	<i>OBCs</i>	
Grandfather's/father's years of schooling	0.645 ***	0.487 ***
	(0.033)	(0.028)
Mobility	0.355	0.513
Observations	2,027	3,114
R-squared	0.217	0.267

Note: \*\*\* = 1 percent significance level.

Source: Azam and Bhatt (2012).

A comparison of Tables 2, 3, and 4 shows that the father-son pair in the *zamindar quom* of Sargodha has a much higher mobility coefficient

districts of India was as tight as that between the proprietary and social status of families in the villages of rural Punjab (Bayley, 2001; Ahmad, 1977; Rouse, 1988).



(0.721) than those reported for higher-caste Hindus. We also find that the mobility coefficients among father-son pairs in the artisan and the historically depressed *quoms* are worse than those reported for the Scheduled Castes with sons in the 1981–85 birth cohort. This suggests that the mobility experience of households in Sargodha is in stark contrast to the finding for India that “there has been an improvement in mobility across social groups, especially at the lower end of the educational distribution” (Azam & Bhatt, 2012, p. 33).

**Table 4: Intergenerational educational mobility by social group in India (II)**

<b>Dependent variable: Son’s years of schooling</b>		
	<i>Son’s birth cohort</i>	
	<b>1961–65</b>	<b>1981–85</b>
	<i>Scheduled Castes/Tribes</i>	
Grandfather’s/father’s years of schooling	0.685***	0.467***
	(0.043)	(0.027)
Mobility	0.315	0.533
Observations	1,667	2,622
R-squared	0.207	0.179
	<i>Muslims</i>	
Grandfather’s/father’s years of schooling	0.622***	0.571***
	(0.051)	(0.026)
Mobility	0.378	0.429
Observations	628	1,316
R-squared	0.217	0.308

Note: \*\*\* = 1 percent significance level.

Source: Azam and Bhatt (2012).

#### 4. School Transitions

Next, we analyze the question of education mobility as if it were a discrete event in the lives of these rural households. For this, we code anyone who went to school and received some education as distinct from those household members who did not receive any formal schooling and never went to school. The idea is to distinguish the act of enrolling in school from the years of completed schooling, the former acting more as an observable/behavioral signal of intent whereas the latter may be a composite outcome influenced by multiple factors.

Table 5 reports data on households where the *next* generation received some education as a proportion of all those households in which members of the *prior* generation did not go to school. Thus, the statistics reported in columns 1–3 of the table present the proportion of upwardly mobile households where mobility is measured by the decision of unschooled parents to send their next generation to school. This analysis presents a lower-bound estimate of the degree of educational mobility among the families belonging to the three *quoms*.

**Table 5: Generational transition to schooling by *quom***

Pair	<i>Zamindar</i>	Artisan	Historically depressed <i>quom</i> (HDQ)	Differences in means		
				(i) <i>Zamindar</i> – artisan	(ii) Artisan – HDQ	(iii) <i>Zamindar</i> – HDQ
Grandfather-father	0.500	0.443	0.185	0.0571	0.2584***	0.3155***
Father-son	0.808	0.700	0.605	0.0690	0.0680	0.0560
				0.1077	0.0953	0.2030***
				0.0770	0.0920	0.0640

Note: Standard errors reported below the difference in means. \*\*\* = 1 percent significance level.

Source: Sargodha Village and Household Survey (2007/08).

Two facts are immediately apparent. First, in each generational pair, the proportion of households that transition into *some* level of schooling increases with the household's position in the rural social hierarchy. That is, households belonging to the *zamindar quom* have the highest rate of transitioning into schooling at both instances of generational change: 50 percent of the *zamindar* households with unschooled *grandfathers* sent their sons to school and 80.8 percent of *zamindar* households with unschooled *fathers* sent their sons to school. On the other hand, of the three *quoms*, the historically depressed households have the lowest rate of accomplishing the schooling transition from one generation to the next.

Second, an increasing proportion of households over time make the schooling transition across all three social groups; this could be a result of supply-side government programs that have ensured better school provision in the villages of Sargodha (Table 6). We find that, across all three social groups, the proportion of previously unschooled households that started sending their members to school is higher for the father-son pair than for the grandfather-father pair.

However, we do find that, in spite of increased school provision, education mobility remains sluggish at the bottom of the social ladder. Thus, households belonging to the historically depressed *quoms* have a significantly lower rate of schooling transition than the *zamindar* households (the difference is statistically significant at 1 percent); a generation ago, their rate of schooling transition was even lower than that of the artisanal households (Table 5). As the quantile plots in the following section demonstrate, this gap in educational attainment raises interesting questions regarding households' demand for education and poses a serious challenge to the government's stated aim of universalizing education.

**Table 6: School provision in 35 sample villages**

Time period	No. of private schools	No. of public schools	No. of villages without a school
-1950	0	8	27
1951-70	0	36	8
1971-90	0	69	1
1991-	15	76	1

Source: National Education Census, 2005.

Table 7, which regresses years of schooling on generational dummies for the historically depressed and the nondepressed (*zamindar* and artisan) *quoms* separately, gives a sense of the magnitude of the challenge. It shows that the mean level of three years of schooling achieved by historically depressed *quoms* in the current generation is the level achieved by the nondepressed *quoms* a generation earlier. Put another way, the sons' generation of the historically depressed households has an educational attainment that was achieved by the father's generation in the nondepressed social groups. *This suggests that, in rural Sargodha, historically depressed households have fallen a generation behind in terms of educational attainment.*

**Table 7: Education mobility: Historically depressed versus nondepressed *quoms***

Dependent variable: Years of schooling	Nondepressed ( <i>zamindar</i> and artisan) <i>quoms</i>	Historically depressed <i>quom</i>
Current generation, t = 3	6.77*** (31.3)	2.92*** (7.53)
Father's generation, t = 2	3.43*** (15.8)	0.59 (1.52)
Constant	0.70*** (4.59)	0.00 (0.00)
Household fixed effects	Yes	Yes
Model F-statistic	489.7	31.7
N	1284	198

Note: \*\*\* = 1 percent significance level; t-statistics reported in parentheses. We control for household fixed effects.

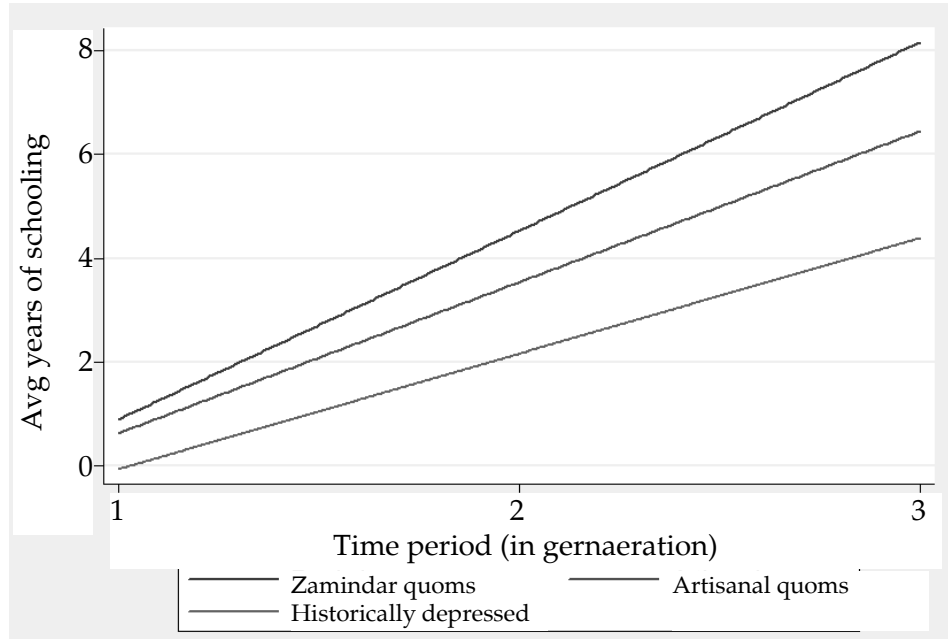
Source: Sargodha Village and Household Survey (2007/08).

## 5. Evidence from Quantile/Mean Plots

Next we revert to the variable capturing the detailed educational attainment, i.e., years of schooling, to unmask any heterogeneity in mobility within the different social groups. Unlike in Section 3, we do not focus here on the *mean* educational attainment in each generation and/or *quom*. Instead, we capture the heterogeneity in outcomes by calculating different percentiles of the education distribution and tracking their progression over time. The resulting quantile plots reveal interesting patterns that reinforce our earlier findings on educational mobility and help put them in starker relief.

However, before plotting the quantiles within each *quom*, Figure 1 plots the mean educational attainment for each generation and *quom*. This serves to reinforce the earlier finding that the different *quoms* have different educational outcome profiles and, moreover, that these differences are not closing over time. Therefore, while it is the case that *zamindar quom* households continue to be more educated than the other two classes and the mean educational attainment has increased for all three groups, the gap in their mean educational attainment has increased over time.

**Figure 1: Average educational attainment over generations, by *quom***

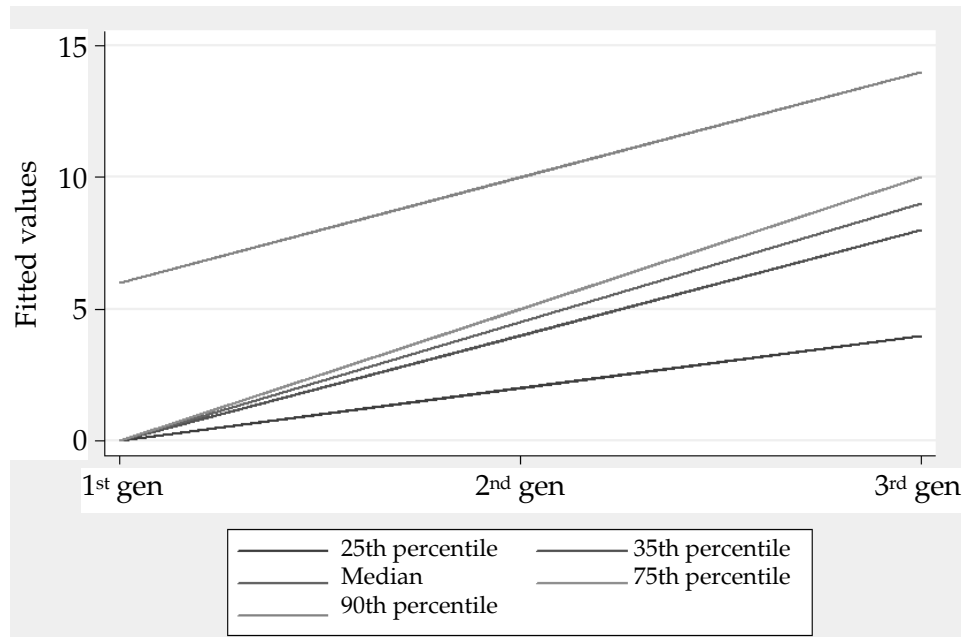


Note: The figure plots the average educational attainment against (the generational) time period for each of the three socioeconomic groups; t = 3 refers to the current generation, t = 2 refers to the *father's* generation, and t = 1 is the *grandfather's* generation.

This divergence in educational attainment is interesting and we are not aware of any prior work that attempts to quantify or explain such a phenomenon. This may partly be explained by the fact that information on a household's *quom* is not collected in the Population Census or other standard large household surveys.

Next, we present a set of quantile plots in order to show that there is tremendous heterogeneity in educational attainment *within* the different *quoms*. To see this, for each *quom*, we plot and track five different percentiles of education distribution at each point in time. Three of these percentiles (the 35th, median, and 75th) lie close to the center of the distribution while the 25th percentile captures the bottom tail and the 90th percentile captures the top tail of the distribution. Figure 2 plots the quantiles for households belonging to the historically *zamindar quom*.

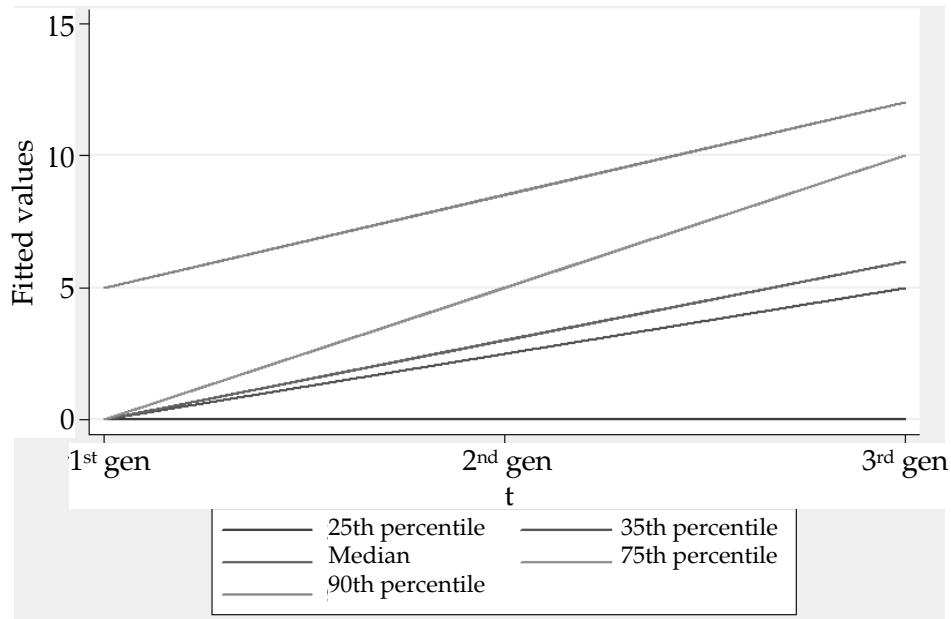
**Figure 2: Quantile plots for educational attainment, by generation (historically zamindar quom)**



As shown by the graph above, one finds very different outcomes depending on which part of the education distribution one looks at. There is a slight overall increase in the dispersion of the education distribution as we move along the x-axis. There is no evidence of convergence between the 25th and 90th percentiles even though schooling levels are increasing in both percentiles. People in the middle have all increased their educational attainment over the years at the rate of about five years per generation though, even after three generations, the educational attainment has barely reached matriculation.

In contrast, Figures 3 and 4 show that, over the same period of time, a significant proportion of the households belonging to the historically landless social groups show *zero* educational mobility.

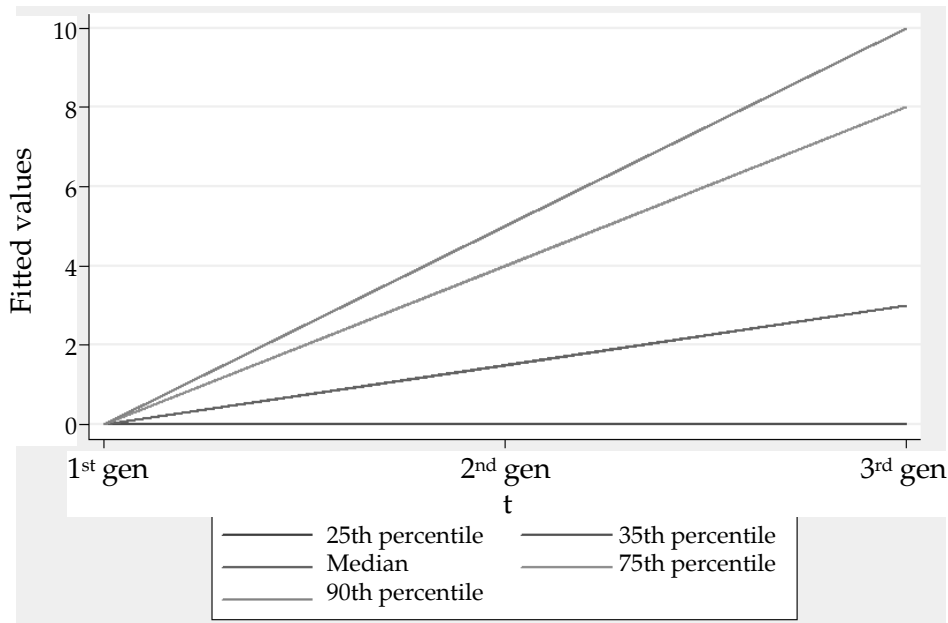
**Figure 3: Quantile plots for educational attainment, by generation (artisans)**



Even though the most educated households in these two *quoms* include males who have reached matriculation level or attained higher education, at least 25 percent of all artisan households and 35 percent of all historically depressed *quom* households still have males with zero years of schooling. Given that a decline in educational attainment from one generation to the next is less likely, a flat line for the 25th or 35th percentile indicates that there are households for whom there has been *zero* change in educational attainment over time and, hence, limited/zero upward mobility.

These “flatliners,” who belong to the nonpropertied *quoms*, present the greatest challenge to fulfilling the objective set by Article 25-A of the Constitution. What is extremely worrying is that flatlining as a behavioral phenomenon is evident in the context of villages that *have* access to government schools. To achieve the goals set by 25-A, it is imperative that policymakers design policy interventions after rigorously analyzing the low demand for education in this group of households.

**Figure 4: Quantile plots for educational attainment, by generation (historically depressed *quoms*)**



## 6. Conclusions

This paper has measured the extent of intergenerational persistence in educational mobility across propertied and nonpropertied *quom* groups in rural Sargodha in central Punjab. The analysis is based on a rich primary dataset constructed by the authors that collates information on three generations of families belonging to three *quoms* that historically comprised the hierarchy of village society in the district. The historical *quom* status of households is determined by carefully triangulating self-reported survey data with information contained in colonial village inspection reports and through community focus groups and interviews with village elders. The data allows us to create a unique father-son matched dataset for two successive generational pairs that is not restricted to the co-residence condition and, hence, is not subject to the selection bias that exists in most developing country studies on this issue.

We have found evidence of increasing intergenerational mobility in educational attainment across three generations of rural males in the district. The average persistence coefficient declines from 0.875 for the grandfather-father pair to 0.413 for the father-son pair. However, we have found significant differences in the degree of intergenerational mobility



across *quoms*: the historically nonpropertied groups experience far less long-run mobility in educational attainment than the propertied groups. This indicates the worsening long-run equality of opportunities among these groups, implying that the agrarian transformation in the district has resulted in a lopsided rise in fortunes.

The intergenerational mobility coefficient among the propertied group in Sargodha is much higher than that reported for higher castes in India; the coefficients for the nonpropertied groups in the district are worse than those for Scheduled Castes in India. This suggests that long-run inequality in opportunities in the district is worse than that found across the border.

The proportion of households that transition into *some* level of schooling increases with the household's historical position in the rural social hierarchy. While impressive gains have been made by the propertied in terms of school transitions, households at the bottom of the historical social hierarchy continue to have extremely low rates of transition to school *in spite* of increased provision of schools in the district's villages. The outcome is that households belonging to the historically depressed *quom* have fallen a generation behind in terms of educational attainment compared to nondepressed *quom* households. This is in stark contrast to the finding for India that "there has been an improvement in mobility across social groups, especially at the lower end of the education distribution" (Azam & Bhatt, 2012).

Finally, there is tremendous heterogeneity in educational attainment *within* the different *quom* groups. What is cause for serious concern is that artisan households in the 25<sup>th</sup> percentile and the historically depressed *quom* households in the 35<sup>th</sup> percentile of the distribution of educational attainment have had zero change in educational attainment across three generations. In our view, these "flatliners," who belong to the nonpropertied *quoms*, present the greatest challenge to meeting the objective set by Article 25-A of the Constitution. The fact that this is occurring in villages *with* schools suggests that it is these households' demand for education that is the most serious challenge to the government's stated aim of universalizing education. It seems that it will not be possible to design effective intervention tools to universalize education without understanding the channels underlying education demand failure among historically nonpropertied households.

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## **The State of Health in Pakistan: An Overview**

**Uzma Afzal\* and Anam Yusuf\*\***

### **Abstract**

*Although the Millennium Development Goals provide countries with well-rounded objectives for achieving human development over a period of 25 years, Pakistan is not on track to achieving the health-related goals. With the eighth highest newborn death rate in the world, in 2001–07 one in every ten children born in Pakistan died before reaching the age of five. Similarly, women have a 1 in 80 chance of dying of maternal health causes during reproductive life. Compared to other South Asian countries, Pakistan currently lags behind in immunization coverage, contraceptive use, and infant and child mortality rates. Expenditure as a percentage of private expenditure on health is about 98 percent, positioning Pakistan among those countries with the highest share of out-of-pocket payments relative to total health expenditure (World Health Organization, 2009). Pakistan is also going through an epidemiological transition where it faces the double burden of communicable diseases combined with maternal and perinatal conditions, as well as chronic, noninfectious diseases. The landscape of public health service delivery presents an uneven distribution of resources between rural and urban areas: The rural poor are at a clear disadvantage in terms of primary and tertiary health services, and also fail to benefit fully from public programs such as the immunization of children. The poor state of public facilities overall has contributed to the diminished role of public health facilities, while the private sector's role in the provision of service delivery has increased enormously. Following the 18<sup>th</sup> Amendment to the Constitution, the health sector has been devolved to the provinces, but the distribution of responsibilities and sources of revenue generation between the tiers remains unclear. A multipronged national health policy is needed that tackles the abysmal child and maternal health indicators, and reduces the burden of disease. Moreover, it is imperative to improve the provision of primary and tertiary healthcare with a strong monitoring system in place.*

**Keywords:** Millenium Development Goals, public health, Pakistan.

**JEL classification:** I18.

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## 1. Introduction

The Millennium Development Goals (MDGs) provide time-bounded objectives to overcome extreme poverty and provide the basic human rights to health, education, and security that were pledged in the Universal Declaration of Human Rights and United Nations Millennium Declaration (Millennium Project, 2006). Two years short of the deadline in 2015, it is useful to see how Pakistan has performed in the health-related goals that were set in 2000. Health outcomes are useful in gauging a country's health performance over past decades and in conducting cross-country comparisons.

Pakistan is not on track to achieving most health-related MDGs. While there has been an improvement in the education sector, health remains on the periphery of the development landscape. With the eighth highest newborn death rate in the world ("Pakistan has the 8th highest," 2010), one in every ten children born in Pakistan during 2001–07 died before reaching the age of five years. Women have a 1 in 80 chance of dying of maternal health causes during their reproductive life (World Bank, 2010). Pakistan thus faces a daunting challenge in improving health outcomes for children and adults alike.

In order to achieve substantial improvements in the health sector, it is imperative to formulate a well-rounded health policy that focuses not only on short-term health outcomes but also on improving the long-term health status of the population at large. Given the current level of government expenditure on health, an improvement in this sector seems unlikely. The quality of public health services has seen a downturn over the last few decades, and the rising population is increasing pressure on state institutions. This has allowed the private sector to bridge the gap between rising demand and public provision of healthcare. The private sector's role in the provision of service delivery has increased enormously. The poor state of public facilities overall has contributed to the diminished role of public health facilities. Out-of-pocket expenditure as a percentage of private expenditure on health is about 98 percent, positioning Pakistan among those countries with the highest share of out-of-pocket payments relative to total health expenditure (World Health Organization, 2009).

Pakistan is going through an epidemiological transition where it faces the double burden of communicable diseases combined with maternal and perinatal conditions, and chronic, noninfectious diseases. The landscape of public health service delivery presents an uneven distribution of resources between rural and urban areas. The rural poor are at a clear

disadvantage in terms of primary and tertiary health services. They also fail to benefit fully from public programs such as the immunization of children. Following the 18<sup>th</sup> Amendment to the Constitution, the health sector has been devolved to the provinces, but the distribution of responsibilities and sources of revenue generation between the tiers remains unclear.

## **2. Where We Stand: The State of Health**

Although life expectancy, health, and living standards have improved in the last few decades, this growth has not been uniform across countries, and even within countries there exist stark disparities in health outcomes. South Asia has the greatest concentration of malnourished people in the world, where one in every five persons is malnourished or suffers micronutrient deficiencies such as Vitamin A and iron. Estimates suggest that South Asian countries lose about 1 percent of their GDP due to such deficiencies (Pakistan Poverty Alleviation Fund, 2010).

### **2.1. Pakistan's Overall State of Health**

Pakistan is a signatory to the United Nations mandate of the MDGs, which are to be attained by 2015. While there have been successes in some areas, the country has not fared well in health-related goals. Currently, it has the highest mortality rates for children and women in South Asia, given which, it will fail to meet MDGs 4, 5, and 6 (on child mortality, maternal health, and combating HIV/AIDS, malaria, and other diseases, respectively). For Pakistan to meet the MDGs, the infant mortality rate should decline to 40 deaths per 1,000 live births and the under-five mortality rate should be no more than 52 deaths per 1,000 live births. Maternal mortality, on the other hand, should decline by almost 50 percent of its current level (140 per 100,000) by 2015 (Khan, 2013).

Estimates indicate that about 38 percent of under-five children are underweight while 12 percent are severely underweight (Khan, 2012). Children represent the most vulnerable group of society, and have not benefited much from previous growth episodes and social development. Countries such as Nepal and Bangladesh have achieved greater progress in their child mortality rates despite similar or worse economic performance (see Table 1).

Maternal mortality, despite being difficult to measure, is alarmingly high. Much of this stems from the low incidence of skilled birth attendance

and high fertility rates. What is more alarming is that the rate of skilled birth attendance—a proxy for maternal mortality—has actually declined from 48 percent in 2004–06 to 41 percent in 2008/09 (Pakistan, Planning Commission, 2010). The situation is even worse in rural areas where the maternal mortality rate is almost double that of urban areas: 319 per 100,000 in rural areas and 175 per 100,000 in urban areas (Pakistan, Planning Commission, 2010).

**Table 1: Health indicators for South Asia**

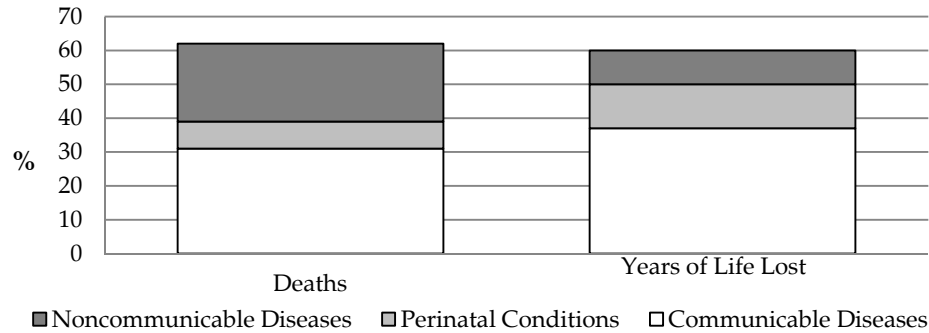
Health indicators	Pakistan		Bangladesh		India		Sri Lanka		Nepal	
	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010
Infant mortality rate (per 1,000 live births)	95	60	97	39	81	49	24	11	94	41
Maternal mortality rate (per 100,000 live births)	490	260	800	240	600	200	85	35	770	170
Under-five mortality rate (per 1,000 live births)	122	74	139	49	114	63	29	13	135	50
Immunization (DPT)* among 1-year-olds (%)	54	86	69	95	70	72	86	99	43	82
Immunization (measles) among 1-year-olds (%)	50	82	65	94	56	74	88	99	57	86
Total fertility rate (births per woman)	-	3.4	-	2.2	-	2.6	-	2.3	-	2.7
Life expectancy at birth (years)	-	65.2	-	68.6	-	65.1	-	74.7	-	68.4

*Source:* World Health Organization (2013).

## 2.2. Burden of Disease

Pakistan is going through an epidemiological transition that subjects it to a “double” burden of disease. Communicable diseases combined with maternal and perinatal conditions account for more than 50 percent of the burden. Diseases such as lower respiratory tract infections, diarrheal diseases, measles, and whooping cough (pertussis) account for about a third of the years of life lost, but can be controlled by low-cost interventions such as vaccinations, simple treatments, and hand washing. These account for much of the current burden of disease. The second burden is that of chronic, noninfectious diseases (World Bank, 2010). Figure 1 highlights the total burden of disease in Pakistan.



**Figure 1: Burden of disease in Pakistan**

Source: World Health Statistics, 2006.

Hyder and Morrow (2000) look at noncommunicable diseases and find that hypertension, chronic liver disease, and heart disease are among the top ten causes of loss of healthy life years. Coronary artery disease and diabetes are also prevalent, with around 30 percent of the adult population suffering from the former and 7.1 percent from the latter—Pakistan is one of the top few countries in the world prone to the prevalence of diabetes. It is imperative to acknowledge the presence of such high burdens of chronic disease so that the healthcare system can respond to these conditions actively. Unfortunately, there has been little methodical effort to curtail the risk of noncommunicable diseases: for example, despite the high levels of heart disease in Pakistan, neither the public nor the private sector has undertaken any active antismoking campaigns.

In 2004, the Ministry of Health (Government of Pakistan), the World Health Organization (WHO), and Heartfile (a nongovernment organization [NGO]) collectively drafted the National Action Plan for Noncommunicable Disease Prevention, Control, and Health Promotion in Pakistan. The plan incorporated the control and prevention of cardiovascular disease as the basic premise of an inclusive noncommunicable disease prevention effort. The process of surveillance and implementation was started and by October 2007, the action plan's first phase had achieved a number of targets. Such measures have brought issues of disease and their possible prevention into the limelight for policymakers, donors, and the private sector to take effective steps for thorough implementation.

Using data from the Pakistan Demographic Survey for 1997, Hyder, Wali, Ghaffar, Masud, and Hill (2005) measure the burden of premature

mortality in Pakistan. They note that women experience a greater overall burden of disease than men, owing to reproductive and maternal health issues. Figure 1 also shows that a considerable number of years of life are lost due to poor perinatal conditions.

### 3. Landscape of Public Health Service Delivery

Assessing the performance of the public health service in Pakistan is critical. Despite optimistic claims by Khan (2012) pertaining to improved services, the picture is not too promising. The situation is even more worrying when we look at differences in service provision and utilization among rural areas. They are at a clear disadvantage in terms of the use of primary and tertiary health services. Additionally, the rural poor are marked by substantially lower use of services than the urban poor.

While the coverage of services in rural Punjab and Khyber Pakhtunkhwa (KP) has increased over time, the gap between rural and urban use of health facilities remains stubborn in Sindh and Balochistan (World Bank, 2010). Taking the example of full immunization rates (record and recall) in 2010/11, there is about 79 and 77 percent coverage in rural Punjab and KP, but only 67 and 45 percent in Sindh and Balochistan, respectively (Pakistan Bureau of Statistics, 2010).

There are also large variations between districts within a province. Let us consider the case of rural and urban Punjab with regard to antenatal coverage in the top five and bottom five districts (see Table 2). The province's total estimated antenatal coverage is 68 percent. In the urban areas, 79 percent of expectant mothers have access to antenatal care, but the corresponding figure for the rural areas is just over 60 percent (Punjab, Planning and Development Department, & United Nations Development Programme, 2011). Individual districts tell a similar story.

**Table 2: Coverage of antenatal care in Punjab**

Top five districts				Bottom five districts					
	District	Total	Urban	Rural		District	Total	Urban	Rural
1	Mandi Bahauddin	88	86	88	1	Muzaffargarh	55	67	54
2	Rawalpindi	86	85	88	2	Rajanpur	54	75	52
3	Jhelum	85	90	82	3	Hafizabad	50	52	49
4	Lahore	82	85	68	4	Bhakkar	48	57	47
5	Gujrat	81	77	82	5	Narowal	35	41	34

*Source:* Punjab Millennium Development Goals Report (2011); data from Multiple Indicator Cluster Survey, 2011.

We can further assess the performance of public health services through the recent measles outbreak in parts of Sindh and Punjab. A striking number of first-level healthcare facilities were found to be in poor condition and mostly ill equipped. Medicines, especially mumps, measles, and rubella (MMR) vaccination shots, were in drastically short supply at many public healthcare facilities. WHO reported the death of 300 children from measles in December 2012 alone (“Healthcare: The measles muddle,” 2013). A dearth of trained health workers was also reported. Staff absenteeism, a serious problem in public healthcare delivery, has also led to dissatisfaction with government health services, especially among the most vulnerable in Pakistan.

This crisis not only reflects the gaps in the public healthcare system, it also addresses the question as to why the private healthcare option is in more demand than public healthcare services. The private sector is now the leading source of outpatient consultations and maternal and child health services, even though the high cost of private healthcare does not explain the use of such an option (World Bank, 2010).

We now analyze three important healthcare programs in Pakistan to underline specific gaps in public health services. Even though there has been a noteworthy increase in national health programs in the last two decades, which has had a positive impact on the healthcare system, their contribution could be strengthened.

Since its initiation in 1978, Pakistan’s Expanded Program on Immunization (EPI) has aimed to significantly improve child and maternal health through immunization against tuberculosis (TB), measles, tetanus, diphtheria, pertussis, hepatitis B, and poliomyelitis. However, many targets, such as the elimination of polio and measles, have still not been met and WHO figures paint a dismal picture of the situation. Unfortunately, Pakistan is observed to have reported more cases of polio in 2011 than any other country in the world. Although the number of polio cases had decreased overall by 2011, this decrease was offset by the hundreds of thousands of cases of measles reported the following year (Akhtar et al., 2013). The low rate of immunization was the main cause for this epidemic, and points to the EPI’s limited outreach in routine immunization coverage. Among the crucial barriers to successful routine immunization areas are low demand and social resistance to vaccines by certain groups.

Pakistan also has a long history of TB prevalence—responsible for 5.1 percent of the national burden of disease (World Bank, 2010). The

government's National Tuberculosis Control Program has initiated advocacy and social mobilization, and coordinated with other national healthcare programs such as the Lady Health Workers Program at the community level. This makes it easier to identify cases of TB. Additionally, the National Nutrition Program uses the TB control program to provide micronutrients to TB patients (World Bank, 2010). However, the country still lags behind in achieving the global target of TB case detection of 70 percent (Khan, 2012).

Under the Family Planning and Primary Healthcare Program, the Lady Health Worker Program had recruited more than 103,000 lady health workers (LHWs) by March 2012. Around 76 percent of the target population is now covered by LHWs (Khan, 2012), which has accelerated routine immunization for children across the country and brought about some improvement in antenatal care, contraceptive prevalence, and skilled birth attendance in the areas covered. LHWs are trained primarily at basic health units (BHUs), to which they also refer their clients. However, absenteeism and an inadequate supply of medicines at the BHUs mean that many patients are still denied both preventive and curative treatment. The quality of services delivered by the LHWs also requires regular monitoring and evaluation—processes that are yet to be strictly implemented.

#### **4. Health Financing**

Political commitment to improving healthcare can be gauged by the budgetary allocations for social sectors. The current level of expenditure—PRs 62 billion or 0.35 percent of GDP in 2012/13—clearly implies that basic public health goods such as health facilities, medicines and supplies, and universal immunization are in short supply. In addition, the share of health expenditure as a percentage of GDP has declined in the past decade from 0.72 percent in 2000/01 to 0.27 in 2011/12 (Khan, 2012). It is, therefore, not surprising that public expenditure on health in Pakistan is less than that in India, Bangladesh, Sri Lanka, and Nepal (World Bank, 2012).

WHO has recommended allocating 6 percent of GDP to curtail the country's deteriorating health conditions. According to the National Health Accounts for 2005/06, Pakistan spent around USD 20 per capita on health, which is far less than what other low-income countries spent (around USD 32 per capita) (Pakistan Institute of Legislative Development and Transparency, 2013). The total expenditure on health is about 2.4 percent of GDP, of which private expenditure constitutes 83.6 percent (WHO, 2009). Private expenditure on health as a proportion of

total health expenditure is far greater in Pakistan than in other South Asian countries.<sup>1</sup> Moreover, out-of-pocket expenditure as a percentage of private expenditure on health is about 98 percent, positioning Pakistan among those countries with the highest share of out-of-pocket payments relative to total health expenditure (WHO, 2009).

Apart from the low level of expenditure on health, the nature of this expenditure is also disconcerting. According to Islam (2002), Pakistan spent about 85 percent of its healthcare budget on tertiary healthcare, which is utilized by 15 percent of the population. While there has been some improvement in this mix, the regressive nature of public spending persists. Given the increasing burden of communicable disease, the budgetary share of preventive measure programs should also increase.

In recent years, the federal government has taken some positive steps by initiating several vertical programs such as the National Maternal and Child Health Program, the Cancer Treatment Program, and the HIV/AIDS Control Program. Public expenditure on preventive measures and health facilities is progressive at the provincial and regional level, but fails to provide sufficiently at the rural level (Akram & Khan, 2007).

With the promulgation of the 18<sup>th</sup> Constitutional Amendment and the 7<sup>th</sup> National Finance Commission Award, health has now become a provincial subject. The provinces' newly empowered status renders huge responsibilities in terms of formulating policy, streamlining functions, raising funds, and ensuring that existing facilities run smoothly. The National Health Policy of 2009 is no longer relevant in light of the organizational reforms post-2010. At present, there is no national health policy to guide the provinces. While they are expected to develop their own policies, they will still need guidance from the center, especially the smaller provinces, and Pakistan will still require a coherent national agenda for health.

Sharing national health information, financial forecasting, and donor coordination is vital, and in the absence of a federal regulatory authority, an umbrella institution at the federal level could provide a platform for the provinces to work together (Shaikh, 2013). The increased provincial responsibilities require enhanced institutional and management capacities, which are lacking at the moment. The provinces not only need to formulate their own health agendas, they also require skillful execution

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<sup>1</sup> India, Bangladesh, Nepal, and Sri Lanka.

of these policies and sensitive monitoring systems to gauge performance. While the federal government will continue to run the vertical programs till June 2013, they will eventually have to be taken over by the provinces, and the efficacy of these programs may be threatened by this transition.

## 5. Areas of Reform and Conclusion

Given the current situation, there is much that needs to be done, possibly in every domain of the health sector. Women and children still have the most to lose. There is a dire need for aggressive intervention to strengthen the network of health services, expand the outreach of health programs, and introduce technologies to better monitor and strengthen the health programs in place.

It is imperative for the government to tackle the country's abysmal child and maternal health indicators. Maternal mortality needs to be addressed carefully by increasing the number of skilled health service providers such as female doctors and LHWs in rural areas. These workers should also focus on disseminating awareness of family planning services and supplies.

There is evidence that, apart from low nutritional intake, communicable diseases are also largely responsible for malnutrition in children. In addition to programs such as the EPI, preventive information on healthy practices such as washing hands, treating drinking water, and sanitation should be systematically disseminated. It is estimated that 4 billion cases of diarrhea each year, mostly in developing countries, cause at least 1.8 million deaths, of which 90 percent are children under the age of five (United Nations Children's Fund, 2008). About 88 percent of these deaths are attributable to unsafe water supply, inadequate sanitation, and poor hygiene (WHO, 2005).

In this regard, the private sector and NGOs could play a crucial role in spreading awareness among schools, colleges, and universities. In 2009, the private multinational Procter & Gamble Pakistan and the NGO Save the Children came together to build 100 sanitation facilities in 100 days across Karachi, Lahore, and Quetta. They targeted 40,000 school-age children in their health and hygiene awareness campaign.<sup>2</sup> Such measures could help reduce the burden of communicable disease to a large extent.

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<sup>2</sup> For more information, on Procter & Gamble Pakistan's new partnership to reach 100 primary schools in Pakistan through a school health project, see [http://www.pg.com/en\\_PK/news/sagfeeguard\\_build\\_sanitation\\_facilities.shtml](http://www.pg.com/en_PK/news/sagfeeguard_build_sanitation_facilities.shtml)

However, this does not shed the public sector's responsibility, which has the most to contribute in terms of improving the country's water and sanitation sector. Public-private partnerships need to be encouraged in tackling health issues.

Addressing the issue of noncommunicable diseases is equally important for the adult population. Given the loss of healthy life years caused by these diseases, the government needs to incorporate programs at the BHU level to effectively prevent the spread of such diseases. Moreover, in order to accurately determine and analyze the burden of disease, a cause-of-death system that collects detailed information on disease prevalence and mortality should be put in place (Hyder & Morrow, 2000). The healthcare system must cater to the twin burden of communicable and noncommunicable diseases simultaneously, which again necessitates public-private support in health financing.

This leads us to the issue of health expenditure in Pakistan. With one of the lowest public expenditure shares on health, the government needs to make an effort to mobilize more resources. While out-of-pocket expenditure on free health services is growing enormously, approximately 4 percent of the population falls into poverty due to health shocks each year. This risk is even higher in rural areas—the highest being in KP—and increases with household size and lower income levels (World Bank, 2010).

Improved monitoring and evaluation is also necessary not only to improve the performance of the health sector but also to enhance existing programs and reforms. Some instruments, such as the Health Monitoring Information System developed by the government in 1992 with the help of USAID, are in place, but the public health surveillance system in Pakistan is still fragmented and has been unable to generate the data required to make informed public health decisions.<sup>3</sup> Callen, Gulzar, Hasanain, and Khan (2013) draw on the admirable example of an intervention conducted at the BHU level to monitor public worker absenteeism. They use smartphone technology designed to increase inspections at rural clinics, which proved practical for their purposes. Such studies can be useful in developing effective means of monitoring and evaluating the health system.

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<sup>3</sup> In an effort to improve monitoring, the Ministry of Health (prior to the 18th Amendment) designed a district health information system that covers the hospital sector in addition to primary health facilities. The Japan International Cooperation Agency (JICA) has provided technical expertise and aid for the project. The system has already been tested in pilot districts and the plan is to expand it across Pakistan. This is still an ongoing project (See [http://www.jica.go.jp/pakistan/english/activities/activity02\\_03.html](http://www.jica.go.jp/pakistan/english/activities/activity02_03.html)).

Social protection in the form of health insurance could also play a critical role in protecting against health shocks, although the idea has limited scope in Pakistan. In KP, bilateral agencies have promoted social health insurance with support from the religious community, capitalizing on its nonprofit solidarity characteristics. This has served as a call to policymakers for future action. The federal and Punjab governments have also assessed the prospect of health insurance but no plans have been implemented. Needless to say, there is minimal linkage between Pakistan's social protection strategy and the health sector (Nishtar, 2010). In its budget for 2009/10, the government announced that the Benazir Income Support Program would cover health insurance, implying that it was a program only for the ultra-poor (World Bank, 2011). Most evaluations of the program are, however, cautiously optimistic.

We can analyze alternative means of health financing by looking at the health sector across the border in India. The Rajiv Aarogyasri Health Insurance Scheme is an example of one such successful program implemented in Andhra Pradesh. It has successfully covered 87 percent of families living below the poverty line, even though it only covers medical conditions that pertain to catastrophic illnesses (Yellaiah, 2013). The scheme has also substantially reduced out-of-pocket expenditure per capita in the state. On the downside, disease prevention is relegated to the background under such publicly funded insurance schemes, while hospitalization is seen to be a one-off solution to ill health (Karan & Selvaraj, 2012). Despite the pros and cons of such state-funded localized health insurance schemes, an ideal policy would target universal health coverage, providing a push from primary healthcare-level upward.

Following the promulgation of the 18th Amendment to the Constitution, provincial and local governments in Pakistan are constrained by a lack of expertise in formulating pertinent health policies and inadequate institutional capacity to carry out reforms. What the country needs at this point is a focused multi-pronged approach that will improve the provision of primary and tertiary healthcare by building on existing infrastructure and expanding services into areas with limited outreach. With more funds allocated to health, a system of monitoring should be in place to ensure that public resources are properly utilized. Once a universal health policy is formulated, the private sector can better identify its role in complementing that of the state in health service provision.



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## **Improving Public Health Delivery in Punjab, Pakistan: Issues and Opportunities**

**Michael Callen\*, Saad Gulzar\*\*, Ali Hasanain\*\*, Abdul Rehman Khan\*\*\*, Yasir Khan\*\*\*\* and Muhammad Zia Mehmood\*\*\*\*\***

### **Abstract**

*Pakistan has a large and dispersed primary public health system that gives citizens access to trained doctors and staff, and to subsidized medicines. However, both the use of these facilities and health outcomes remain low. Improvements in information and communications technology provide exciting opportunities to leverage technology to improve management. This paper presents a detailed qualitative and quantitative study of the institutional context in which such interventions in the public health sector in Punjab would be trialed. We describe the structure and management of primary healthcare facilities, present selected results from a survey of a representative sample of basic health units, and identify some key issues. We also report and discuss officials' responses to the question of how services might be improved.*

**Keywords:** Healthcare infrastructure, public sector management, Pakistan.

**JEL classification:** I18.

### **1. Introduction**

Pakistan has a large and dispersed primary public health system that gives citizens access to trained doctors and staff, and to subsidized medicines. Both the use of these facilities and health outcomes, however, remain low. The development economics literature recognizes absenteeism

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as a key problem faced by underdeveloped countries across the world. The rapidly improving features and falling costs of information and communications technology (ICT) provide an exciting opportunity to improve information flows and facilitate better management of the health infrastructure.

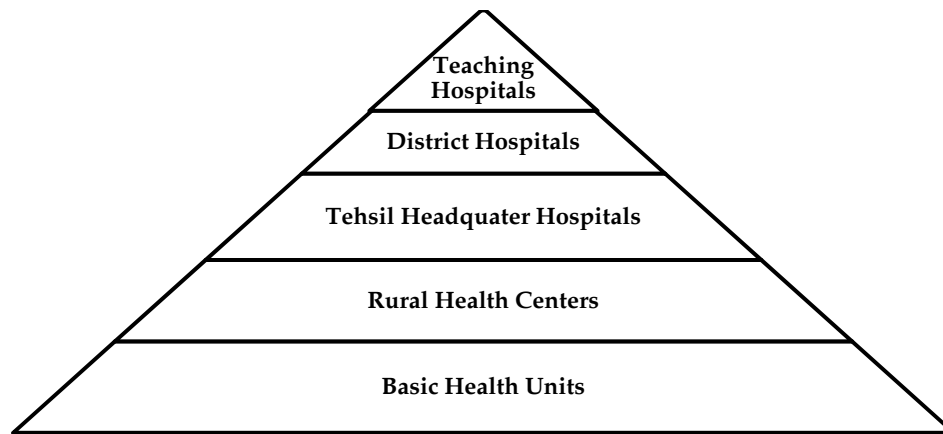
This paper presents a detailed qualitative and quantitative look at the institutional context in which such an intervention in the public health sector in Punjab would be trialed. Section 2 describes the structure and management of primary healthcare facilities, identifying areas that require further scrutiny and action. Section 3 presents selected results from a survey of a representative sample of basic health units (BHUs), and identifies some key issues that need sustained attention. Section 4 reports officials' responses to the question of how services might be improved. Section 5 discusses some of these responses and concludes the study.

## **2. Existing Organization and Management of Health in Punjab**

The public health system in Punjab is devolved to the districts, giving the province's central government in Lahore a minimal administrative role. In practice, however, the structure is far more complex. There are three significant substructures that make up the public health system in Punjab. First, on the service delivery side, hospitals are structured at various levels. Second, the administrative side largely comprises bureaucrats working at the provincial, divisional, and district levels. Finally, a monitoring system for these health facilities operates externally to the department.

### ***2.1. Organization of Service Delivery***

Punjab has about 3,000 medical facilities delivering heavily subsidized healthcare to the public. These facilities are broadly divided into five types: (i) BHUs, (ii) rural health centers (RHCs), (iii) *tehsil* headquarter (THQ) hospitals, (iv) district headquarter (DHQ) hospitals, and (v) teaching hospitals. Figure 1 illustrates this hierarchy.

**Figure 1: Hierarchy of public hospitals in Punjab**

### 2.1.1. BHUs

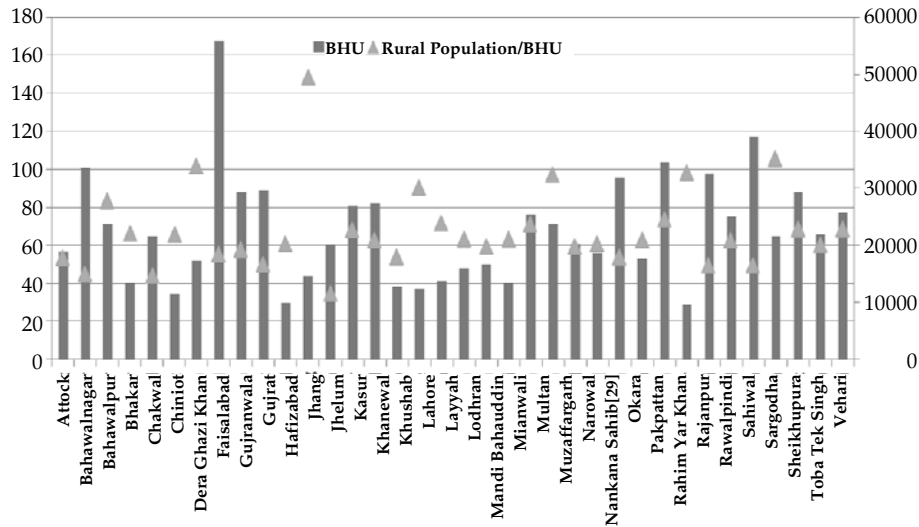
There are 2,496 BHUs spread across the length and breadth of the province<sup>1</sup>. These are supposed to provide the vast majority of public health services and are the first stop for rural households seeking medical attention. In most cases, they serve the population of roughly one union council<sup>2</sup> each, but in some cases there are two facilities per union council.

As Figure 2 shows, there is wide variation in the number of BHUs per district. This variation translates into the average rural population per BHU as presented in Figure 2-A. Rajanpur, with the fewest BHUs of all the districts, has a higher rural population per BHU—close to 30,000 people. In Faisalabad, on the other hand, a BHU serves on average fewer than 20,000 rural patients. There is, therefore, no relationship between the size of a rural population and number of BHUs in a district.

<sup>1</sup> List of BHUs provided by Punjab Health Sector Reforms Program.

<sup>2</sup> A union council is a collection of revenue villages and can be regarded as the smallest administrative unit for various state organs.

**Figure 2: Distribution of BHUs across districts**



The BHUs are staffed by a small number of personnel that provide preventive and primary healthcare services. Each unit has a doctor or medical officer (MO) who also serves as the BHU’s administrative head. The doctor is supported by a female health visitor (known as a “lady health visitor”), a dispenser, and occasionally a health technician. Every BHU also serves as a center for five to six roving female health workers (or “lady health workers”), a vaccinator, and a school health and nutrition supervisor. These roving workers provide door-to-door preventive healthcare services and run awareness campaigns.

### 2.1.2. RHCs

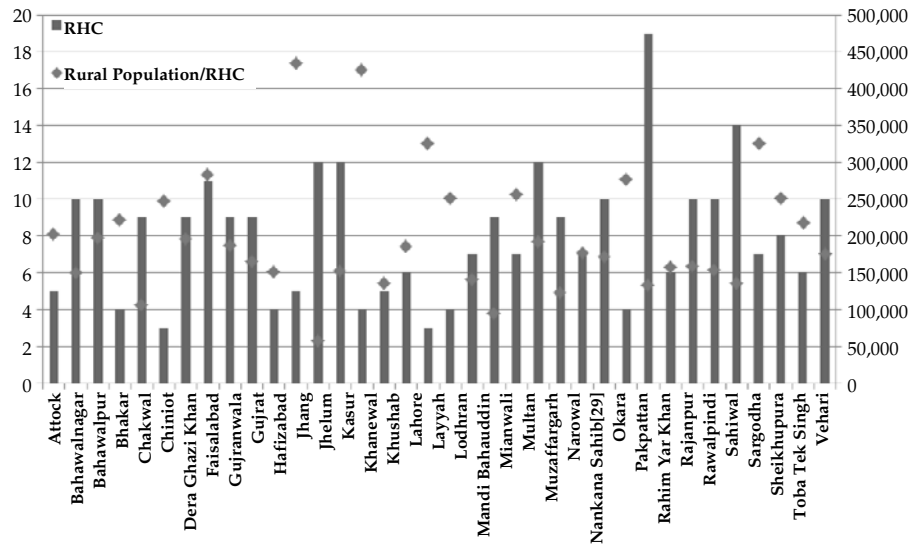
While BHUs are almost ubiquitous in rural areas, they have limited usefulness for patients seeking slightly advanced but not specialized care. To serve such patients, the health system has established a tier of facilities known as RHCs. There are about 290 RHCs across the province.

RHCs are better equipped than BHUs to manage minor emergencies and surgeries. They also have better diagnostic facilities, since most are equipped with basic laboratories. Each unit is staffed by two to three doctors, who are supported by dispensers, female health visitors, and nurses. Unlike BHUs, these centers operate for longer hours to deal with emergencies, so their staff works in shifts. In some cases, the government has appointed specialists apart from general physicians to these facilities.



As with BHUs, the decision to locate RHCs does not seem to account for variations in population per facility across districts: there is wide variation in both the number of RHCs and the rural population per RHC, as demonstrated by Figure 3.

**Figure 3: Distribution of RHCs across districts**



2.1.3. THQ and DHQ Hospitals

All tehsils and districts in the province are provided with large hospitals that are usually the most advanced healthcare facilities available in regions far from large cities. Administratively, these hospitals are run by senior doctors or medical superintendents who oversee a medical staff that comprises doctors, nurses, and other technicians. These facilities are almost exclusively located in urban centers and towns. There are 34 DHQ and 88 THQ hospitals in Punjab.

2.1.4. Teaching Hospitals

There are 23 teaching hospitals in the province, of which 11 are in Lahore. These hospitals deal with most advanced healthcare requirements and prepare doctors and paramedical staff for future needs. The hospitals are located in urban centers, almost exclusively in divisional headquarters. Four divisions—Sahiwal, Dera Ghazi Khan, Gujranwala, and Sargodha—do not have any teaching hospitals.

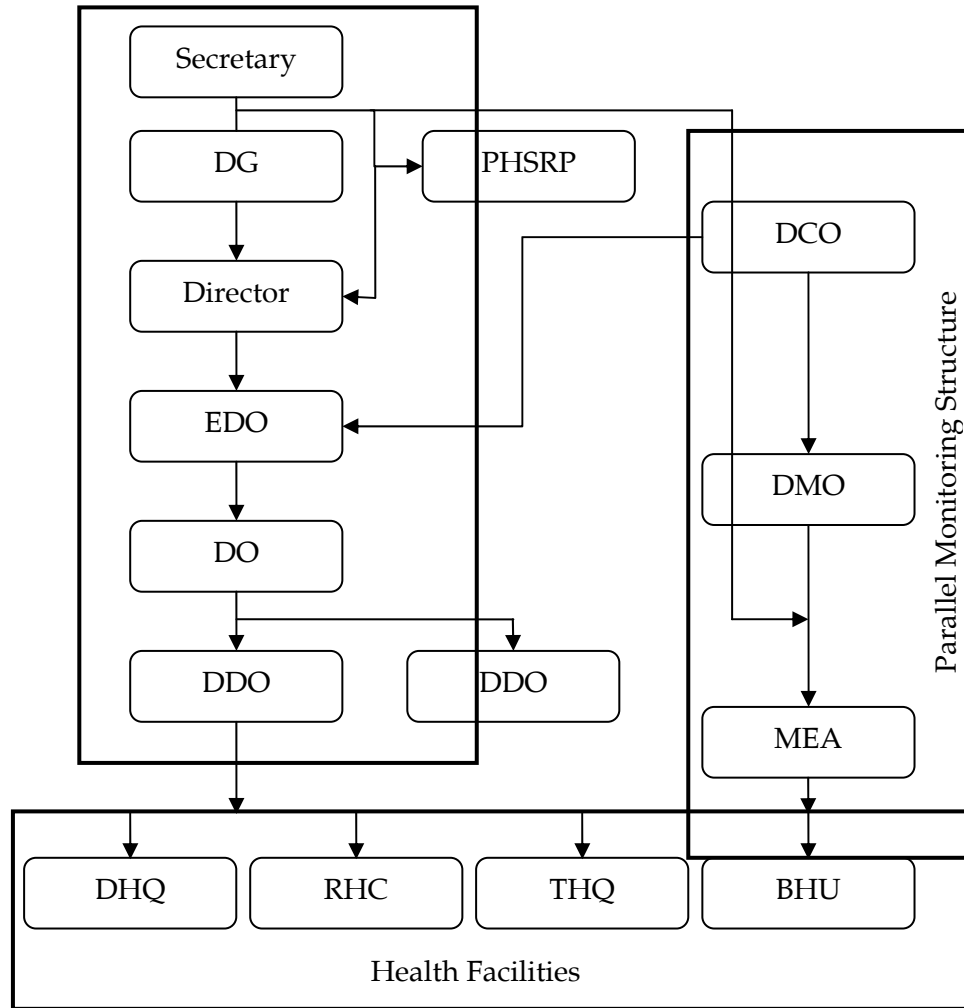
## **2.2. Administration of the Health Department**

The administration of the health system is divided between the province, divisions, districts, and tehsils (see Figure 4). The health secretary is the administrative head of the Health Department, and provides policy guidance and oversight. The department has established a separate unit, the Directorate General of Health Services, to look after the day-to-day workings of the healthcare system. The unit is headed by a director general (DG) who reports directly to the health secretary.

The directorate receives administrative support from the divisional and district health offices. The district health department has major responsibility for ensuring the proper provision of healthcare in public sector hospitals. The department is headed by an executive district officer (EDO) for health. The district department is part of the district government, which is headed by a district coordination officer (DCO). In a problem common to many departments, the EDO has two lines of reporting: he/she is not only part of the Health Department, but also of the district government. This means the EDO is answerable to the DCO for the workings of the hospitals and also to the Directorate General of Health Services. The extent of the DCO's involvement varies from district to district, depending more on his/her administrative style rather than any institutional arrangement.

The EDO oversees the provision of preventive and curative health services provided by the district's health facilities and roving workers programs. In managing these services, the EDO is supported by a district officer (DO) for health and deputy district officers (DDOs) for health.

**Figure 4: Administrative setup of the Health Department**

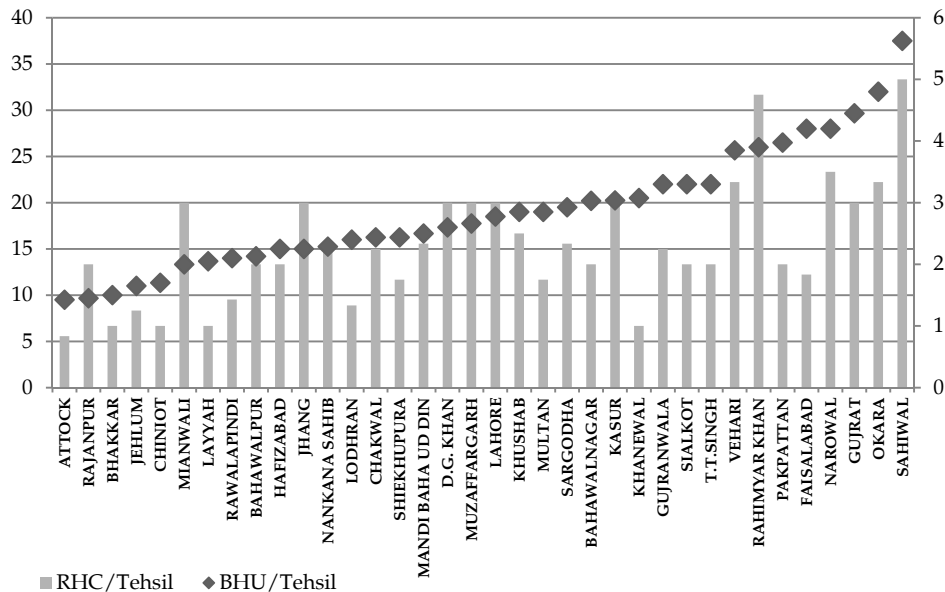


The DDO is the main officer responsible for running the health system at the tehsil or subdistrict level. He/she supervises the health staff and is entrusted with ensuring that the government facilities continue to provide free or heavily subsidized medical aid. Figure 5 gives the average number of BHUs and RHCs per tehsil in each district. Since each tehsil is looked after by a DDO, the graph can also be read as the number of average facilities that a DDO is responsible for looking after.

Besides the general management of the system, the DDO is required to visit the hospitals in his/her jurisdiction to carry out random checks of the facilities and staff working there. The DDO thus ensures that

staff members—in particular, doctors—are attending to their duties, that there are sufficient medical supplies, and generally that the facilities are functional, staffed, and well equipped. A DDO has the authority to verbally sanction an absent officer or report him/her to the senior district officer for further action. In cases that involve contractual staff who are not permanent government employees, the DDO can recommend withholding their salary for a number of days based on performance.

**Figure 5: Average number of facilities per tehsil, by district**



The process of reporting information based on monitoring visits tends to be very informal and is not standardized. The department’s previous halfhearted efforts to standardize data collection did not change anything. Senior managers were not sure if the data being provided was reliable or whether it had been fabricated in the DDOs’ offices.

The mechanism to use this data at the center was also very weak. While some effort was made to create standard indicators on which each district was to report its performance to the secretariat every month, it was unclear how the information needed to construct such indicators should be collected from the field. In general, the existing practice for DDOs was to record information in their diaries as and when it received and to report it to the EDO’s office sporadically. The statistical officer at the EDO’s office then used that information to construct the indicators and send an electronic report to the DG’s office through a district health information system.

Unsurprisingly, the indicators received in this manner were seldom reliable enough to be used as a basis for policy decisions. Nonetheless, the Health Department continued to hold a monthly meeting in Lahore with all the EDOs at which these indicators and the data from the monitoring and evaluation system (see Section 2.3) was discussed in detail.

Given the large number of BHUs, DDOs spend most of their time visiting these units. As discussed above, the number of BHUs per district varies, which in turn implies a varying workload for each DDO. Since each DDO is usually responsible for one tehsil, we have reported the average workload per DDO in a district in Figure 2. These averages show large variations: some DDOs are required to visit close to 40 BHUs in a month (e.g., in Sahiwal) while others might have as few as about 10 visits to make. One confounding factor that the graph does not represent, however, is that some DDOs have multiple charges: in some cases, they may be responsible for more than one tehsil, which increases their workload significantly.

This variation in DDOs' workload results in a nonuniform structure of monitoring across the districts. In places where the DDO has a manageable number of BHUs to oversee, the existing monitoring system may work. On the other hand, places with almost 40 BHUs per officer present a structural flaw in the system in the sense that even the most diligent officer would struggle to conduct sufficient visits. Such a flaw usually results in lack of monitoring, which manifests itself in high absenteeism and the breakdown of public health delivery.

The department has also established a special unit outside the secretariat known as the Punjab Health Sector Reform Program (PHSRP). This unit is tasked with starting special projects aimed at reforming the department's governance and accountability systems with technical and financial support from donor agencies. The PHSRP also serves as a hub for collecting data from the monitoring and evaluation teams that serve all the districts.

### ***2.3. Monitoring and Evaluation Assistants***

Even though the Health Department has an extensive system in place for monitoring Punjab's healthcare facilities through regular visits by DDOs and senior district staff, there is also an independent monitoring structure in the province. The chief minister's monitoring task force was established in 2004 to counter the rampant absenteeism and lack of quality education in public schools in Punjab. The monitoring team is based at the

district level and initially reported to the additional chief secretary. At the district level, the team comprises monitoring and evaluation assistants (MEAs) and a district monitoring officer. There are roughly 900 MEAs across the province who conduct monitoring visits on a daily basis.

In 2007, the MEAs were assigned the additional task of inspecting health facilities. They conduct one visit per month to a health facility up to the DHQ hospital level. Alternate MEAs carry out random visits to counter the possibility of collusion with the staff. A large amount of information is collected on a standardized form developed by the PHSRP. These forms are collected at the district level and sent to the PHSRP in Lahore, which has established a data entry center where the forms are digitized. This data is then used to calculate the performance ranking of each district.

The process of first collecting data manually and then sending the forms to the district headquarter, which subsequently sends it to Lahore, is long and tedious. By the time the data becomes available to policymakers, it is about three months old and cannot be used for any rapid policy actions. It is worth noting that this is the only formal information system (besides the DDO reports) that keeps the Health Department apprised of medicine availability, attendance of health staff, and the number of vaccinations—one of the reasons that the government so frequently lags behind in allocating medicines to hospitals.

### **3. Survey: Methodology and Results on Attendance**

In late 2011, our team conducted an initial wave of data collection by surveying a representative sample of 850 out of roughly 2,500 BHUs in the province. Under our guidance, independent surveyors visited each facility unannounced in the guise of a walk-in citizen patient. Respondents were asked a large number of questions, but we report here only those responses directly linked to attendance.

#### ***3.1. Attendance and Postings are Weak***

The first lesson we learned from this survey—and the first-order problem of health service delivery that the survey identified—was that of attendance. Of the 850 BHUs visited during working hours, 61 were closed. Furthermore, of those that were found to be open, on average 52.4 percent of the essential staff assigned to each BHU was unavailable to cater to patients.

Given that the MO is usually considered the administrative head of a BHU in addition to being the only staff member authorized to write

prescriptions, his/her presence during working hours is crucial for the facility to function properly. We found that the MO's post was vacant in 35 percent of the BHUs visited. Moreover, of the 535 cases in which an MO was posted to the facility, he/she was absent in 269 of them. From the perspective of a patient seeking treatment, whereby there is no distinction between a doctor not being posted and a doctor being posted but not being present, the data show that a doctor was effectively unavailable in 67.7 percent of the facilities surveyed.

Absenteeism in dispersed public facilities such as schools and clinics is endemic in the developing world; it tends to be worse in smaller clinics manned by a single doctor (Chaudhury & Hammer, 2004). However, what is alarming is that the percentages we recorded are among the worst when compared to similar surveys in other developing countries: India has a recorded absence rate of 40–45 percent (Banerjee, Deaton, & Duflo, 2004a, 2004b); Indonesia, 40 percent; Uganda, 37 percent; Bangladesh, 35 percent; and Peru, 25 percent (Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006). Similarly, the vacancy rate also compares unfavorably with that of other developing countries.

### ***3.2. Inspections are Weak***

The question that arises from our first result is: why is this weak attendance not being acted on? Our next result suggests this is because higher officials do not inspect the facilities as often as they are mandated to. Attendance does not improve because the inspectors do not make the visits necessary to learn about and act on staff absence. This is clear from our next series of questions.

All district health officers are expected to regularly visit BHUs to carry out inspections. However, their principal responsibility is to cover all the facilities in the districts. Due to the variation in the facilities-to-officer ratio, the frequency of visits scheduled for a BHU varies across tehsils and districts, as discussed above. Typically, a BHU is supposed to be inspected at least once a month by the DDO concerned. BHUs in the district with the highest facilities-to-officer ratio are supposed to be visited at least once every two months. BHUs in smaller districts are scheduled for two inspections a month by the DDO.

The data in Table 1 show that 51.6 percent of BHUs had been inspected by the DDO concerned in the same month we visited or the month before. About 23.3 percent had been visited before that, but within

the preceding six months, while 11.4 percent were last visited more than six months ago. Finally, the staff of 13.8 percent of the sample BHUs could not remember the last time a DDO visited the facility for an inspection.

**Table 1: Most recent visit by a DDO**

<b>When was the last time a DDO visited this BHU?</b>	<b>Percent</b>
This calendar month	19.31
Last calendar month	32.28
In the last six months	23.28
More than six calendar months ago	11.38
Don't know	13.76

The EDO is not responsible for inspecting all facilities, but he/she is still required to make at least 15 visits to any randomly selected BHUs in the district. As Table 2 shows, only 27.9 percent of the facilities reported having been inspected by the EDO in the month we visited or the month before. About 25.5 percent of the sample BHUs were last visited by the EDO before that, but within the preceding six months. Moreover, 353 facilities were either visited more than six months ago or had no record of the last time the EDO visited.

**Table 2: Most recent visit by an EDO**

<b>When was the last time an EDO visited this BHU?</b>	<b>Percent</b>
This calendar month	2.77
Last calendar month	25.10
In the last six months	25.50
More than six calendar months ago	17.44
Don't know	29.19

These results strongly support the idea that weak management by district officers, particularly with regard to attendance, is a first-order problem in improving the management of government health facilities. The fact that this weakness is widespread points to a systematic failure to give district managers the incentive to curtail absence. However, it is not the only candidate area for reform. In the next section, we report respondents' own suggestions for improving the BHU/health system.

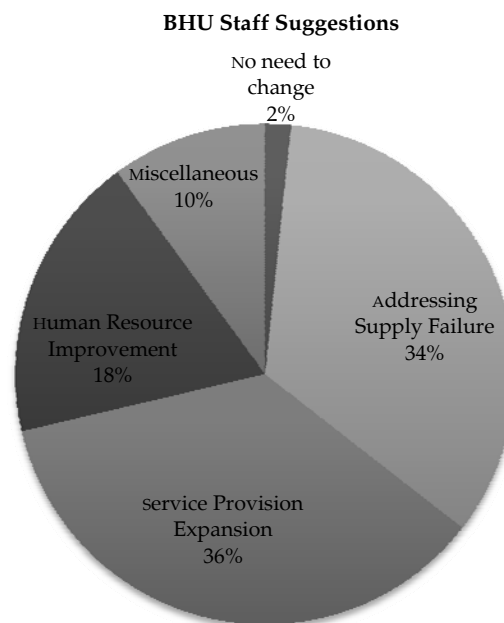


#### 4. Suggestions from the Clinics

As part of our survey, we also asked staff members for their opinion of how the BHU could be made more effective. We received a total of 7,077 recommendations based on what respondents perceived to be the main problems in the system. These can be classified into four broad categories: addressing (i) supply failure, (ii) service provision expansion, (iii) human resource improvement, and (iv) miscellaneous. About 118 responses suggested there was no need for any change.

Figure 6 illustrates the distribution of these recommendations. The three most important areas identified were (i) expanding service provision, i.e., making available services that were hitherto either not supplied at all or undersupplied; (ii) addressing supply failure, i.e., fixing supply chain and maintenance-related issues; and (iii) improving human resource management.

**Figure 6: Recommendations by BHU personnel**



The complete taxonomy, with each category further divided into subcategories is presented in Figure 7. The detailed distribution of recommendations within these subcategories is given in Figures A1 through A4 in the Annex.

**Figure 7: Taxonomy of recommendations**

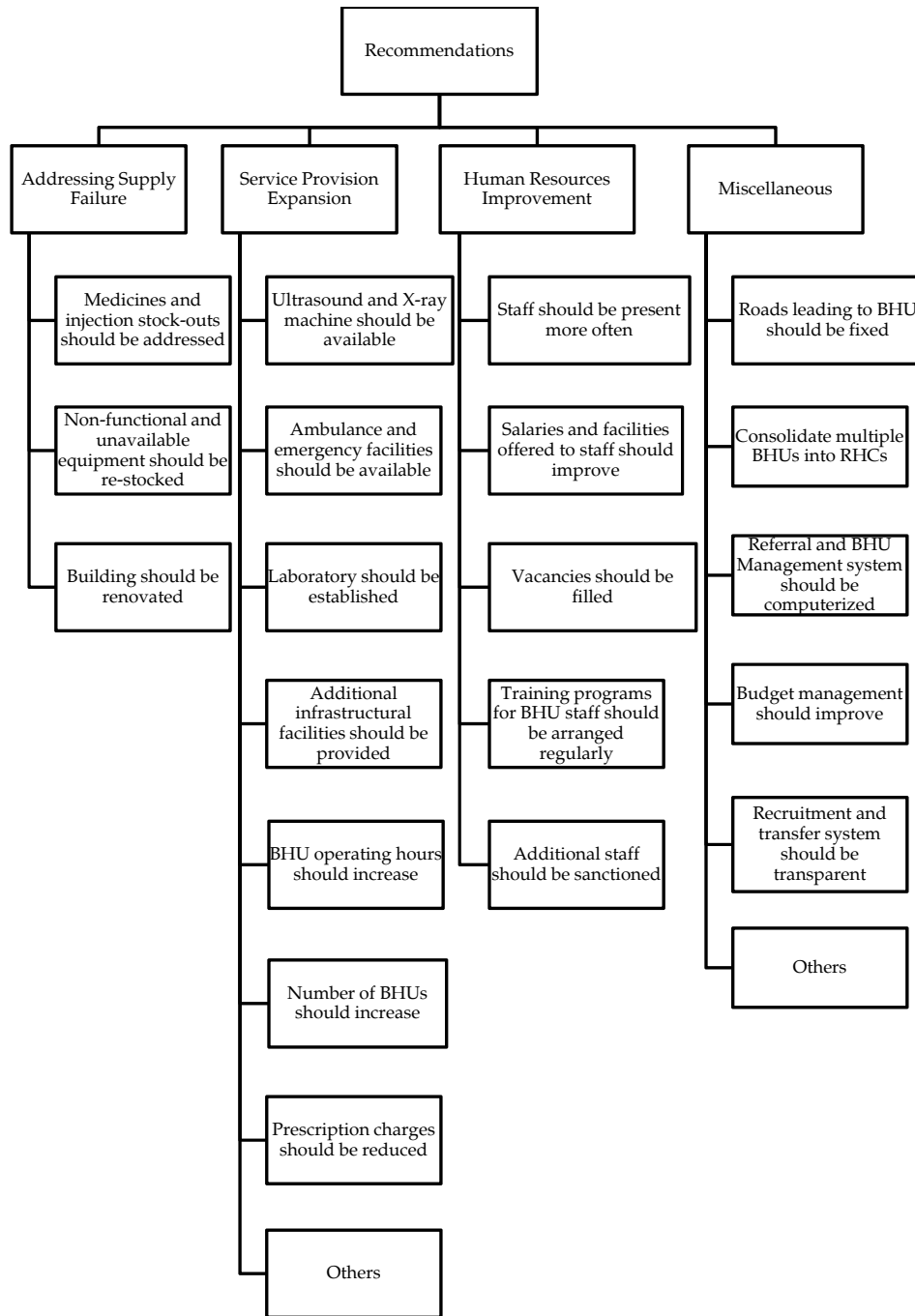


Table 3 records the frequency of the most common subcategories of recommendations that we observed.

**Table 3: Most common recommendations**

<b>Recommendation subcategories</b>	<b>Frequency</b>	<b>Percentage of total</b>
Medicines and injection stock-outs should be addressed	1,232	17.40
Ultrasound and X-ray machines should be available	614	8.68
Nonfunctional and unavailable equipment should be restocked	608	8.59
Ambulance and emergency facilities should be available	561	7.93
Building should be renovated	556	7.86
Staff should be present more often	466	6.58
Laboratory should be established	441	6.23
Salaries and facilities offered to BHU staff should be improved	423	5.98
Additional infrastructural facilities should be provided	395	5.58
Vacancies should be filled	342	4.83

The availability of medicines and injections is by far the most commonly voiced concern. Almost one in five respondents cited the lack of medicines as the most important constraint to improving service.

In their own reported prioritization, staff rank their own attendance as only the fifth most important problem to rectify. Filling vacancies is ranked tenth. Combined, improving attendance and filling vacancies account for just over 11 percent of all recommendations. Given the strongly negative result we report in our survey, this problem seems to be severely under-emphasized in staff members' own reports. Presumably, this is because reporting poor performance within their own cohort might lead to greater scrutiny of their own work in the future. In view of this, we believe that managers should not allow these results to cloud the first-order importance of absence and vacancies as roadblocks to a better performing health system in Punjab.

The cautionary note above notwithstanding, there is a striking concentration of recommendations. The top five subcategories reported above comprise just over half of all recommendations submitted; the top ten listed in Table 3 combined comprise just under 79.66 percent of the total. Moreover, the three broad categories earlier identified as the most important are the only ones represented in the top ten.

To sum up, health center personnel across Punjab are remarkably unequivocal in identifying the key issues that plague their clinics and, by extension, the system as a whole. This clarity certainly helps the health sector worker identify most major problems. However, as our survey suggests, this list may continue to carry blind spots that reflect respondents' positional or intentional biases, or simply their lack of awareness about relevant issues.

## **5. Problems and Opportunities**

This paper identifies at least six important lessons for Punjab's health sector managers. First, there are, clearly, faults in the geographical distribution of facilities: facilities are distributed unevenly compared to the population catchment area, and need to be relocated. Second, not only does this mean there are more doctors per facility in some areas at the expense of others (to the detriment of patients), it also means that the administrative (monitoring) workload of district officers is uneven.

Third, facility attendance of health workers is extremely weak, and fourth, vacant positions are left unfilled on a very large scale. One proximate cause for this may be that, fifth, the inspection regime run by the district officers does not perform well: doctors posted to facilities may not show up to work because their superiors do not show up to inspections. Sixth, there is widespread demand for the availability of medicines in the province and, more generally, the department must focus on supply chain improvements, adding new services, and improving management.

The recent literature on development economics recognizes absenteeism among health workers as a major constraint to improving health services (Banerjee & Duflo, 2006). Seminal studies such as Banerjee, Duflo, and Glennerster (2008) report the difficulty of correcting this problem in poor countries with insufficient oversight, since reform efforts have a temporary effect before managers and workers find a way to return to the status quo.

Absenteeism afflicts both public and privately run centers that are geographically dispersed (and likely far removed from their principals). Duflo, Hanna, and Ryan (2012) demonstrate a promising solution for the private and nonprofit sector: they show that the use of monitoring coupled with a system of rewards and punishments can significantly improve attendance. However, this solution may not be appropriate to the public sector, where workers may enjoy political power, which insulates them from significant punishment.

Another promising development has been the introduction of ICT. This is because of the confluence of enabling factors. First, advances in cellphone technology coupled with the falling cost of handsets has made it technologically possible to aggregate large amounts of previously dispersed data. Second, government deregulation of the telecom sector in Pakistan has led to the widespread adoption of cellphones. The Multiple Indicator Cluster Survey reports that about 70 percent of households in Punjab have at least one cell phone. Even in the poorest quintile, 20 percent report cell phone ownership. In related ongoing work, we evaluate an innovative smartphone technology to facilitate the flow of information on attendance up the organizational hierarchy. Preliminary evidence confirms both the difficulty of fixing absence and the promise of technology.

Ultimately, however, it is unlikely that a panacea exists for the problem of absenteeism. Practitioners will have to attempt a wide variety of solutions in order to achieve incremental progress.

## **6. Conclusions**

We have provided a detailed contextualization of the structure of the health bureaucracy in Punjab. We have also reported selected results from an independent survey of health facilities, along with officials' suggestions for improving the system. Our main findings from these two sources are that absence and the unavailability of medicine are major problems. Both these problems stem from managerial, not financial, constraints. ICT could prove a source of potential future reform. It is up to future work in this area to harness this potential.

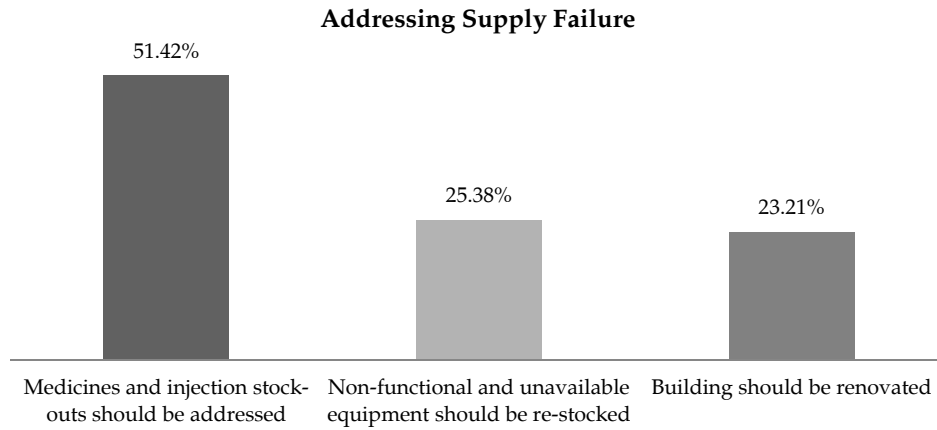
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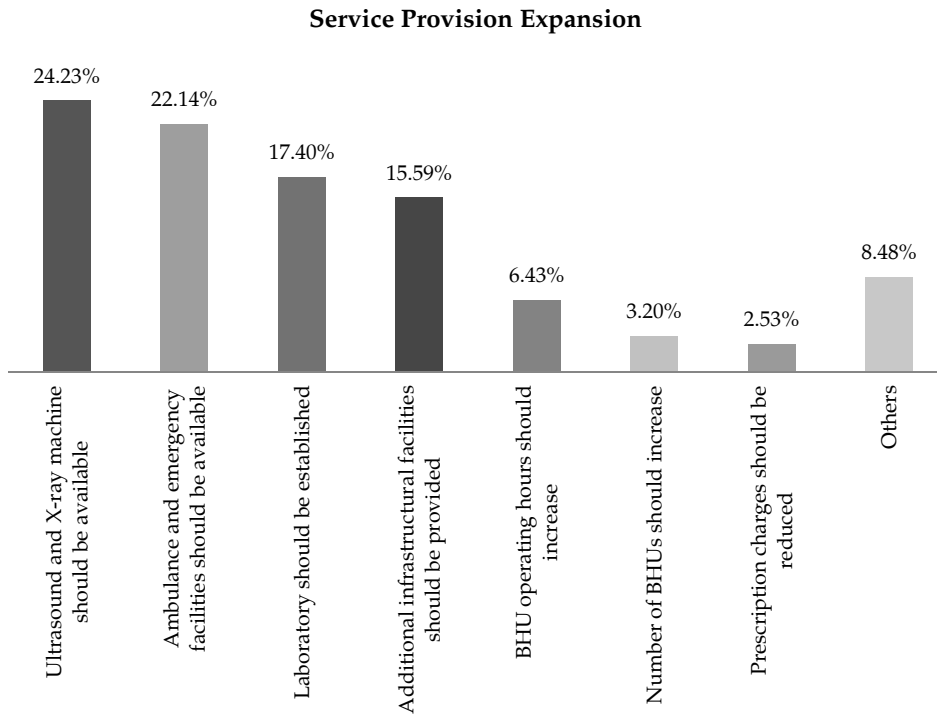
*Annex***Table A1: Survey summary statistics (selected)**

<b>Variable</b>	<b>Obs.</b>	<b>Mean</b>	<b>Std. dev.</b>
BHU was open at the time of visit	848	0.928066	0.258531
Doctor present (unconditional)	823	0.323208	0.467986
Doctor present (conditional)	535	0.497196	0.50046
Doctors assigned	823	0.650061	0.477241
Health technician present (unconditional)	822	0.372263	0.483702
Health technician present (conditional)	617	0.495948	0.500389
Health technicians assigned	822	0.750608	0.432924
Dispenser present (unconditional)	821	0.741778	0.437923
Dispenser present (conditional)	792	0.768939	0.421778
Dispensers assigned	821	0.964677	0.184707
Lady health visitor present (unconditional)	821	0.607795	0.48854
Lady health visitor present (conditional)	773	0.645537	0.47866
Lady health visitors assigned	821	0.941535	0.234764
School health and nutrition supervisor present (unconditional)	820	0.343902	0.475299
School health and nutrition supervisor present (conditional)	757	0.372523	0.483796
Midwife present (unconditional)	818	0.506113	0.500269
Midwife present (conditional)	744	0.556452	0.497137
Number of polio vaccinations in the last month (unweighted)	631	567.8082	1,433.589
Number of polio vaccinations in the last month (weighted)	628	264.7357	799.8425
Number of antenatal care clients in the last month (unweighted)	562	56.74555	51.75568
Number of antenatal care clients in the last month (weighted)	560	23.5917	25.5131

**Figure A1: Suggestions for improving supply**

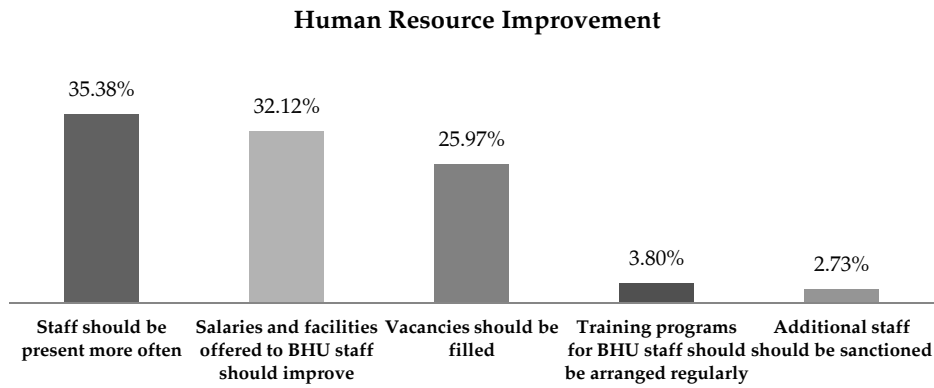


**Figure A2: Suggestions for expanding services**

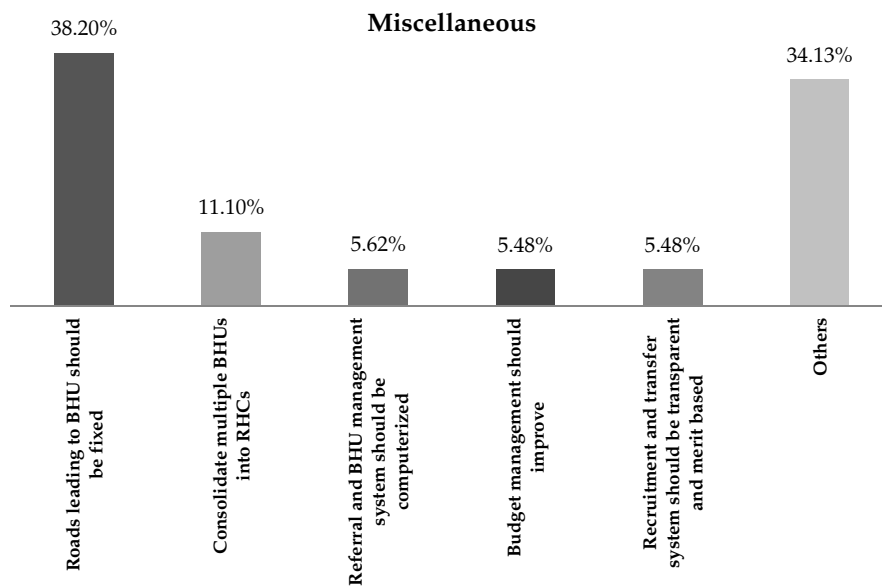




**Figure A3: Suggestions for improving human resources**



**Figure A4: Miscellaneous suggestions**





## **Increased Rural Connectivity and its Effects on Health Outcomes**

**Hadia Majid\***

### **Abstract**

*This paper examines the effects of increased connectivity in rural areas on child health outcomes. In particular, it studies whether improved access to markets for rural areas through an upgraded road network and greater openness, as measured by village electrification status, has had a positive impact on child health outcomes and awareness of health practices such as immunization and prenatal care. Using a 16-year panel dataset from rural Pakistan, we estimate two iterations of a probit model, where one examines the probability of child  $i$  being vaccinated and the second estimates the incidence of use of prenatal care. The results support the hypothesis that greater connectivity, as measured by road connectivity and electrification, improves health outcomes by increasing the likelihood of immunization and uptake of prenatal care.*

**Keywords:** Child immunization, prenatal care, access to markets, electrification, rural Pakistan.

**JEL classification:** I10.

### **1. Introduction**

This paper explores the impact of increased connectivity in rural areas to the outside world, on child health outcomes. It focuses on rural Pakistan, with outcomes examined over a 16-year period. In particular, we study whether rural areas' improved access to markets through an upgraded road network and greater openness—as measured by village electrification status—has had a positive impact on child health outcomes and awareness of health practices such as immunization and prenatal care.

The focus on child immunization and prenatal care is driven not only by their significant and positive effect on health in adulthood, but also by the importance of prenatal care in the prevention of maternal and infant deaths. Women who seek prenatal care are found to be more likely to select a trained attendant at birth and, while there is some but no conclusive

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evidence to show that the use of skilled attendants reduces maternal deaths, trained birth attendants have been found to be effective in reducing newborn mortality (Bloom, Lippeveld, & Wypij, 1999; Sibley, Sipe, Brown, Diallo, McNatt, & Habarta, 2007).

There is a considerable body of literature that highlights the role of health status in early life on health as well as economic outcomes in adulthood. Immunization directly affects child and adult disease burden, while the mother's use of prenatal care affects *in utero* and infancy nutritional status, which may affect chronic disease burden in later life (Alexander & Korenbrot, 1995; Case & Paxson, 2008). Moreover, childhood health and related outcomes have been found to exert significant influence on economic outcomes, and explain a large fraction of the variance in employment and social status in adulthood (Case, Fertig, & Paxson, 2005).

Particularly with regard to Pakistan, the incidence of under-five deaths is especially high (87 per 1,000 live births), and the United Nations Children's Fund (UNICEF) (2008) reports that one third of these deaths are attributable to vaccine-preventable diseases. Moreover, 20 percent of the disease burden of children under five is related to poor maternal health and nutrition during pregnancy (UNICEF, 2008). If we consider immunization coverage, we find that one in every five children is not immunized; in many rural areas, two out of every three children are not immunized (United States Agency for International Development, 2012). Thus, the factors affecting the incidence of immunization and use of prenatal care are likely to have a significant impact both on child and lifelong health outcomes as well as on economic and employment opportunities. This makes studying these variables especially relevant for policy interventions aimed at improving human capital accumulation and economic growth.

The literature on health outcomes studies both demand- and supply-side factors that affect health status. With regard to the former, Alderman and Gertler's (1997) model provides insight into why parental preferences may be biased toward the son: parents are more likely to invest in the human capital of their sons than that of their daughters when the market returns on such an investment are higher. Similarly, Ensor and Cooper (2004) carry out an extensive study of the barriers influencing obstetric choices in Bangladesh. They find that demand-side factors such as knowledge of (health) issues, mobility checks, and monetary considerations are the most commonly cited reasons for poor access to health services.

With regard to the effect of supply-side factors on health outcomes, Haddad and Hoddinott (1994) find that distance to health facilities has a negative effect on health outcomes for both boys and girls in Côte d'Ivoire. In the same vein, Holmes (2006), in a study on rural Pakistan, shows that community prices, along with infrastructure such as the availability of piped water, distance to the nearest shops and public health clinics, and the quality of the closest health facilities, all play a significant role in reducing gender gaps in health outcomes.

Although considerable work has been done on the effect of community and health infrastructure variables on health outcomes, most studies have generally focused on either factors related to distance or to the quality of public health clinics (where the supply of doctors, nurses, and pharmaceuticals is also considered). To my knowledge, no study has as yet examined the effects of increased openness on rural health outcomes. Thus, I use electrification status and the state of the road network in rural Pakistan as a proxy for openness and increased market accessibility.

It is worth noting that, while the road network determines ease of travel to and from a village—thus increasing openness—electrification allows villagers to access information, connecting them to the outside world regardless of road conditions.<sup>1</sup> The main hypothesis is that, as villages become less remote, the access of residents to (health) information as well as general goods and services improves, which, in turn, reflects in child immunization status and the use of prenatal care.

Using a 16-year panel dataset for rural Pakistan, I estimate two iterations of a probit model: one examines the probability of child  $i$  being vaccinated, and the second estimates the incidence of use of prenatal care. The results support the hypothesis that greater connectivity, as measured by road connectivity and electrification, improves health outcomes by increasing the likelihood of immunization and uptake of prenatal care.

The rest of the paper is organized as follows: Section 2 describes the data and sets up the econometric methodology. Section 3 discusses the results and policy implications, and Section 4 concludes the study.

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<sup>1</sup> In rural Pakistan, it is common practice for villagers to congregate at a neighbor's house or central shop to watch television. Hence, even those households that do not own a television set may be able to consume television programming as long as the village is electrified.

## 2. Data

This paper uses a panel dataset developed by the International Food Policy Research Institute (IFPRI) and the Pakistan Institute of Development Economics (PIDE). IFPRI conducted 12 rounds of the Pakistan Panel Survey (PPS) between July 1986 and September 1991. This survey was carried out at the household level for districts of three provinces—Sindh, Punjab, and Khyber Pakhtunkhwa—and spanned approximately 900 rural households. Starting in 2001, PIDE resumed the IFPRI panel with the Pakistan Rural Household Survey (PRHS), which includes 60 percent of the original IFPRI sample and was conducted in Sindh and Punjab. To date, three rounds of the PRHS have been performed: the first in 2001/02, the second in 2003/04, and the third in 2009/10 (which is not yet publicly available).

I create my panel using the 2001/02 round of the PIDE follow-up data and the 1986–91 round of the IFPRI data. The PRHS was also conducted at the household level and, like the IFPRI data, contains community-level variables including information on roads leading into the village, the status of health facilities, and incidence of immunization and prenatal care. Using the PPS and PRHS, I trace the evolution of the road and electricity network along with the health infrastructure and health outcomes for specific villages in Sindh and Punjab over a 16-year period.

Table 1 summarizes key statistics for the dataset. In terms of the accessibility of health facilities and connectivity, the table shows an improvement from 1986–91 to 2001/02. The percentage of children ever vaccinated and the percentage of women receiving prenatal care also improves from 1986–91 to 2001/02.

**Table 1: Summary statistics**

Variable	1986–91 round	2001/02 round
<b>Village statistics</b>		
Percent with paved roads	25.0	63.0
Percent with electricity	53.5	83.0
Percent with any health facility	5.9	23.0
Mean distance between village and any health facility	5.16 km	3.5 km
<b>Household characteristics</b>		
Percent of children ever vaccinated	47.0	71.0
Male	48.0	69.0
Percent of women receiving prenatal care	10.7	50.0
Total (no. of households)	998.0	908.0

### 2.1. Econometric Methodology

A difference-in-difference approach would have been ideal to isolate the causal effect of road improvements and electrification on health outcomes. However, the PRHS does not follow all individuals who were covered in the PPS. Also, there is a 10-year gap between the last PPS round and the first PRHS round, which is likely to have a significant effect on the demographic make-up of each surveyed village. My analysis focuses, therefore, on isolating how a community's access to roads and electricity has affected the wellbeing of individuals, especially children, in the village. The basic probit regression is provided in (1).

$$h_{i,j} = \alpha_0 + \Psi R + \Theta F + \Pi E + \Phi X_{ij} + \varepsilon_{ij} \quad (1)$$

where  $h_{i,j}$  represents the health outcomes of child  $i$  in family  $j$  in the PRHS round. I estimate two iterations of (1) with  $h_{i,j}$  varying from whether the child was immunized to whether the mother received prenatal care when pregnant with child  $i$ .

$\varepsilon_{ij}$  is a random, idiosyncratic error term.  $R$  is a vector that measures the strength of the road network, in particular categorizing if the village has a road connecting it to a market and whether that road has improved in the 16-year period covered in the panel.  $E$  specifies the electrification status of the village, measuring it in 2001/02 relative to 1986–91.  $F$  is a vector representing community-level variables, especially those related to the health infrastructure;  $X_{ij}$  is a vector of family and child characteristics,

including age, family size, and education levels. Household wealth status is represented by a wealth index that uses productive assets such as agricultural assets, along with information on ownership of livestock and household durables. In order to distinguish between the poor and middle-income strata more exactly, I also include information on the structure of the dwelling (mud, semi-permanent, or permanent).

I use principal components analysis (PCA) to determine the weights of the wealth index. By applying PCA to a set of variables, I can extract orthogonal linear combinations of the variables that capture common information most successfully (see Filmer & Pritchett, 2001). The first principal component, expressed in terms of the original ( $M$ ) variables is, therefore, an index for each household:

$$A_{1h} = f_{11} \times \frac{v_{1,h} - \bar{v}_1}{sd_1} + \dots + f_{1M} \times \frac{v_{M,h} - \bar{v}_M}{sd_M} \quad (2)$$

The procedure first standardizes the variables using their mean ( $\bar{v}$ ) and standard deviation ( $sd$ ), and then calculates the “scoring factors ( $f$ ).” Finally, for each household, the variable values are multiplied by the scores and summed for the wealth index. All households are sorted by the index and cut-off values established for percentiles of the population. Households are assigned to groups based on their value of the index. I use similar cutoffs to those in Filmer and Pritchett (2001) and Vyas and Kumaranayake (2006): the bottom 40 percent is referred to as “poor,” the next 40 percent as “middle,” and the top 20 percent as “rich.”

### 3. Results

Table 2 lists the results of the probit regressions. The analysis considers two dependent variables:

1. Whether the child has ever been vaccinated (as recorded in the 2001/02 round): *Immune\_01*
2. Whether the mother received prenatal care when pregnant with child  $i$  (as recorded in the 2001/02 round): *Pre-natal*

The main variables of interest include those that proxy village connectivity or openness as measured by electrification status and by the condition of the road leading to the nearest large market. These variables have been constructed such that they measure the status of the proxy in 2001/02 relative to 1986–91. Thus, four electrification dummy variables are created: (i) *Electri: '01 not '86*, which takes a value of 1 if the village had an



electric grid in 2001 but not in 1986, and 0 otherwise; (ii) *Elect: Both*, which takes a value of 1 if the village was electrified in both rounds; and (iii) *Elect: Never*, which takes a value of 1 if the village was never electrified.

It is worth noting that, for approximately 10 percent of villages, the data shows the presence of an electric grid in 1986–91 but not in 2001/02, which serves as the base category for both regression analyses. Similarly, *road\_improve* takes a value of 1 if the condition of the road leading to the market is reported as having improved from 1986 to 2001; *road\_worsen* takes a value of 1 if the road leading to the market has worsened from 1986 to 2001; and *no\_road\_both* takes a value of 1 if the village did not have a road to the market in either round.

Compared to villages that lost their electric grid between 1986–91 and 2001/02, villages that had electricity in 2001 (only) and those that had electricity in both rounds, see a positive and significant effect on the incidence of prenatal care, with the effect of electricity in both rounds being significantly greater than that in only one round. Moreover, improved connectivity to the market also has a positive and significant effect on the incidence of prenatal care. With regard to the likelihood of being vaccinated, villages that were electrified in 1986 but not in 2001 are the worst off. Here, too, we find that having electricity in both rounds has a significantly larger effect on the likelihood of being immunized.

While road conditions have no significant effect on the likelihood of immunization, the larger the proportion of children vaccinated in 1986–91, the greater the chances that a child was vaccinated in 2001. This is best understood by considering that those villages that have already seen large numbers of children vaccinated are more likely to be aware of the advantages of immunization, and so are more likely to engage in this in later years as well. The effects of road connectivity, electrification, and the proportion of children vaccinated in 1986 support the primary hypothesis that reduction in remoteness has a positive effect on health outcomes. Indeed, as villages become more connected (as measured by electrification and roads) and more aware of the benefits of certain health practices (which *prop\_vaccin\_86* helps capture), the likelihood that children are immunized and mothers seek prenatal care, increases.

**Table 2: Probit regression results**

	(1)	(2)
	<b>Immun_01</b>	<b>Prenatal</b>
Electr: Never	0.688 (0.079)**	-0.014 (0.025)
Electr: '01 not '86	0.726 (0.101)**	0.093 (0.025)**
Electr: Both	0.997 (0.002)**	0.427 (0.027)**
road_improve	-0.038 (0.020)	0.044 (0.018)*
no_road_both	0.041 (0.020)	
road_worsen		-0.143 (0.066)*
health_in_01	-0.003 (0.003)	0.148 (0.010)**
prop_vaccin_86	0.376 (0.021)**	
Middle	0.185 (0.014)**	0.264 (0.012)**
Rich	0.072 (0.006)**	0.220 (0.013)**
tot_family_size	-0.006 (0.001)**	-0.001 (0.001)
Gender	0.032 (0.003)**	0.064 (0.010)**
mom_educ	0.008 (0.001)**	0.023 (0.002)**
dad_educ	-0.004 (0.001)**	-0.021 (0.001)**
mom_age	-0.000 (0.000)**	-0.002 (0.000)**
<i>N</i>	11,214	11,667

Note: Robust standard errors in parentheses. \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

The regressions also control for the presence of an in-village health facility (in 2001), which has a positive effect on the incidence of prenatal care. Finally, compared to the lower-income strata, middle and rich classes are more likely to seek immunization and prenatal care for their children while boys are more likely to be immunized and their mothers to receive prenatal care.

### **3.1. Policy Implications**

The results presented in this paper indicate that connectivity helps improve health outcomes. The results with respect to electrification may seem to point toward an expensive policy prescription, but it is worth noting that the Government of Pakistan already has a rural electrification program as well as a village electrification program in place. The former is especially geared toward those villages that are far from the national grid and so cannot be connected to it (see Pakistan, Alternative Energy Development Board, n.d.). Under this program, 3,000 homes in 49 villages in Sindh have been energized through solar energy, while under the latter about 850 electrification schemes have been approved and completed just by the Islamabad Electric Supply Company (IESCO) (see IESCO, n.d.). Thus, there is a concerted bid to extend the electric grid across Pakistan.<sup>2</sup> This is unsurprising, especially when we consider that, while roads allow areas to be physically connected, electrification allows for greater access to information even in those areas that may be otherwise remote.

Furthermore, the positive effect of in-village health facilities on the probability of prenatal care and the positive effect of the proportion of children vaccinated in 1986 on the likelihood of immunization in 2001 points toward the importance of increasing the number of health units/clinics in rural areas and immunization drives to ensure that more children are vaccinated each year.

Some statistics on Pakistan's health service delivery and human resources are given in Table 3 below. These clearly show that the population's needs are far outmatched by the supply of healthcare. While the 2006–10 National Health Policy Guidelines include several welcome initiatives—such as the female (“lady”) health worker community-based program that is geared toward bringing health information, some basic healthcare, and family planning services to women's doorsteps, and the involvement of multidonor-supported social protection programs—the

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<sup>2</sup> Since 1958, the total number of electrified villages has increased from 609 to 125,495 in February 2008 (see Water and Power Development Authority, n.d.).

security issues surrounding immunization drives and the continual absence of provision of timely healthcare in rural areas point toward the need for more stringent and widespread reforms.

**Table 3: Health facilities and human resource densities**

<b>Health human resources</b>	<b>2010/11</b>	<b>2011/12</b>	<b>2012/13</b>
Registered doctors	144,901	152,188	160,289
Registered dentists	10,508	11,584	12,544
Registered nurses	73,244	77,683	82,449
Population per doctor	1,222	1,164	1,127
Population per dentist	16,854	15,288	14,406
Population per hospital bed	1,701	1,647	1,786

*Source:* Pakistan Economic Survey 2012-13: Health and Nutrition.

#### **4. Conclusion**

This paper has examined the effect of increased connectivity in rural areas on child health outcomes. In particular, it has studied whether rural areas' improved access to markets through an upgraded road network and greater openness—as measured by village electrification status—has a positive impact on child health outcomes and on awareness of health practices such as immunization and prenatal care.

Using a 16-year panel dataset on rural Pakistan, two iterations of a probit model were estimated: one examining the probability of child *i* being vaccinated and the second estimating the incidence of use of prenatal care. The results support the hypothesis that greater connectivity, as measured by road connectivity and electrification, improves health outcomes by increasing the likelihood of immunization and uptake of prenatal care. Furthermore, the presence of in-village health facilities has a positive effect on the probability of prenatal care, while the proportion of children vaccinated in 1986 has a positive effect on the likelihood of immunization in 2001.

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## Two Social Protection Programs in Pakistan

Ijaz Nabi\*

### Abstract

*Pakistan has launched two far reaching social protection programs. The federal government's Benazir Income Support Program has, at its core, an unconditional cash grant for the poorest households. Responding to the concern that this runs the risk of creating a large pool of permanent government handout recipients, the federal government has also launched an ambitious skills development program. At the provincial level, the government of Punjab is implementing skills development as social welfare in the four poorest Southern Punjab districts. The paper discusses the structure of the two programs, their success at reaching the poor and the monitoring challenges to assess their overall effectiveness.*

**Keywords:** Social protection, targeted transfer program, skills development, Pakistan.

**JEL classification:** R58, 020.

### 1. Introduction

Social protection in Pakistan went through a remarkable change with the return of democracy in 2008. In a short period, the newly elected federal government of the Pakistan People's Party (PPP) and the main opposition government of the Pakistan Muslim League (Nawaz) (PML-N) in Punjab had inherited an economy in tatters. Pakistan's chronic economic ills, the fiscal deficit, and the associated balance of payments crisis that had begun to surface in 2006 but had been restrained with "band aid," surfaced with a vengeance amid the political uncertainty of 2007. To avoid a major economic crisis, the elected PPP government was forced to curtail public expenditure sharply and devalue the rupee.

Given the economic slowdown, poor job creation, and rampant inflation, the impact of macroeconomic adjustment on the poor was predictably harsh. The Benazir Income Support Program (BISP), a federal

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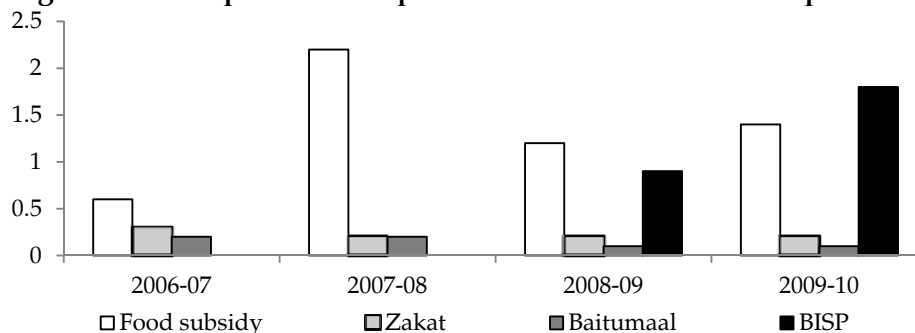
\* Country Director, International Growth Center, Pakistan, and Visiting Faculty, Department of Economics, Lahore University of Management Sciences, Pakistan.

program created by a parliamentary act in 2010, has at its core an unconditional cash transfer program targeting the poorest 20 percent of the population, and was designed to cushion the impact of economic hardship on the poor and the most vulnerable.

The PML-N government in Punjab took a different approach to social protection. Soon after taking office, the provincial government put in place a program subsidizing bread. Called *Sasti Roti* (literally, cheap bread), untargeted subsidized *rotis* were made available at 12,000 *tandoors* (bakeries) throughout urban Punjab.

The federal BISP and Punjab's *Sasti Roti* programs represented a sevenfold increase in expenditure on social protection (Gazdar, 2011) (see Figure 1). Within the first year of its establishment, the BISP was reaching more beneficiaries than the two previous social protection programs, Bait-ul-Maal and *zakat* (Table 1); by the third year, 2010/11, it was reaching over 3 million beneficiaries. The program's design and scope are discussed in Section 2.

**Figure 1: Social protection expenditure as a share of total expenditure**



Source: Gazdar (2011) and Pakistan, Ministry of Finance (2011).

**Table 1: Beneficiaries of the main social protection programs**

Program	Number of beneficiaries		
	2008/09	2009/10	2010/11
Pakistan Bait-ul-Maal	159,822	1,915,071	1,885,035
Zakat	1,085,378	1,289,050	1,109,151
BISP	1,760,000	2,290,000	3,081,000

Source: Gazdar (2011).



Even though social protection was scaled up in response to the economic crisis of 2007/08, the vulnerability of low-income groups to hardship is endemic. This is evident in the pattern of poverty incidence in Pakistan whereby a large number of income earners lie in a band just above and below the poverty line (estimated in 2011/12 at PRs 2,243 per capita per month) (Shaikh, 2013). Economic downturn and inflation are just one cause of vulnerability. Others are agriculture cycles, natural disasters (earthquakes, floods), and illness of the main family earner.

Mindful of the vulnerability that exposes the poor—and especially its youth—to prolonged periods of unemployment and low-income earnings, and responding to social dislike of permanent handouts, both the federal government's BISP (through its *Waseela-e-Rozgar* program) and the Punjab government have implemented skills development programs as alternative forms of social protection, ones with an in-built exit strategy. The Punjab Skills Development Fund (PSDF), which focuses on the province's four southern districts that are marked by pronounced elements of vulnerability, is the more interesting of the two in terms of design and is discussed in Section 3. Section 4 concludes with some comments on issues going forward, including the all-important issue of fiscal sustainability surrounding the two programs.

## 1. BISP

The BISP was launched in 2008 in a nightmarish economic scenario. The economy was collapsing under the burden of rapidly rising energy and food prices, a gaping fiscal deficit, and soaring inflation. It was clear that the poor would be the worst affected and without some income support, risked losing whatever gains they had made in the previous growth spurt.

The BISP's immediate objective was to cushion the negative effects of slow economic growth, the food crisis, and inflation on the poor, particularly women, through the provision of cash transfers of PKR 1,000 (approximately USD12) per month to eligible families. As one of the world's largest such programs, it would eventually provide income support to 7 million households (20 percent of the poorest people in a population of 180 million). It has since evolved into the country's main social safety net.

Rolling out an income support program that minimizes leakages and reaches the intended population in a country the size and diversity of Pakistan was not easy. It took a couple of years of intense engagement with

the world's best technical experts and resolute commitment by the Pakistani management to get things right.

The period from 2008/09 to 2011/12 was one of rapid learning for the BISP. Best practices from around the world were tailored to the Pakistani environment to develop a modern and efficient social protection system. The innovations included (i) switching from community-based targeting to more scientific targeting, (ii) developing one of the largest databases of poor households, (iii) instituting automated payment generation, (iv) providing cash transfers through innovative technology, (v) establishing an automated case management system that interfaced with beneficiaries at the *tehsil* level, and (vi) using third-party evaluations of processes and the program to assess its efficiency and improve the quality of services.

The core program providing cash support of PKR 1,000 per month per beneficiary household reached 4 million families in 2011/12. This helped fill 60 percent of the gap between the actual income of poor households and the income needed to climb out of poverty. The bulk of the funds for the cash program are drawn from the government's own budgetary resources. The two conditions for eligibility are that (i) the household belongs to the poorest 20 percent of the population, and (ii) the recipient is a female household member who may be currently married, divorced, or widowed. Empowering poor women is thus a central pillar of the program.

In addition to the core unconditional cash program, and using the same database, the BISP has launched a major conditional cash program, *Waseela-e-Taleem*, to help increase enrolment in primary schools. Other programs are *Waseela-e-Rozgar* (skills training), *Waseela-e-Haq* (entrepreneurship development), and *Waseela-e-Sehat* (health). This paper discusses the core cash program and *Waseela-e-Taleem*, the two flagship programs of the BISP.

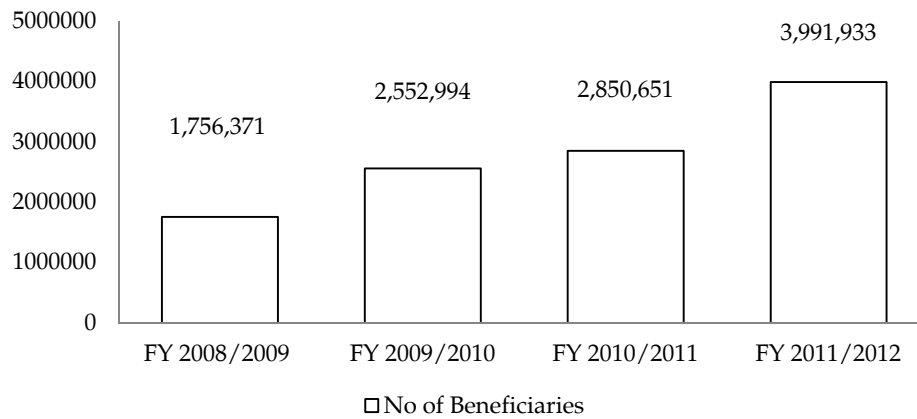
Since October 2011, the BISP has delivered these programs under the watchful eye of an independent board of directors. There are 11 board members (five independent members, five government representatives, and one secretary/chief executive officer [CEO]). Prominent members who have driven board proceedings include a former governor of the State Bank of Pakistan, a former finance minister, a prominent educationist and former minister, a well-known publisher/journalist, and myself, a former dean of the Lahore University of Management Sciences. The board and its four committees have held 14 meetings since October 2011 scrutinizing BISP hiring policies, program design, finances, and operations. Third-party

internationally procured evaluations are given a large weight in this scrutiny and are discussed below.

### 1.1. Unconditional Cash Grant Program

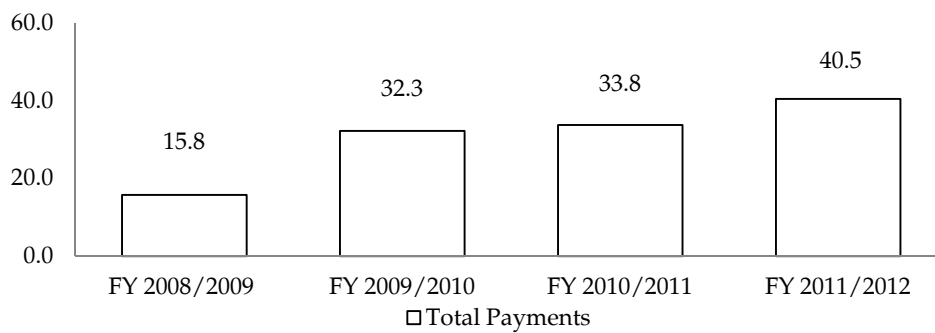
The number of beneficiaries (Figure 2) of the unconditional cash program increased from 1.7 million households in 2008/09 to nearly 4 million in 2011/12 and BISP payments (Figure 3) rose from PKR 15.8 billion to PKR 40.5 billion. Each female who has ever been married in the households selected receives PKR 1,000 per month. Originally, the payments were made through the Pakistan Post, but this has now been largely replaced by payments via the BISP ATM card.

**Figure 2: Number of BISP beneficiaries receiving cash grants**



Source: BISP Data

**Figure 3: Annual Payment of Cash Grants (in Billion Rs.)**



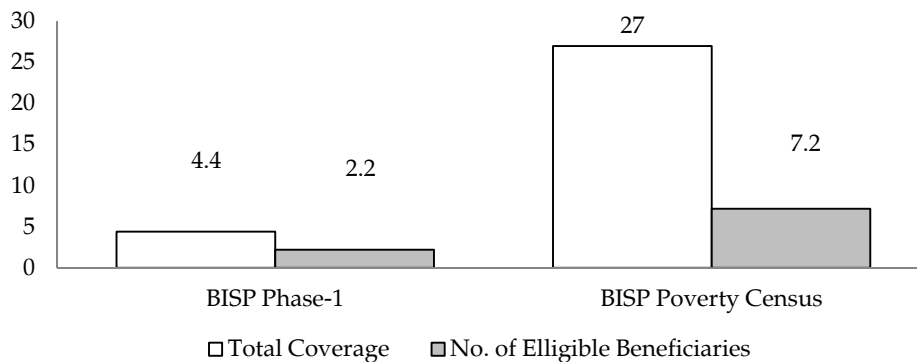
Source: BISP Data

This period of growth and consolidation is characterized by two phases. In phase I (2008/09 to 2010/11), beneficiaries were identified by parliamentarians; in phase II (2010/11 to 2012/13, as the survey has yet to be completed in two agencies of FATA), a more reliable survey method was used. The Nationwide Poverty Scorecard Survey, the first of its kind in South Asia, enables the BISP to identify eligible households through the application of a proxy means test that determines the welfare status of households on a scale of 0 to 100. The survey, which was started in October 2010 and has been completed across Pakistan (except in two FATA agencies), has the following features.

- It identifies 7.2 million households who are living below a cut-off score of 16.17.<sup>1</sup>
- It creates a large and reliable national registry of the socioeconomic status of around 27 million households across Pakistan.
- It uses GPS to map data for the entire country to help make informed decisions (e.g., to respond to natural disasters and other emergencies).
- It validates the targeting process through third-party evaluation.

Figure 4 compares the targeting in phase I (community-based targeting) with that in phase II (poverty scorecard-based targeting), and clearly indicates the rapid expansion in coverage of the BISP. Figure 5 presents province-wise details of the total estimated number of households and the number declared “eligible” for BISP benefits.

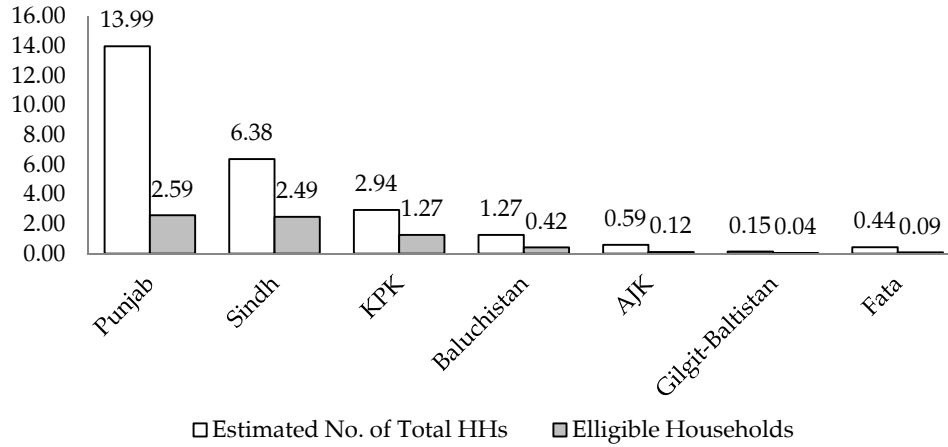
**Figure 4: Coverage and eligible beneficiaries in phases I and II, and poverty census (millions)**



Source: BISP data.

<sup>1</sup> A cut-off score of 16.7 does not represent a poverty line, but was decided on the basis of the available fiscal space.

**Figure 5: Province-wise aggregates of total BISP eligible households (millions)**



Source: BISP data.

## 1.2. Evaluations

Rigorous evaluations are built into the program's design and are conducted by external organizations to ensure credibility. The evaluations provide invaluable insight into the incentive structure and processes of an intervention and, as such, are an essential part of policy design. Three independent firms were hired to conduct spot-checks of eligible beneficiaries, evaluate the process of program implementation, and carry out a detailed impact evaluation exercise.

The BISP contracted two third parties (Innovative Development Strategies and GHK) to conduct a validation exercise through spot-checks and to evaluate the different procedures relating to the scorecard implementation. The specific objectives of these assignments were to test the completeness and quality of the survey conducted by the partner organizations. The interim findings of both exercises are shared regularly with the BISP. The spot-check assignment found that the overall coverage of the BISP's targeting survey at the national level was 93 percent, and that there was only a small difference in the poverty scores across the two surveys (i.e., the national roll out of the poverty survey and spot-check representative survey). Additionally, the process evaluation interim results showed that almost 85 percent of the stipulated processes were followed for all activities completed under the poverty scorecard survey.

The program has also been evaluated by the United States Agency for International Development (USAID) under its Budget Support Monitoring initiative. As per its findings, 98.69 percent of beneficiaries received their cash payments: 32 percent via banks through mobile payments, 25 percent through the Pakistan Post, and 41 percent via smartcard. Almost 81 percent spent, on average, a day (or two hours) or PKR 175 to receive the cash grant. This was slightly higher for Balochistan (PKR 200). In 60 percent of the households, senior female members decided how the cash grant was to be used; the rest made joint decisions.

The implementation of cash transfer programs has been accompanied by systematic efforts to measure their effectiveness and understand their broader impact on household behavior. The BISP undertook a baseline study (recently completed by Oxford Policy Management) that is being used as part of a wider impact assessment of the program. The baseline provides data against which to measure the BISP's impact through future surveys, focusing on 11 pre-agreed areas ranging from poverty and consumption expenditure to child nutrition, women's empowerment, and the uptake of education and health services on which BISP could reasonably be expected to have an impact.

The results of the baseline reiterate that the BISP's intended beneficiaries have larger families with a high dependency ratio and low educational attainment, and that are prone to more illnesses than the rest of the population. Children in eligible households are more malnourished than in noneligible households. Overall, the findings were broadly in line with the National Nutrition Survey, with 43 percent of children recorded as stunted, 15 percent as wasted, and 35 percent as underweight. Similarly, the baseline provides details on indicators of household consumption, major shocks, coping mechanisms, and the use of financial services. The study's scope, sampling, and data collection approach will be incorporated in a comprehensive medium-term impact evaluation plan.

The Office of the Auditor General completed a financial audit of the BISP for 2010/11 and 2011/12 in October 2012. The audit report deemed the progress and operations of the program satisfactory and did not highlight any serious problems. The BISP has responded to the audit observations and the audit report will be finalized after a meeting of the Departmental Accounts Committee. The report will be submitted to the BISP's board once finalized. An internal audit is also in process and will be submitted to the board in the near future.

### 1.3. *Waseela-e-Taleem (Primary Education Program)*

The BISP has recently launched the co-responsibility cash transfer *Waseela-e-Taleem*. The program aims to encourage BISP beneficiary families with children aged 5 to 12 years to send their out-of-school children to primary schools (and allow currently enrolled schoolchildren to continue their education) in return for cash transfers with the long-term prospects of human capital formation that would help them move out of abject poverty. This involves a cash transfer of PKR 200 per month paid quarterly (PKRs 600 per child) for up to three children in each BISP beneficiary family in return for their compliance with the co-responsibilities of school admissions and a minimum 70 percent quarterly attendance. The BISP intends to implement the program using a phased approach, which involves testing the program in selected districts first and then rolling it out on the basis of learning from the test phase.

The most significant aspect of this initiative is the compliance monitoring of the co-responsibilities by beneficiary families. The co-responsibilities include gaining admission in schools for primary education and maintaining at least 70 percent quarterly attendance. The benefits of noncompliant families/children will be suspended following two consecutive cases of noncompliance with the program's co-responsibilities. The compliance monitoring process is implemented by the district education departments in close coordination with BISP *tehsil* offices.

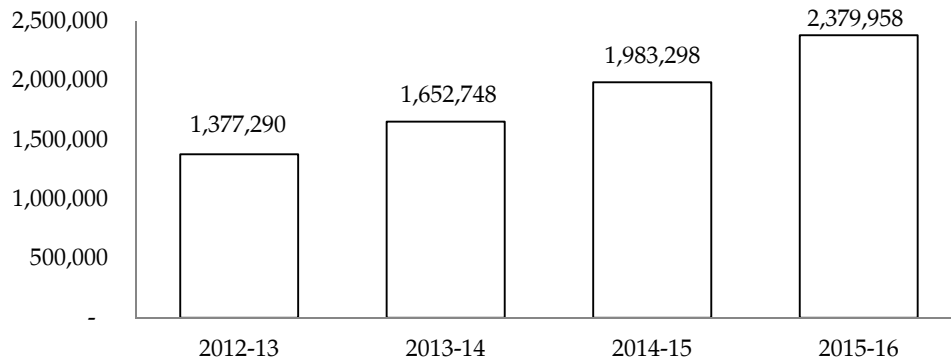
The program uses an optical mark recognition-based compliance monitoring process. The quarterly attendance sheets of children from BISP beneficiary families whose school admission has been verified are entered into the BISP's management information system for *Waseela-e-Taleem* (generated at BISP *tehsil* offices) and handed over to the education department officer concerned at the *tehsil* level. Education supervisors from the local education department then collect the attendance sheets for their respective schools and pass them on to the schools, who record the attendance of BISP beneficiary children as per the training provided by BISP's *Waseela-e-Taleem* training firm. The completed forms are then resubmitted through the same channel they were received.

The program's field operations started on 8 October 2012. The program was officially launched on 9 November 2012. As of 22 January 2013, a total of 21,116 families have enrolled in the program in three districts of Cluster A whose 51,127 children were identified and issued admission verification certificates by enrolment centers under *Waseela-e-*

*Taleem*. The projected annual number of children to be enrolled and the amount of benefits paid is shown in Figures 6 and 7.

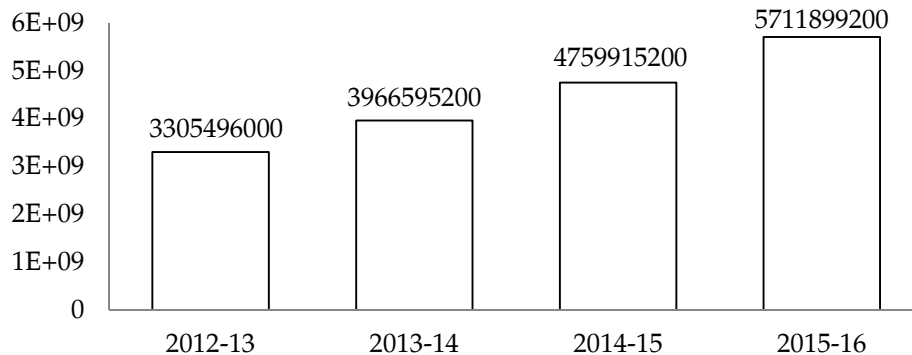
An essential component of rigorous program evaluation is built into the design of *Waseela-e-Taleem*. In order to implement the program as per the procedures laid out in its operational manual and associated guidelines, BISP will hire a firm to carry out operational reviews of the program's implementation through spot-checks and process evaluations. The operational review is important to ensure checks and balances on all the implementing partners of the program and to maximize the outputs by continuously improving the processes on the basis of the feedback received from the operational audit consultancy. Correspondingly a vigorous impact evaluation of *Waseela-e-Taleem* is also in process.

**Figure 6: Projected annual number of children enrolled in *Waseela-e-Taleem***



Source: BISP Data

**Figure 7: Projected amount of CCT to be paid in *Waseela-e-Taleem***



Source: BISP Data



The baseline will be fielded during March–June 2013, based on a comprehensive quantitative design. Data on impact evaluation, process evaluation, and spot-checks will be collected on a sample basis from program operational offices and beneficiary families, using appropriate data collection tools (such as questionnaires). The data acquired through the operational review will be analyzed critically, using both quantitative and qualitative data analysis techniques. The operational review firm will also ascertain the procedural reasons for errors, if any, by rigorously testing the data. Different thresholds will be defined for error margins and corrective actions suggested by the consultant firm on reaching a threshold. All the relevant stakeholders of the program will be given regular feedback for timely course corrections.

The primary schooling program already meets the core criterion that other such programs struggle with, i.e., it is well targeted by virtue of BISP's well-designed infrastructure. The challenge going forward is to ensure that the demand for education created by this federal program is matched by supply (teachers, teaching material, school buildings); constitutionally, this task rests with the provinces. Aligning the federal and provincial governments' incentives is Pakistan's main challenge as it forges the institutions needed by democracy to deliver development and prosperity.

#### **1.4. Other Programs**

Complementary interventions play an increasing role in determining the sustainable impact of cash transfer interventions on the uptake of education and health services, nutrition outcomes, and in improving livelihoods to increase households' chances of graduating from poverty. Global experience suggests that, where programs are combined with well-sequenced complementary interventions, they have greater potential. The BISP has also initiated complementary programs including *Waseela-e-Rozgar* (technical and vocational training), *Waseela-e-Haq* (microfinance), and *Waseela-e-Sehat* (life and health insurance). The success of the BISP has encouraged several international donors—the UK Department for International Development (DFID), USAID, the World Bank, and Asian Development Bank—to use its highway to the poor to deliver other much needed services.

## **2. PSDF**

The PSDF is an initiative of the Punjab government in collaboration with DFID. It was envisaged as one of the two prongs of the Punjab

Employment Opportunities Program, the other being livestock development. In the initial phase, the PSDF has been designed to focus on the four poorest districts in southern Punjab (Bahawalpur, Bahawalnagar, Lodhran, and Muzaffargarh). The program addresses poverty, unemployment, and vulnerability by providing skills that help secure jobs or enhance income in self-employment. The livestock program was closed down in mid-2012 because of slow progress, and the funds were transferred to the PSDF with the additional responsibility of providing skills that would improve the quality and size of livestock in the region.

The PSDF is a Section 42 company managed by an independent board of directors (with private sector representation) with a total outlay of GBP 50 million. The program was formally launched in 2011, with the appointment of a CEO. There are 12 board members: seven are nongovernment representatives while four are department secretaries and the CEO. The board has met 13 times since it was set up in October 2010. Its subcommittees are closely involved in giving direction to PSDF operations. The human resource committee has met five times, the audit and finance committee has met six times, and the program design and evaluation committee has met five times since the program's inception.

The PSDF's objective in the four targeted districts is to train 80,000 vulnerable people over five years and restore the credibility of the state in facilitating access to better-paying jobs. The PSDF has launched three principal training schemes: (i) skills for market (training for self-employment focused on rural areas), (ii) skills for employment (training for employment in small towns/rural areas/the informal sector), and (iii) skills for jobs (training for employment in the formal sector).

The first two categories, offered to the poor and women in rural areas and small towns, are forms of social protection; the third targets educated, unemployed, and vulnerable individuals in urban/peri-urban areas in the four districts. The average duration of the training program for skills for market and skills for jobs is 4 months and 6.5 months, respectively. Trainees receive a stipend of PKR 1,500 per month if the training is within the four districts and PKR 3,000 if located outside. As of June 2013, nearly 30,000 individuals have been trained in 90 different trades, working with 60 public, private, and nongovernment organizations. The program is on course to meet its overall target of training 80,000 trainees in four years.

### 2.1. Program Design

The PSDF's design represents a major shift in delivering public resources for skills development. It does not provide training itself on premises constructed with its resources and by teachers hired using program fund, nor is it a "captured" fund funneling public money to public sector training institutions insensitive to the market demand for their training programs. Instead, the PSDF identifies the courses to be taught and the trainees to be targeted, and then takes competitive bids from both public and private trainers to provide the training at specified locations. Bids that satisfy the rigorous technical and financial criteria set by the program are then contracted and given the funds to provide the training.

The program design outlined above can work only if the PSDF spends its energy and resources in responding effectively to information flows that match the demand for skills acquired by trainees (that help to find jobs in the market or to improve income in self-employment) with the supply of training programs it funds. Thus, research on household and employer skills needs, gathering market information, fine-tuning courses, setting technical and financial criteria to assess bids, third-party evaluation of training programs, and tracking trainees to assess post-training employment and income status become the core functions of the program.

Given these core functions, the PSDF's success depends on the quality of research that supports its decision-making. Its sponsors have made available adequate technical assistance to procure such research, and the board ensures that a proper balance is kept between the operational needs of delivering the program according to the agreed timeline and the quality of information needed so that the training delivered does indeed match the demand for skills. This design feature allows for ongoing monitoring and evaluation with a feedback loop into program design, and thus facilitates timely course correction.

The PSDF has defined its success in terms of the following bars:

- Select trainees that meet the criteria of vulnerability (people with an income less than USD 2 a day and marginalized women)
- Identify training courses that increase the employability and productivity of trainees
- Promote training by private trainers via competitive bidding by public and private trainers for training contracts

- Ensure zero-tolerance for “ghost” training programs and training that does not conform to contract specifications
- Assess improvements in the employability and income of trainees who have completed the training program

### ***2.2. Design Features to Help Meet the Program Bars***

How well the PSDF performs on the bars listed above will be assessed in due course as the program matures and evaluations are completed. This is especially true for the last bar on the program’s impact on income. Nonetheless, several design features are already beginning to have an impact on program outcomes.

The evidence-based rollout of the program has used baseline surveys of living conditions in the four districts being targeted. The sample comprises 11,000 households whose skill preferences were surveyed. A survey of employers for skills demanded and a survey of networks for job placement were also conducted. Following these, two categories of skills were identified: (i) skills for market (tailoring, home crafts, etc.) and (ii) skills for jobs (welding, electrical work, cooking, inventory control, etc.). The PSDF therefore has an effective targeting mechanism and a strong system in place to ensure employability and income generation.

### ***2.3. Vulnerability***

The program’s focus on four districts in southern Punjab (Bahawalpur, Bahawalnagar, Lodhran, and Muzaffargarh)—the least developed in terms of poverty, education, and health indicators—allows it to meet the first bar. The selection of trainees satisfies the criterion of vulnerability in that their incomes are less than USD 2 a day. Nearly 40 percent of the beneficiaries are women.

### ***2.4. Course-Correcting Design Features***

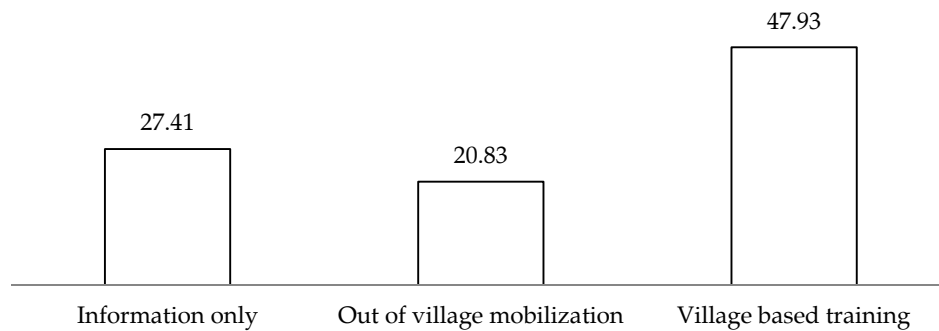
Household surveys conducted in the early stages of the program revealed a high degree of enthusiasm for training among households, even among young women in these relatively conservative districts. This was followed by a series of randomized control trials (RCTs) to assess whether this enthusiasm could be sustained in terms of committing household time to the training program. The trial involved distributing vouchers to households with potential trainees that could be cashed when the training was undertaken.

The results were discouraging. The voucher uptake corresponded to an abysmal 5 percent of the general population and was even lower among the targeted population (those that met the criterion of vulnerability). Further analysis showed that the low uptake was not due to a lack of demand for training but rather due to program design factors such as inadequate information on training programs, distance from the training center, the limited number of courses offered, and low stipends. The voucher uptake was even lower for women due to factors such as the number of household dependents, both the elderly and children.

The PSDF's program design was adjusted in light of the RCT findings. The new round of bids for courses offered to women trainees whose uptake was very low, were adjusted by providing them with more information on the program, specifying the location of training centers to address the distance concern, and offering more varied courses.

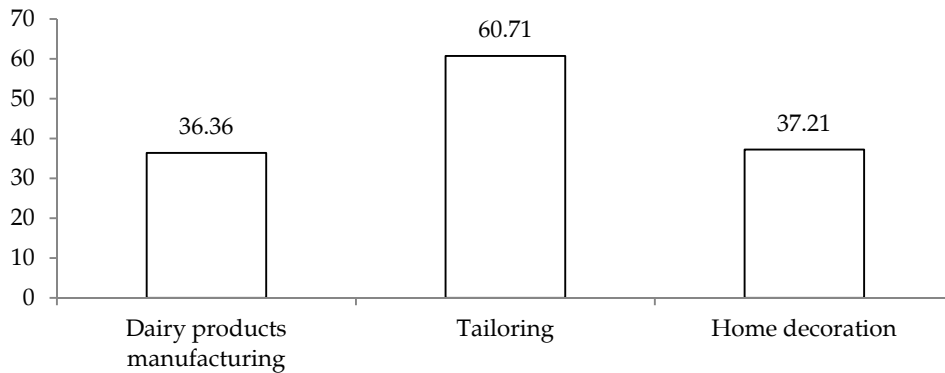
The results of these adjustments can be seen in Figures 8 and 9. By adjusting distance and providing more village-based training, the voucher uptake more than doubled. Offering more varied courses also met with resounding success in increasing women's voucher uptake (Figure 9). Moreover, none of these measures involved increasing the stipend. These experiments have helped fine-tune the program in terms of training location, modes of trainee mobilization, and courses offered.

**Figure 8: Impact of village-based training: Overall voucher uptake by training**  
(percentage of female participation)



Source: BISP Data

**Figure 9: Course desirability matters: Voucher uptake in village-based training by course**  
(percentage of female participation)

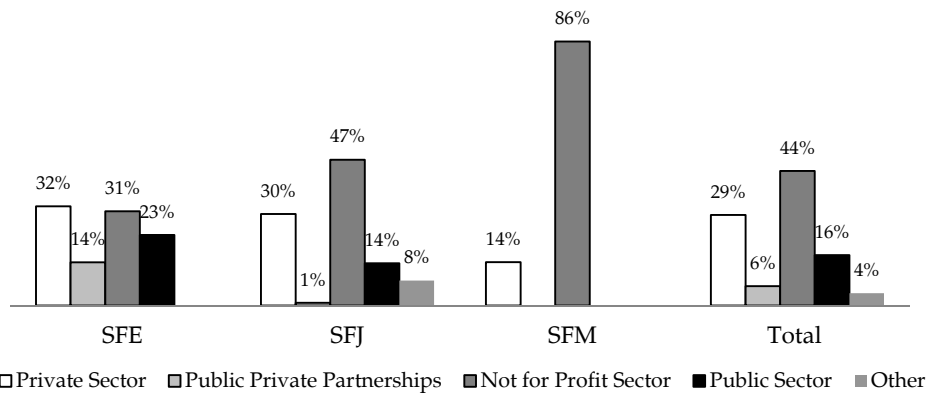


Source: BISP Data

**2.5. Private Sector Development**

The PSDF’s strategy to develop private sector trainers seeks to create competition in the market for better results. The private sector is invited to bid for all three main categories of training programs, i.e., skills for market, for jobs, and for employment. Figure 10 shows that, after NGOs, it is the private sector that secures the most contracts in all three categories of training. This creates entrepreneurship in training that was, until recently, dominated by public sector training institutions. It also demonstrates that the potential for growth, as seen in low-cost private formal education in recent decades, is substantial.

**Figure 10: Private sector development (mix of providers)**



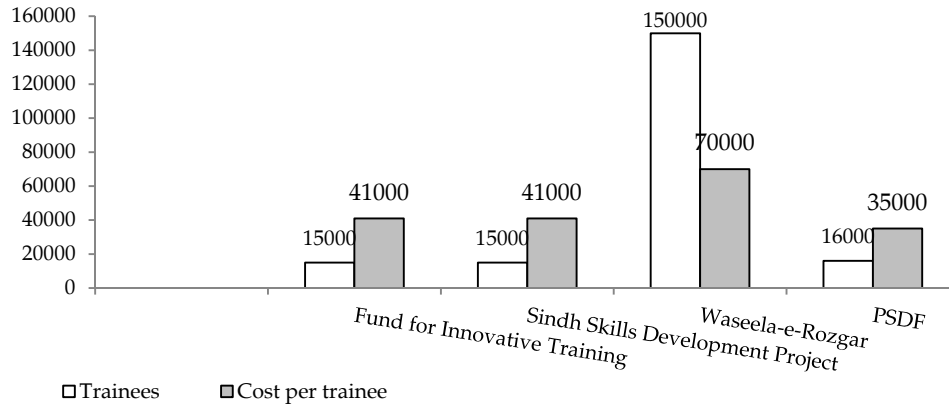
Source: BISP Data

## 2.6. Third-Party Monitoring and Cost-Effectiveness

A robust third-party monitoring system has been put in place to ensure the availability of inputs-trainers, learning materials, and trainee attendance. The program has zero-tolerance for corruption: all bids are transparent and there are heavy checks in place to ensure that no ghost programs are funded by the PSDF; this entails ongoing third-party monitoring and independent yearly financial audits. Testing services that ensure the quality of the training programs are outsourced to national and international accredited certifying agencies.

The program's cost-effectiveness relative to the Sindh Skills Development Project is illustrated in Figure 11.

**Figure 11: PSDF cost-effectiveness: Comparison with four skills development programs**



Source: BISP Data

## 3. Concluding Remarks: Social Protection Going Forward

### 3.1. BISP

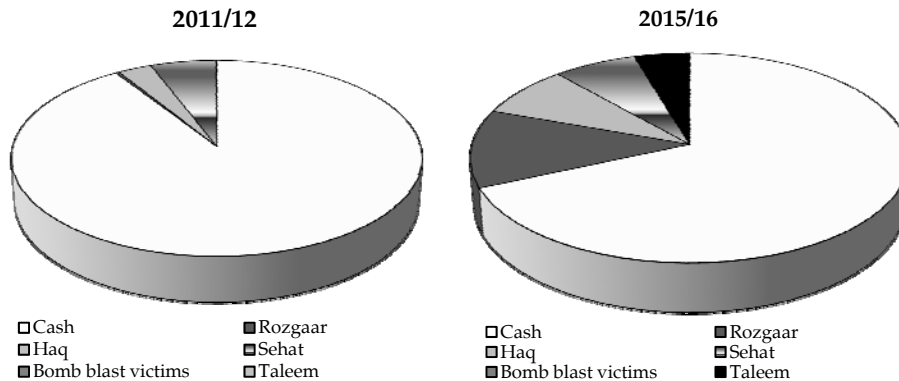
The BISP was put through a crucial sustainability test in the May 2013 election that resulted in the PPP's defeat and brought the PML-N, the main opposition party, into power with a comfortable majority in Parliament. It was feared during the transition that the PML-N might jettison the program as it is too closely identified with the PPP. These concerns have now been adequately addressed. The 2013/14 budget presented to the newly elected Parliament by the PML-N government shows its commitment to continuing the program. Indeed, the cash transfer

in the core BISP subprogram has been increased to PKR 1,200 per month (from the previous PKR 1,000). Furthermore, after some debate, the government has decided to retain the program's original name, indicating the maturity of the political process in Pakistan.

Having satisfied ourselves that the BISP is technically sound, the other questions to ask are whether the program is ethically desirable and financial feasible. One ethical concern that arises is whether the program discourages enterprise by people and creates a permanent pool of people dependent on government handouts. Responding to this concern, the BISP has developed an exit strategy in the form of its *Waseela-e-Rozgar* (skills development) and *Waseela-e-Haq* (entrepreneurship development) programs. These programs are still in their early stages, and need to be evaluated before scaling them up as a full-blown exit strategy.

The size of the BISP subprograms is expected to triple by 2015/16 (Figure 12). Their total expense, as of 2011/12, was PKR 43 billion in addition to PKR 6 billion in administrative costs (including liaison with NADRA, banks, and the Pakistan Post).

**Figure 12: Size of BISP subprograms**



Source: BISP Data

The program's financial viability is inevitably a source of worry for a fiscally strapped economy. At PKR 60 billion per annum and growing, it is a large financial commitment by a government already facing stagnant revenues. However, it is worth bearing in mind that a large part of the annual energy subsidy of PKR 500 billion supports the consumption of middle-class residential homes, as do the huge subsidies given to the loss-making railways and Pakistan International Airlines. Furthermore, in the



last four years, the tax expenditure (which is a kind of subsidy) enjoyed by middle-class income taxpayers who should be in the tax net but are not, is estimated by the Federal Board of Revenue to be the size of Pakistan's annual defense expenditure. The BISP's PKR 60 billion for the poor is modest by comparison.

Clearly, there is room for improvement in all such large and complex programs as the BISP. Some of the issues going forward include the need to (i) continually update the program's database and list of beneficiaries; (ii) enhance the different subprograms' capacity, particularly with regard to several other programs that have recently been launched; and (iii) develop good working arrangements with the provinces following the 18<sup>th</sup> Amendment. Also, fiscal prudence requires that some trades be made with subsidized programs for the middle class to make space for the BISP. Democratically elected governments have to make sure that the poor do not always come out the worst in all such trades.

### 3.2. PSDF

Encouraged by the promising PSDF roll out, plans are underway to expand its operations to all of Punjab. The number of trainees is to be increased from the current target of 20,000 per annum to 500,000 trainees per annum by 2020—a huge multiple of 25 (see Table 2).

This has important implications for program design. First, employers located in the relatively more prosperous districts of Punjab will become important stakeholders and catering to their training needs will imply a substantial increase in and predominance of training courses aimed at skills for jobs. Second, the PSDF will increasingly become a program focused on economic growth as the share of training for skills for the market—and with that the program's social protection dimension—declines in importance. Third, the PSDF will need to be vigilant in ensuring that the social protection dimension of skills training, especially in the poorer districts, continues to receive the management's attention. Fourth, private sector trainers will be challenged to respond to the considerably larger training cohort requiring increasingly complex training courses. Finally, the capacity of the PSDF itself will need to be built up rapidly to manage the much larger program.

**Table 2: Targeted number of trainees**

Year	Pilot districts	Target under expansion strategy	
		Punjab (excl. pilot districts)	Total target: Number of trainees
2011/12	10,000	Preparation	10,000
2012/13	30,000	10,000	40,000
2013/14	35,000	100,000	135,000
2014/15	5,000	200,000	205,000
2015/16	-	280,000	280,000
2016/17	-	350,000	350,000
2017/18	-	410,000	410,000
2018/19	-	460,000	460,000
2019/20	-	500,000	500,000

*Source:* Punjab Skills Development Fund.

Another set of challenges is associated with the fiscal sustainability of the envisaged, much larger program. Given low overall government revenues, the subsidy built into its current design will no longer be feasible. Public-private partnerships and asking trainees to pick up a larger share of the training cost would be one solution. The earlier stages of the PSDF rollout will have demonstrated the increase in worker productivity associated with training and the ensuing increase in employers' profits and higher wages for trained workers. This will create incentives for both employers and workers to pick up a greater share of the cost of training. In turn, it will pave the way for the government to change its role from funding training to providing regulatory oversight (setting standards, ensuring quality, checking fraud, etc.) and facilitating knowledge exchange (on emerging skills needs) between training seekers (employers and workers) and private training providers.

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*Annex***Table A1: Poverty line estimates, 2005–12**

<b>Year</b>	<b>Poverty line (PRs)</b>
2005/06	948.93
2006/07	1,046.48
2007/08	1,231.18
2008/09	1,522.97
2009/10	1,712.88
2010/11	2,020.35
2011/12	2,243.19

**Source:** Economic Survey of Pakistan, 2010.

**Table A2: Poverty headcount rates by urban-rural divide (%)**

	<b>1998/99</b>	<b>2000/01</b>	<b>2004/05</b>	<b>2005/06</b>
<i>National</i>	31.1	34.5	23.9	22.3
Urban	21.4	22.7	14.9	13.1
Rural	35.1	39.3	28.1	27.0
<i>Punjab</i>				
Urban	23.9	23.4	16.8	12.1
Rural	33.0	34.8	28.4	21.0
<i>Sindh</i>				
Urban	14.9	20.3	10.8	11.5
Rural	34.3	48.0	22.7	31.0
<i>Balochistan</i>				
Urban	24.5	27.3	17.9	32.4
Rural	21.1	39.0	28.7	56.6
<i>KP</i>				
Urban	26.1	30.4	22.1	23.6
Rural	21.1	39.0	28.7	56.6

**Source:** Planning Commission of Pakistan. All poverty headcount rates are official estimates.

## **Human Development and Economic Uncertainties: Exploring Another Dimension of Development**

**Jamshed Y. Uppal\* and Syeda Rabab Mudakkar\*\***

### **Abstract**

*This study makes the case that economic uncertainties—i.e., the extent to which economies face systemic uncertainties—need to be considered another dimension of human development because they render development vulnerable, diminish social welfare, and constrain human capabilities. We propose a methodology for adjusting the human development index (HDI) for economic uncertainties, using the time variability of income changes as a proxy. We construct an adjusted index associated with the income component for the 2011 HDI. Our analysis indicates that such an index contains additional information. The percentage loss in the income component of the HDI seems to reflect the variability in economic indicators arising from the political and economic tribulations experienced by each country. In Pakistan’s case, the results of a time-series analysis of the percentage loss from the uncertainty adjustment appear to closely trace the country’s political and economic upheavals.*

**Keywords:** Human development index, capabilities, human development, economic growth, economic vulnerability, uncertainty, risk.

**JEL classification:** D63, I32, I38.

### **1. Introduction**

The United Nations Development Programme (UNDP)’s human development index (HDI) has been instrumental in focusing on the nexus between human development and economic growth. The index’s simplicity in characterizing development as a composite of achievements in health, education, and income has made it a particularly useful tool for advocacy purposes and in de-emphasizing a *growth-centric* view of development.

The HDI has undergone many revisions since its inception in 1990. UNDP (2010) revised its indicators and functional form, but retained the index’s three-dimensional structure. To address a major criticism that the

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HDI neglected within-country inequality, three additional indices were introduced: the *inequality-adjusted* HDI, the *gender inequality index*, and the *multidimensional poverty index*. According to Klugman, Rodríguez, and Choi (2011): “The 2010 HDR made a significant move away from the idea that the ideal measure of human development must cover only the three core dimensions.” It is in this spirit that we explore a new dimension of human development in this paper.

One dimension that has not received much attention is the extent to which populations face economic uncertainties, rendering development vulnerable. These uncertainties arise from a wide range of risk factors, e.g., natural disasters, systemic political and market failures, external economic shocks, and adverse technological and market changes. The overall impact of economic uncertainties is to *diminish human capabilities* in the sense originally conceived of by Amartya Sen—“development as capability expansion” (Sen, 1985, 1990). The 2010 Human Development Report (HDR) raises the issue of economic vulnerabilities, noting that, “countries and people are vulnerable when their human development is threatened by various risks,” but promises to address it in the following HDR (UNDP, 2010). The 2011 HDR, however, takes it up as an issue of development sustainability in the broader environmental, economic, and social context (UNDP, 2011).

We argue that economic uncertainties need to be explicitly considered as another dimension (negative) of human capabilities, and propose an *uncertainty-adjusted* HDI (U-HDI). Our methodology for constructing such an index takes the time variability of income changes as a proxy for economic vulnerability. This study presents the results of an exploratory exercise in constructing such an index across countries. We also present a detailed analysis for Pakistan in the context of the uncertainties associated with the country’s political and economic environment over time.

## 2. Background

Since its introduction in 1990, the HDI has become a “yardstick of wellbeing” in discussions on development issues. Its basic message, that development is much more than income growth, has forced policymakers and development economists alike to move away from “growth-centric” thinking and focus on other dimensions of development such as health and education. Its prime movers, the late Pakistani economist Mahbub ul Haq

and Nobel laureate Amartya Sen, had sought an alternative to per capita income as the standard measure of development.<sup>1</sup>

The resulting HDI aggregated three basic dimensions into a composite index, motivated by the view that, “Human development is a process of enlarging people’s choices. [...] The three essential ones are for people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living” (UNDP, 1990, p. 10). The index’s simplicity in characterizing development as a composite of achievements in health, education, and income has made it a particularly useful tool for advocacy purposes and encapsulating a comprehensive view of development.

Until 2010, the HDI was defined as a simple arithmetic average of its sub-indices—health, education, and income—based on normalized indicators of achievements in each of these dimensions. Life expectancy and GDP per capita were used as proxies for health and living standards, respectively, while the literacy ratio and gross enrolment ratio were used to measure education. The sub-indices were then normalized using given upper and lower bounds. The HDI has undergone many revisions since its inception in 1990, and the choice of indicators and definition of sub-indices had varied over time. However, it has retained its basic original structure.

While the HDI is accepted as a measure of development, it has also invited much criticism in two broad categories: (i) its choice of development dimensions, and (ii) its functional form. Critics point out that the HDI excludes other obvious dimensions of wellbeing, such as equity, political freedoms, human rights, sustainability, and happiness. For example, Sagar and Najam (1998) note that the HDI “ignores the environmental dimensions of development, especially the relationships between the performance of countries on the environmental and human development dimensions.” The HDI is also criticized for not capturing all of people’s freedoms and opportunities, for example, Nussbaum (2000) would include personal, social, and political freedoms in her list of ten basic capabilities, and Dasgupta and Weale (1992) would include political and civil liberties.

Partly in response to the criticism regarding the narrowness of the HDI, some studies have advocated multidimensional measures. For example, Alkire and Foster (2011) discuss the strengths and limitations of

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<sup>1</sup> “Any measure that values a gun several hundred times more than a bottle of milk is bound to raise serious questions about its relevance for human progress” (Haq, 1995).

multidimensional poverty measures and provide a “dual cutoff” identification approach that views poverty as the state of being multiply deprived. An earlier study by Alkire (2002) discusses the usefulness and limitations of various dimensions of human development in relation to Sen’s capability approach. She provides a survey of other major *lists* of dimensions developed by various scholars.

In response to various criticisms, the HDI has been revised many times. In the most recently revised HDI (UNDP, 2010),<sup>2</sup> three of the four variables that constitute the index were altered—GDP per capita was replaced by gross national income (GNI) per capita (both valued in terms of US dollar-based purchasing power parity), and literacy and gross enrolment were replaced by mean years of schooling and expected years of schooling, respectively. The method of aggregation was changed from an arithmetic average to a geometric average, and the upper and lower bounds used to normalize the index were redefined, eliminating the practice of capping variables that exceeded the upper bounds. To address a major criticism that the HDI neglected within-country inequality, three additional indices were introduced: (i) the *inequality-adjusted HDI*, (ii) the *gender inequality index*, and (iii) the *multidimensional poverty index*.

The 2010 HDI, however, retains its three-dimensional structure and new dimensions were not introduced on several grounds. Among others, one reason appears to be a continued focus on *opportunity freedoms*—freedoms that give us greater opportunity to achieve the things we value—as opposed to *process freedoms*, i.e., those that ensure that the process through which things happen is fair, based on Sen’s (2002) distinction. However, the 2010 HDR makes a strong case for the consideration of several process freedoms in the discussion on human development, and for “broader dimensions” of human development: empowerment, sustainability and equity. One of the report’s key contentions is that the measurement of human development should be expanded beyond the core dimensions.

The evolution of the HDI shows that the measurement of human development is an ongoing challenge. According to Klugman et al. (2011): “The 2010 HDR made a significant move away from the idea that the ideal measure of human development must cover only the three core dimensions, and presented three new measures that take into account different aspects of the distribution of human development.” The report

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<sup>2</sup> Klugman et al. (2011) and Lustig (2011) explain in detail the rationale for the new HDI, while Ravallion (2010) offers a critical view.



also published on its website a feature that allows users to “build your own development index.”

For Klugman et al. (2011), the position taken by the 2010 HDR constitutes a significant departure from the traditional vision of the index in which the report’s authors would set the weights objectively; instead, the weights and measures used are subject to open public debate. This premise, accordingly, informs our study.

### 3. Inequality-Adjusted HDI

Of particular interest with respect to our study are the innovative inequality-adjusted indices that go beyond the HDI, and are designed to address the key dimensions of inequality and deprivation. Although the HDR has always recognized that inequality in human development is a serious issue, an inequality-based index could not be operationalized earlier due to the nonavailability of data. The inequality-adjusted HDI (IHDI) is a measure of the level of human development of people in a society that accounts for inequality in health, education, and income, and is directly comparable to the HDI across countries.<sup>3</sup>

There are three main steps to computing the IHDI. First, inequality in the underlying distributions is measured. The IHDI builds on the family of inequality measures proposed by Atkinson (1970). In case the aversion parameter  $\varepsilon$  equal to 1, Atkinson’s inequality measure is  $A = 1 - \gamma/\mu$ , where  $\gamma$  is the geometric mean and  $\mu$  the arithmetic mean of the distribution. This can be written as:

$$A_x = 1 - \frac{\sqrt[n]{X_1 \cdots X_n}}{\bar{X}} \quad (1)$$

where  $\{X_1, \dots, X_n\}$  denotes the underlying distribution for the variable of interest.  $A_x$  is obtained for each HDI dimension (life expectancy, years of schooling, and disposable income or consumption per capita) from household survey data and life tables.

The second step is to adjust the mean achievement in a dimension,  $X$ , for inequality as follows:

$$\bar{X}^* = \bar{X}(1 - A_x) = \sqrt[n]{X_1 \cdots X_n} \quad (2)$$

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<sup>3</sup> Alkire and Foster (2011) and Kovacevic (2011) provide details on measuring inequality in the distribution of the HDI indicators.

Thus  $X^*$ , the geometric mean of the distribution, is used to lower the mean according to the degree of inequality in the distribution. The use of the geometric mean emphasizes the lower end of the distribution. The inequality-adjusted dimension indices,  $I_{IX}$ , are obtained from the HDI dimension indices by multiplying them by  $(1 - A_x)$ , where  $A_x$  is the corresponding Atkinson measure:

$$I_{1x} = (1 - A_x) \cdot I_X. \quad (3)$$

The IHDI is then calculated as:

$$IHDI = \sqrt[3]{(1 - A_{Life}) \cdot (1 - A_{Education}) \cdot (1 - A_{Income})} \cdot HDI. \quad (4)$$

#### 4. Economic Uncertainties, Vulnerability, and Resilience

A development dimension that has not received much attention is the extent to which economies face economic uncertainties. These uncertainties can arise from a wide range of risk factors, e.g., natural disasters, systemic political and market failures, external economic shocks, and adverse technological and market changes. Such uncertainties put people's wealth and wellbeing at risk, and render human development vulnerable. The overall impact of economic uncertainties is to *diminish human capabilities* in the sense conceived of by Sen (1985, 1990).

The concepts of *economic vulnerability* and *resilience*, first explored by Briguglio (1995, 2003), have existed in economics literature for some time. A number of empirical studies (see, for example, Briguglio, 2003; Crowards, 2000; Atkins, Mazzi, & Easter, 2000) show that small states, particularly island states, tend to be economically more vulnerable than other countries. An economy's structural characteristics, e.g., a high degree of economic openness and export concentration, lead to higher exposure to exogenous shocks, which can magnify economic fluctuations and risks in economic growth. Cordina (2004a, 2004b) shows that higher variability in the economic growth rate can also adversely affect economic growth itself.

The term '*resilience*' refers to the ability to recover quickly from the effect of an adverse shock to the economy.<sup>4</sup> Briguglio (2003) observes that some small states are able to generate a relatively high GDP per capita despite their higher vulnerability to external economic shocks. He terms

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<sup>4</sup> Merriam-Webster defines resilience as (i) the capability of a strained body to recover its size and shape after deformation caused especially by compressive stress, and (ii) an ability to recover from or adjust easily to misfortune or change; origin, Latin *resilire*, to jump back, recoil.

this phenomenon the “*Singapore Paradox*”—Singapore, although highly exposed to external shocks, has managed to sustain relatively high rates of economic growth and GDP per capita. He explains the paradox in terms of the country’s ability to build its *economic resilience* by structuring the economy so that it can offset the disadvantages associated with its economic vulnerability.

Briguglio (2003, 2004) posits that economic vulnerability reflects an economy’s inherent features that are permanent or quasi-permanent. On the other hand, economic resilience is *nurtured* and associated with “man-made measures, which enable a country to withstand or bounce back from the negative effects of external shocks.” As Briguglio, Cordina, Farrugia, and Vella (2009) note, the term has been used in the literature in at least three senses relating to the ability to (i) recover quickly from a shock—“*shock-counteraction*”, (ii) withstand the effect of a shock—“*shock-absorption*”, and (iii) avoid the adverse impact of shocks—*shock avoidance* as the obverse of economic vulnerability. Briguglio (2004) classifies countries according to their high or low scores in terms of vulnerability and resilience, terming the four possible cases “*best-case*”, “*worst-case*”, “*self-made*”, and “*prodigal son*”. Briguglio et al. (2009) go further and construct vulnerability and resilience indices for 87 countries, and provide ample evidence that countries differ considerably in these dimensions.

Our concept of vulnerability is closely related to the concepts of vulnerability and resilience discussed in the literature. However, we focus on economic vulnerability and resilience in a broader sense than previously used. We aim to assess how overall economic uncertainties are experienced by the populations in different economies along the recognized dimensions of human development. Their recent experience can be used as an indicator of the extent to which human development may be at risk. While earlier empirical research has focused on the determinants of economic vulnerability and resilience, we capture its overall effect in diminishing human wellbeing.

One pervasive theme in the development of human societies has been their endeavor to build social, political, and economic institutions that help reduce the uncertainties faced by individuals, communities, and economies. In the theory of choice under uncertainty, individual utility functions include a risk parameter to reflect risk aversion. In parallel, social welfare functions should also reflect risk aversion on the part of society. At the micro-level, it is argued that a major hurdle to poverty alleviation is the fact that at-risk populations continue to slip back into poverty due to

economic shocks, thus providing one rationale for the need for social safety nets. We suggest that economic vulnerabilities need to be explicitly considered another dimension (negative) of human capabilities, and thus propose a U-HDI.

## 5. A Proposed Measure for Adjusting for Economic Uncertainties

The methodology for constructing a U-HDI uses the time variability of income changes as a proxy for economic vulnerability. Our approach is similar to that used to compute the IHDI following Atkinson (1970). Atkinson's approach, drawing on Dalton (1920), starts with the assertion that any statistical measure of inequality should be based directly on the form of the social welfare function  $U(y)$  and the expected value of the utility function as the primary criterion for ranking income distribution:

$$W = \int_0^{\bar{y}} U(y)f(y)dy \quad (5)$$

Atkinson makes the usual assumptions about the form of the function  $U(y)$ : it is increasing and concave.<sup>5</sup> He draws on the economic theories on decision-making under uncertainty and exploits the parallel to the second-order stochastic dominance criterion:

A distribution  $f(y)$  will be preferred to another distribution  $f^*(y)$  according to criterion (5) for all  $U(y)$  ( $U' > 0, U'' < 0$ ) if and only if

$$\int_0^z [F(y) - F^*(y)]dy \leq 0 \text{ for all } z, 0 \leq z \leq \bar{y} \quad (6)$$

and  $F(y) \neq F^*(y)$  for some  $y$ , where  $F(x) = \int_0^x f(y)dx$ .

Atkinson obtains a measure of inequality by introducing the concept of the *equally distributed equivalent* level of income ( $y_{EDE}$ ), or the level of income per head which, if equally distributed, would yield the same level of social welfare as the present distribution, that is:

$$U(y_{EDE}) \int_0^{\bar{y}} f(y)dy = \int_0^{\bar{y}} U(y)f(y)dy \quad (7)$$

His measure of inequality is 1 minus the ratio of the equally distributed equivalent level of income to the mean of the actual distribution,  $I = 1 - y_{EDE}/\mu$ . Atkinson notes that, "the concept of equally distributed equivalent income is closely related to that of a risk premium or

<sup>5</sup> The assumption that  $U(y)$  is concave is equivalent to assuming that a person is risk-averse.

certainty equivalent in the theory of decision-making under uncertainty.<sup>6</sup>  $Y_{EDE}$  is simply the analogue of the certainty equivalent and  $I$  is equal to the proportional risk premium as defined by Pratt (1964).” This parallel, along with the requirement that inequality measures be invariant to proportional shifts in income—implying *constant (relative) inequality-aversion*—allows Atkinson to develop the following specific measure of inequality:

$$I = 1 - \left[ \sum_i \left( \frac{y_i}{\mu} \right)^{1-\epsilon} f(y_i) \right]^{1/(1-\epsilon)} \quad (8)$$

In the Atkinson measure of inequality,  $I_\epsilon = 1 - \mu_{1-\epsilon}/\mu_1$ ,  $\mu_{1-\epsilon}$  uses a general class of means of order  $\epsilon$ . For  $\epsilon > 0$ , the mean assigns greater weight to the lower part of the distribution; for  $\epsilon = 0$ , it is neutral; and for  $\epsilon < 0$ , it is more sensitive to the upper part. The higher the  $\epsilon$  the more emphasis is on the lower part of the distribution; therefore, the order  $\epsilon$  is interpreted as the degree of aversion toward inequality across persons. The IHDI draws on the Atkinson (1970) family of inequality measures and sets the aversion parameter  $\epsilon$  equal to 1. In this case, the inequality measure is  $A = 1 - \gamma/\mu$ , where  $\gamma$  is the geometric mean and  $\mu$  the arithmetic mean of the distribution.

In constructing a U-HDI, our approach is parallel to that of Atkinson, drawing on the theory on decision making under uncertainty. While Atkinson’s concept of an “equally distributed income equivalent” is based on the certainty equivalent measure, we make direct use of the latter and the risk-based measures associated with it. Whereas the inequality measure is concerned with the distribution of income/wealth across the economy at a point in time, we focus on the distribution of income/wealth in the time series frame. In doing so, we capture the risk dimension associated with a country’s income insofar that the historical distribution may be used as an unbiased estimator of the risk associated with expected income or wealth in the future. We propose that an economy’s risk dimension can be proxied by its expected variability. Following Atkinson, we then propose an index of economic uncertainties as the ratio of the geometric mean to the arithmetic mean of historical time-series of various HDIs.

## 6. An Exploratory Exercise

This section presents an exploratory exercise in constructing a U-HDI. For this initial study, we focus on the income dimension of the HDI since it is easier to measure uncertainties in this dimension than in health

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<sup>6</sup> Drawing on the literature on decision-making under uncertainty, Atkinson shows that the use of this concept is equivalent to condition (6).

or education. We also limit our analysis to the HDI for the year 2011. The data is from the World Development Indicators database and spans the following economic variables for all available countries:

1. GDP growth (annual percent)
2. GDP per capita growth (annual percent)
3. GNI growth (annual percent)
4. GNI per capita growth (annual percent)
5. Household final consumption expenditure (annual percent growth)
6. Household final consumption expenditure per capita (annual percent growth)
7. Household final consumption expenditure, etc. (annual percent growth)

The arithmetic and geometric means are computed for the last ten years (2002–2011) for this series, and then used to construct an uncertainty measure (parallel to the Atkinson measure,  $A$ ):  $U = 1 - \gamma/\mu$ . This is then used to adjust the income component of the HDI for the year 2011. As an illustration, U-HDIs based on household final consumption expenditure per capita are reported in Table A1 in Appendix 1. A summary of the rank changes and percentage losses in the HDI resulting from the adjustment for each economic indicator used is given in Table 1 below.

**Table 1: Summary statistics for adjustments to HDI**

<b>A: Loss or gain in country rankings</b>							
<b>Rank change</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A4</b>	<b>A5</b>	<b>A6</b>	<b>A7</b>
Below -20	10	9	7	7	7	7	9
-20 to -15	2	4	4	4	3	3	3
-15 to -10	4	3	4	3	7	5	5
-10 to -5	8	11	6	6	6	8	8
-5 to 0	34	26	27	28	18	19	19
0 to 5	96	101	81	81	46	45	44
5 to 10	11	18	10	11	18	17	27
10 to 15	4	5	2	1	11	11	14
15 to 20	0	0	0	0	1	1	0
Above 20	0	0	0	0	0	0	0
Subtotal	169	177	141	141	117	116	129
No change	17	9	10	10	7	8	9
Total	186	186	151	151	124	124	138
Minimum	-59	-58	-48	-46	-68	-68	-88
Maximum	13	13	11	11	16	16	15
<b>B: Percent loss in HDI due to uncertainty adjustment</b>							
<b>Loss range</b>	<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A4</b>	<b>A5</b>	<b>A6</b>	<b>A7</b>
0 to 5%	155	154	119	119	80	81	88
5 to 10%	13	14	12	12	17	16	18
10 to 15%	7	8	7	7	6	6	12
15 to 20%	4	3	5	6	9	10	5
Above 20%	7	7	8	7	12	11	15
Total	186	186	151	151	124	124	138
Min. (%)	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Max. (%)	91.0	86.2	53.7	52.3	64.2	60.6	58.7
Average (%)	4.1	4.0	4.7	4.6	7.2	7.1	7.5

Note: Adjustment based on economic variables: A1 = GDP growth (annual percent), A2 = GDP per capita growth (annual percent), A3 = GNI growth (annual percent), A4 = GNI per capita growth (annual percent), A5 = household final consumption expenditure (annual percent growth), A6 = household final consumption expenditure per capita growth (annual percent), A7 = household final consumption expenditure, etc. (annual percent growth).

*Source:* Authors' calculations.

Panel A of Table 1 shows that the uncertainty adjustment leads to extensive changes in countries' ranks corresponding to each of the economic variables used in the adjustment. The number of countries varies from 124 to 186, according to the data available. Only between 7 to 17 out of a sample of 124 to 186 countries did not experience a change in their ranking; thus, the percentage of no change is 9.1 percent at the maximum (17/186) and 4.8 percent at the minimum (9/186), corresponding to the economic variables GDP growth (annual percent) and GDP per capita growth (annual percent), respectively. There is also a wide range in the changes in ranking: seven to ten countries fall by more than 20 positions, while gains in ranks appear to be more moderate but still substantial.

Panel B of Table 1 reports the percent loss in the HDI (income component), computed as  $(1 - \text{adjusted HDI}/\text{HDI})$  percent, for the sample countries for each of the variables (A1–A7) used for adjustment. The average loss resulting from uncertainty adjustment in the HDI ranges between 4 and 7.5 percent, but the experienced loss has a wide range—the maximum loss ranges from 52.3 to 91 percent, with 7 to 15 countries registering a loss greater than 20 percent in the HDI after incorporating the uncertainty dimension.

Figure 1 shows the percent loss in HDI (income component) after adjusting for uncertainty with respect to one economic variable, household final consumption expenditure per capita growth (annual percent). The percent loss is plotted against the HDI and some of the extreme cases are labeled. Pakistan's position is also labeled, which we discuss further in the next section. Appendix 2 includes similar figures with respect to the other adjusting variables. The pattern of the scatter shows that the percent loss does not appear to be related to the level of the HDI. This indicates that the impact of the adjustment for uncertainty captures a different dimension from income.



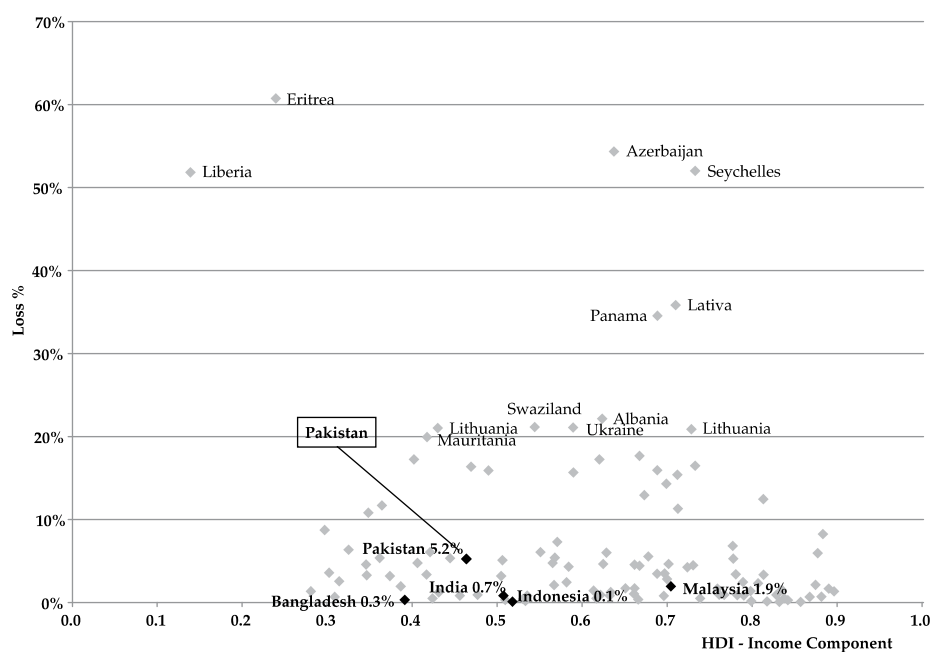
**Figure 1: Percent loss in HDI from adjusting for uncertainty**

Table 2 reports the correlation coefficients for the HDI (income component) and percent loss and change in rank after adjustment based on seven different economic variables. The correlation coefficients are fairly low and insignificant, implying that the adjustment process does add new information to the HDI.

**Table 2: Correlation of HDI with percent loss and rank changes**

Adjustment variable/correlation coefficient	Percent loss	Rank change
GDP growth	-0.1407	-0.0914
GDP per capita growth	-0.1238	-0.0909
GNI growth	-0.1425	-0.1031
GNI per capita growth	-0.1356	-0.1010
Household consumption expenditure	-0.2529	-0.1737
Household final consumption expenditure per capita	-0.2395	-0.1736
Household final consumption expenditure, etc.	-0.2198	-0.1800

*Source:* Authors' calculations.

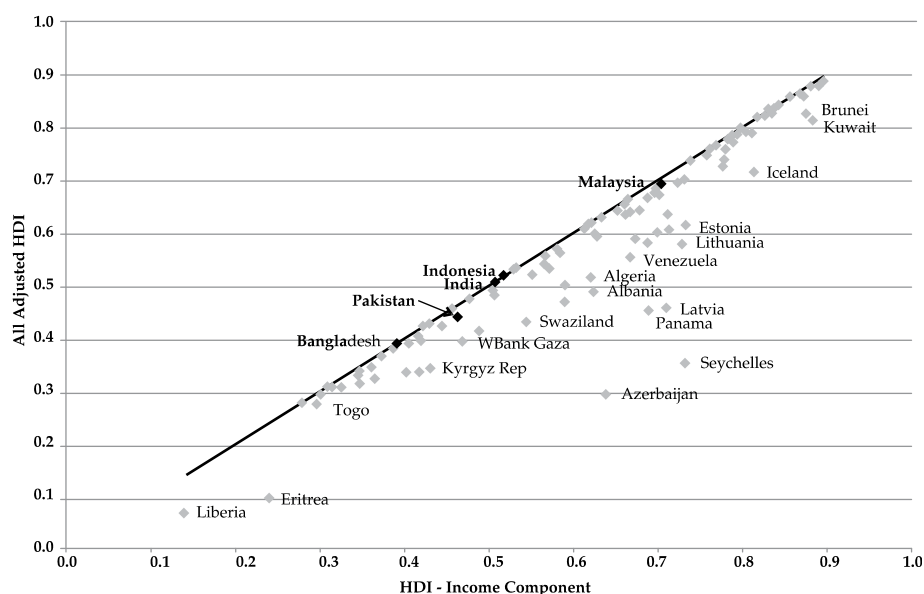
Additionally, the countries with the greatest loss from adjustment (see Table 3) seem to include those that have experienced conflict, extraordinary political and social unrest, and economic hardship following the global financial crisis, greatly affecting people's wellbeing. This association provides intuitive support to the case for considering economic uncertainties a relevant dimension of evaluating human development.

**Table 3: Countries with >20 percent loss from adjustment**

Country	HDI (income)	Adj. HDI (income)	Rank change	Loss from uncertainty (%)
Eritrea	0.240	0.0946	0	60.6
Azerbaijan	0.639	0.2924	-53	54.2
Seychelles	0.733	0.3520	-68	52.0
Liberia	0.140	0.0673	0	51.8
Latvia	0.711	0.4562	-46	35.8
Panama	0.690	0.4515	-39	34.5
Albania	0.624	0.4865	-16	22.0
Ukraine	0.591	0.4658	-12	21.1
Swaziland	0.545	0.4299	-9	21.1
Kyrgyz Republic	0.432	0.3413	-8	20.9
Lithuania	0.729	0.5767	-28	20.9
Mauritania	0.419	0.3349	-6	20.0

*Source:* Authors' calculations.

The HDI and the U-HDI are plotted for the sample countries in Figure 2. Again, the plot is based on adjustment with respect to the economic variable household final consumption expenditure per capita growth. The figure shows that the adjustment procedure affects most of the sample countries, with some registering a substantial decline in the HDI. Again, an obvious observation would be that countries with greater reductions in the HDI seem to be those that have experienced a high degree of variability in their political, social, or economic environment. There is also a degree of positive association between the HDI and the adjusted HDI, which should be expected since one is obtained from the other. Some positive dependence arises arguably because developed and higher-income countries are characterized by a more stable environment due to many factors such as economic size, institutional maturity, and a better capacity for macroeconomic management (or being less vulnerable as well as more resilient).

**Figure 2: Plot of HDI and adjusted HDI**

## 7. The Case of Pakistan

The HDI is an indicator of much interest for Pakistan, which lags behind in human and social development in the region. The HDR groups Pakistan among the countries with “low human development;” according to the 2011 HDR, out of a total of 179 countries, Pakistan is ranked 145, Bangladesh 146, Nepal 157, and Afghanistan 172. In the South Asian region, India and Sri Lanka are grouped as countries with “medium human development” with ranking of 134 and 92, respectively.<sup>7</sup>

When we adjust the income component of the HDI for uncertainty, we find that Pakistan compares less favorably relative to the countries in the region. Table 4 presents the results of this adjustment for a selected group of countries that are typically held out as peers to Pakistan. The percent loss in the HDI-income component for Pakistan is 5.2 percent, which is quite high relative to other countries; for example, it is 0.7 percent for India and 0.3 percent for Bangladesh. The next highest-loss country is Egypt with a loss of 2.1 percent—less than half that of Pakistan.

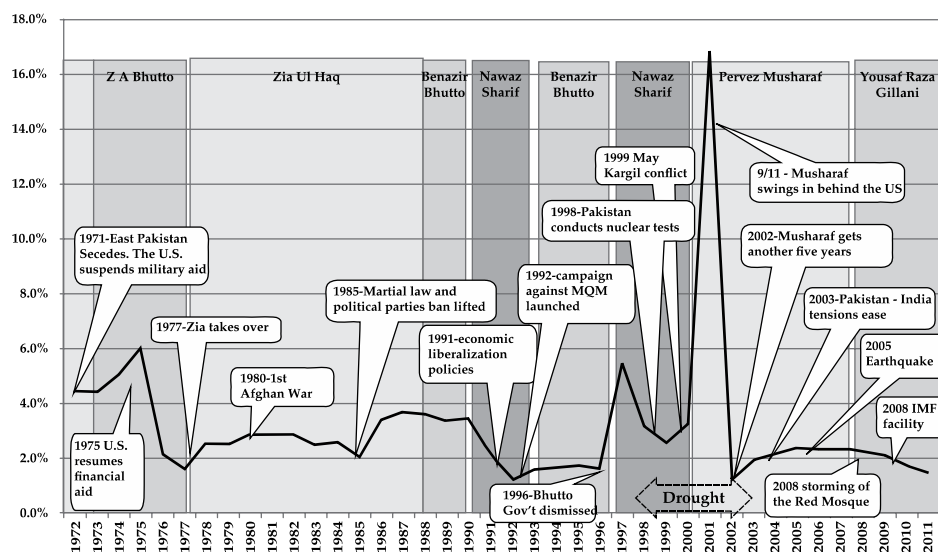
<sup>7</sup> According to the most recent HDR (UNDP, 2013) the HDI 2012 country rankings are not very different from the previous year; these are: Pakistan at 146, Bangladesh at 146, Nepal at 157, Afghanistan at 175, India at 136, and Sri Lanka at 92.

**Table 4: Selected countries in comparison with Pakistan**

Country	HDI (income component)		HDI (income) ranking		Rank change	Percent loss in HDI from adjustment
	HDI before adjustment	HDI after adjustment	Before adjustment	After adjustment		
Thailand	0.622	0.6163	72	59	13	0.9
Egypt	0.568	0.5560	83	72	11	2.1
Indonesia	0.518	0.5172	90	81	9	0.1
Philippines	0.508	0.5073	91	83	8	0.2
India	0.508	0.5041	92	84	8	0.7
Vietnam	0.478	0.4734	96	89	7	0.9
Pakistan	0.464	0.4398	98	94	4	5.2
Bangladesh	0.391	0.3896	109	103	6	0.3
Kenya	0.387	0.3798	110	105	5	1.9

*Source:* Authors' calculations.

In order to better understand how the adjusted HDI might reflect the uncertainties underlying an economy, we trace the percent loss from the uncertainty adjustment over time for Pakistan over the period 1972–2011. We compute the percent loss based on a rolling window of five years, which equals the moving ratio of the geometric mean to the arithmetic mean, using the GNI per capita growth (annual percent) series. The resulting loss indicator series is depicted in Figure 3, each point plotted against the ending year of the moving window, thus reflecting the experience of the previous five years. Major economic and political events are marked on the graph, which also shows the various political regimes that have been in power over this period to bring into relief the country's political and economic climate over time.

**Figure 3: Percent loss in HDI from adjusting for uncertainty over time**

As the figure indicates, the computed percent loss due to uncertainty seems to reflect the uncertainties related to the political and economic environment in various periods. Thus, the increasing values of the loss indicator over 1972–75 captures the political and economic disruption associated with the secession of Bangladesh. After 1975, it declines sharply as the new constitution is enacted. The second half of the Zulfikar Ali Bhutto period, however, sees the indicator rise, reflecting greater uncertainties associated with political unrest, disruptions to economic aid, and the eventual takeover of the government by General Zia-ul-Haq. The indicator remains elevated during Zia's rule and rises further toward the end of the 1980s as the anti-Soviet war in Afghanistan escalates. It declines after the Soviets withdraw in 1989, but is ramped up again as Afghanistan is engulfed in another round of power struggles.

There is a sharp increase in the loss indicator (marked against the year 2001), which captures the political disruptions and economic uncertainties of the preceding years. These include Pakistan conducting nuclear tests (1998), the imposition of economic sanctions, the May 1999 Kargil conflict, the ouster of Nawaz Sharif in the 1999 coup, and finally the events of 9/11. The indicator subsides as the Musharraf government settles down and aligns with the US war on terror, assuring a renewed stream of foreign aid and a period of stable economic growth. Finally, in the more recent period, the loss indicator seems to follow a declining trend.

## **8. Summary and Conclusions**

The 2010 HDR acknowledges that the ideal measure of human development covers more than the three core dimensions currently included. This study has explored such a new dimension of human development, i.e., the extent to which economies face systemic uncertainties, rendering development vulnerable and diminishing human capabilities. We have presented the case that economic uncertainties need to be explicitly considered another dimension of human capabilities, since they directly diminish social welfare and constrain human capabilities.

Our methodology for constructing a U-HDI parallels the approach used by the HDR to construct an IHDI, using the time variability of income changes as a proxy for economic vulnerability instead of intra-country income inequalities.

We have constructed a U-HDI associated with the income component of the HDI for the year 2011 on the suggested lines for a cross-section of countries. Our preliminary analysis indicates that such an index seems to contain additional information beyond the income index. The percent loss in the income component of the HDI appears to reflect the variability in national economic indicators arising from the political and economic tribulations experienced by each country. We have also presented a time-series perspective of the percent loss from the uncertainty adjustment for Pakistan. In this case, the loss indicator closely traces the political and economic upheavals experienced by the country over a 40-year period. Both the cross-sectional and time-series behavior of the adjustment loss indicator thus appears to validate its conceptual foundation.

Our empirical analysis of the proposed measure should, however, be tempered by a number of limitations. First, the use of annual data obviously limits the measure's usefulness as a proxy for underlying economic vulnerabilities. Other higher-frequency time series, if available, might measure the underlying concept more precisely. Second, history is seldom a perfect predictor of the future, and the vulnerability proxy based on historical data obviously ignores any structural shifts and developments in the institutional, regulatory, or governance framework that might otherwise render it invalid as a predictor. Third, the use of aggregate national-level economic indicators hides the uncertainties that are faced by individuals, communities, and regional or sub-national groups.

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## Appendix 1

**Table A1: Uncertainty adjustment to HDI using household final consumption expenditure per capita growth**

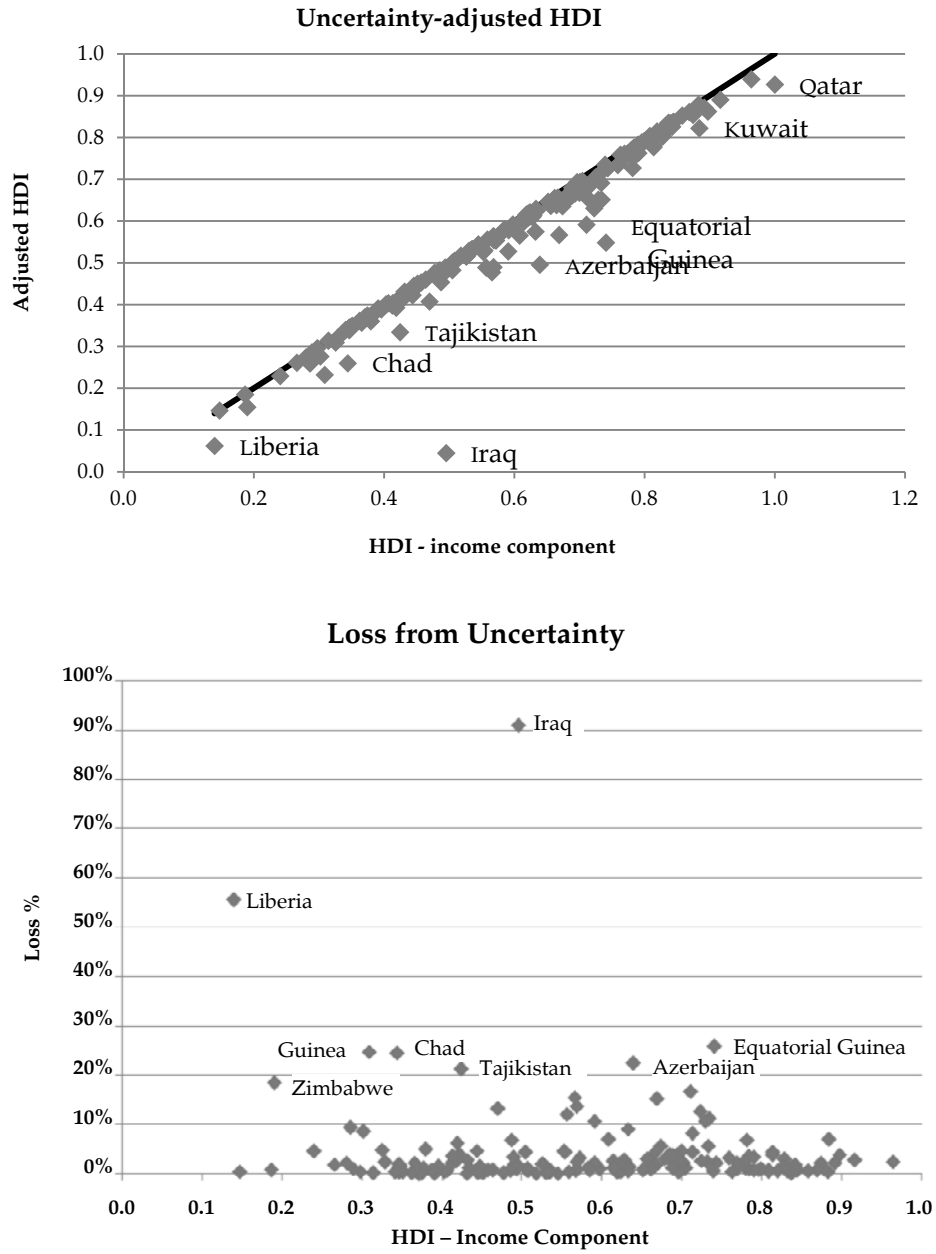
Country	HDI rank	HDI (income)	Uncertainty-adjusted HDI	Rank (income HDI)	Rank (adj. HDI)	Rank change	Percent loss from adjustment
Singapore	26	0.897	0.8852	1	1	0	1.3
Luxembourg	25	0.892	0.8770	2	2	0	1.6
Kuwait	63	0.884	0.8114	3	19	-16	8.2
Norway	1	0.883	0.8767	4	3	1	0.7
Brunei Darussalam	33	0.877	0.8256	5	14	-9	5.9
Hong Kong	13	0.874	0.8557	6	6	0	2.1
US	4	0.869	0.8629	7	4	3	0.6
Switzerland	11	0.858	0.8572	8	5	3	0.1
Netherlands	3	0.845	0.8416	9	7	2	0.4
Sweden	10	0.842	0.8390	10	9	1	0.4
Austria	19	0.842	0.8410	11	8	3	0.1
Canada	6	0.840	0.8371	12	11	1	0.3
Germany	9	0.838	0.8376	13	10	3	0.1
Australia	2	0.837	0.8321	14	12	2	0.5
Denmark	16	0.836	0.8241	15	15	0	1.5
Belgium	18	0.832	0.8315	16	13	3	0.1
UK	28	0.832	0.8211	17	16	1	1.3
Finland	22	0.828	0.8208	18	17	1	0.9
France	20	0.819	0.8180	19	18	1	0.1
Iceland	14	0.814	0.7124	20	37	-17	12.5
Ireland	7	0.814	0.7872	21	24	-3	3.3
Rep. of Korea	15	0.808	0.7894	22	21	1	2.3
Spain	23	0.799	0.7889	23	22	1	1.3
Italy	24	0.799	0.7976	24	20	4	0.2
Israel	17	0.796	0.7881	25	23	2	0.9
Slovenia	21	0.790	0.7831	26	25	1	0.9
Cyprus	31	0.790	0.7711	27	27	0	2.4
Greece	29	0.783	0.7580	28	30	-2	3.3
New Zealand	5	0.783	0.7768	29	26	3	0.8
Saudi Arabia	56	0.781	0.7551	30	32	-2	3.3
The Bahamas	53	0.779	0.7382	31	34	-3	5.2
Oman	89	0.778	0.7247	32	36	-4	6.8
Malta	36	0.769	0.7623	33	28	5	0.9
Czech Rep.	27	0.769	0.7619	34	29	5	0.9
Portugal	41	0.763	0.7561	35	31	4	0.9
Slovak Rep.	35	0.759	0.7459	36	33	3	1.7
Poland	39	0.739	0.7361	37	35	2	0.4
Estonia	34	0.734	0.6132	38	61	-23	16.4

Country	HDI rank	HDI (income)	Uncertainty-adjusted HDI	Rank (income HDI)	Rank (adj. HDI)	Rank change	Percent loss from adjustment
Seychelles	52	0.733	0.3520	39	107	-68	52.0
Hungary	38	0.732	0.6997	40	38	2	4.4
Lithuania	40	0.729	0.5767	41	69	-28	20.9
Croatia	46	0.724	0.6942	42	39	3	4.2
Russian Fed.	66	0.713	0.6035	43	63	-20	15.4
Argentina	45	0.713	0.6331	44	55	-11	11.2
Latvia	43	0.711	0.4562	45	91	-46	35.8
Malaysia	61	0.704	0.6912	46	40	6	1.9
Belarus	65	0.702	0.6694	47	46	1	4.6
Chile	44	0.701	0.6816	48	42	6	2.7
Mexico	57	0.700	0.6801	49	43	6	2.8
Uruguay	48	0.700	0.6000	50	64	-14	14.3
Lebanon	71	0.698	0.6743	51	44	7	3.4
Botswana	118	0.698	0.6736	52	45	7	3.5
Mauritius	77	0.696	0.6912	53	41	12	0.7
Panama	58	0.690	0.4515	54	93	-39	34.5
Gabon	106	0.689	0.5794	55	68	-13	15.9
Turkey	92	0.689	0.6652	56	47	9	3.4
Bulgaria	55	0.678	0.6409	57	52	5	5.5
Romania	50	0.674	0.5871	58	67	-9	12.9
Venezuela	73	0.669	0.5513	59	73	-14	17.5
Kazakhstan	68	0.668	0.6381	60	53	7	4.4
Costa Rica	69	0.667	0.6637	61	48	13	0.4
Serbia	59	0.663	0.6334	62	54	8	4.5
Iran	88	0.662	0.6549	63	49	14	1.1
Brazil	84	0.662	0.6511	64	50	14	1.6
South Africa	123	0.652	0.6413	65	51	14	1.6
Azerbaijan	91	0.639	0.2924	66	119	-53	54.2
Peru	80	0.634	0.6271	67	57	10	1.1
Colombia	87	0.633	0.6286	68	56	12	0.7
Dominican Rep.	98	0.629	0.5913	69	66	3	6.0
Dominica	81	0.626	0.5967	70	65	5	4.6
Albania	70	0.624	0.4865	71	87	-16	22.0
Thailand	103	0.622	0.6163	72	59	13	0.9
Algeria	96	0.621	0.5146	73	82	-9	17.2
Ecuador	83	0.620	0.6172	74	58	16	0.5
China	101	0.618	0.6153	75	60	15	0.4
Tunisia	94	0.614	0.6060	76	62	14	1.3
Namibia	120	0.591	0.4988	77	85	-8	15.6
Ukraine	76	0.591	0.4658	78	90	-12	21.1
El Salvador	105	0.585	0.5599	79	71	8	4.2
Belize	93	0.582	0.5681	80	70	10	2.4
Cuba	51	0.572	0.5301	81	78	3	7.3

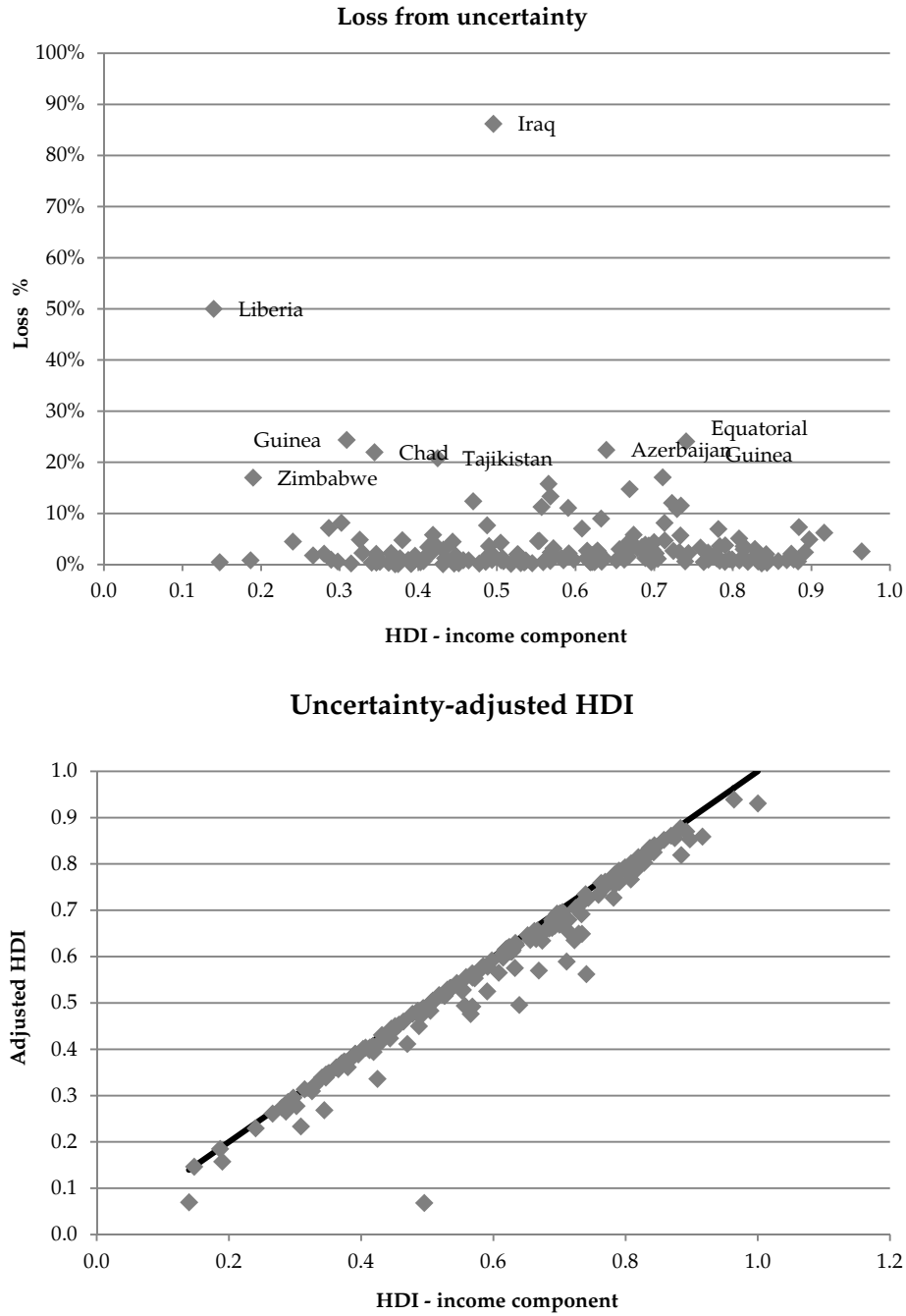
Country	HDI rank	HDI (income)	Uncertainty-adjusted HDI	Rank (income HDI)	Rank (adj. HDI)	Rank change	Percent loss from adjustment
Jordan	95	0.569	0.5378	82	75	7	5.4
Egypt	113	0.568	0.5560	83	72	11	2.1
Armenia	86	0.566	0.5390	84	74	10	4.7
Paraguay	107	0.552	0.5191	85	80	5	6.0
Swaziland	140	0.545	0.4299	86	95	-9	21.1
Morocco	130	0.535	0.5309	87	77	10	0.8
Guatemala	131	0.534	0.5334	88	76	12	0.2
Bolivia	108	0.530	0.5285	89	79	10	0.3
Indonesia	124	0.518	0.5172	90	81	9	0.1
Philippines	112	0.508	0.5073	91	83	8	0.2
India	134	0.508	0.5041	92	84	8	0.7
Honduras	121	0.507	0.4815	93	88	5	5.0
Cape Verde	133	0.505	0.4894	94	86	8	3.1
Moldova	111	0.490	0.4122	95	99	-4	15.9
Vietnam	128	0.478	0.4734	96	89	7	0.9
West Bank and Gaza	114	0.470	0.3933	97	102	-5	16.3
Pakistan	145	0.464	0.4398	98	94	4	5.2
Nicaragua	129	0.457	0.4528	99	92	7	0.9
Lao PDR	138	0.445	0.4219	100	98	2	5.3
Kyrgyz Rep.	126	0.432	0.3413	101	109	-8	20.9
Cameroon	150	0.431	0.4258	102	96	6	1.3
Tajikistan	127	0.425	0.4224	103	97	6	0.5
Sudan	169	0.421	0.3957	104	101	3	6.1
Mauritania	159	0.419	0.3349	105	111	-6	20.0
Cambodia	139	0.418	0.4037	106	100	6	3.4
Senegal	155	0.406	0.3872	107	104	3	4.7
Lesotho	160	0.403	0.3338	108	112	-4	17.1
Bangladesh	146	0.391	0.3896	109	103	6	0.3
Kenya	143	0.387	0.3798	110	105	5	1.9
Benin	167	0.374	0.3626	111	106	5	3.1
The Gambia	168	0.365	0.3229	112	114	-2	11.6
Zambia	164	0.362	0.3427	113	108	5	5.4
Burkina Faso	181	0.349	0.3115	114	115	-1	10.7
Uganda	161	0.347	0.3353	115	110	5	3.2
Mali	175	0.346	0.3306	116	113	3	4.6
Ethiopia	174	0.326	0.3052	117	118	-1	6.2
Mozambique	184	0.314	0.3066	118	116	2	2.5
Guinea	178	0.309	0.3064	119	117	2	0.7
Madagascar	151	0.302	0.2913	120	120	0	3.6
Togo	162	0.297	0.2716	121	122	-1	8.7
Central African Rep.	179	0.280	0.2765	122	121	1	1.3
Eritrea	177	0.240	0.0946	123	123	0	60.6
Liberia	182	0.140	0.0673	124	124	0	51.8

Appendix 2

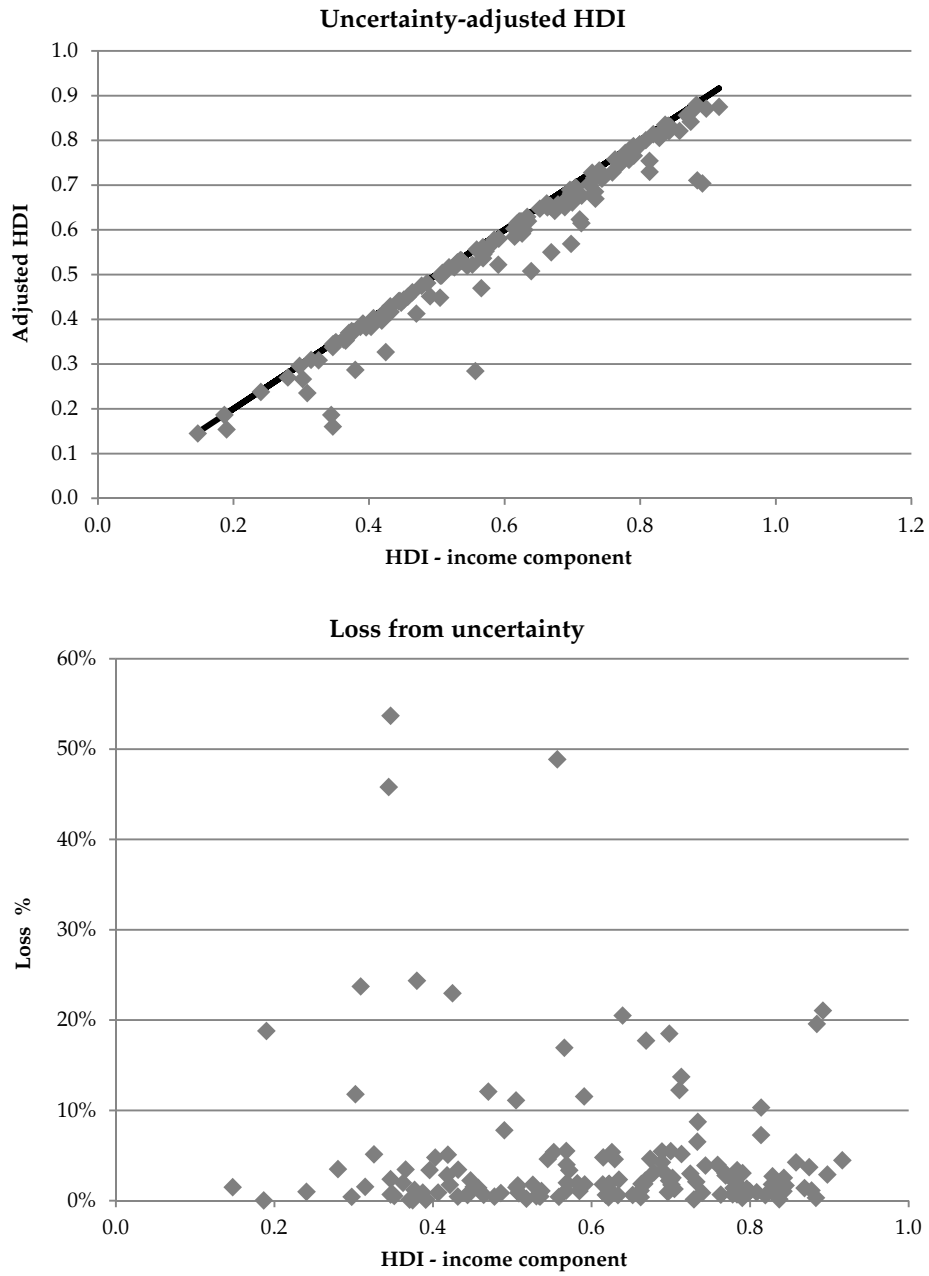
Figure A1: GDP growth  
(annual percent)



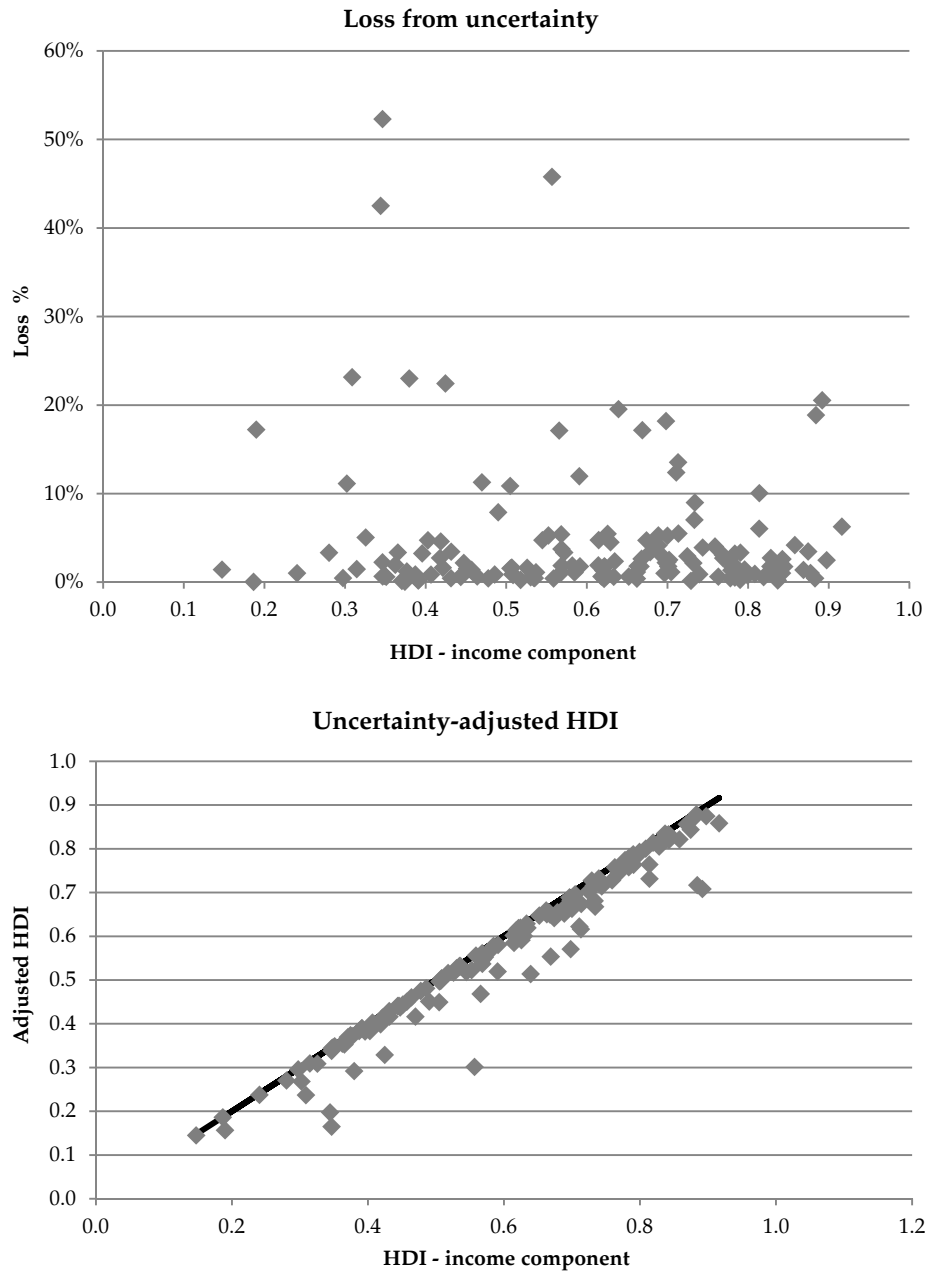
**Figure A2: GDP per capita growth**  
(annual percent)



**Figure A3: GNI growth**  
(annual percent)

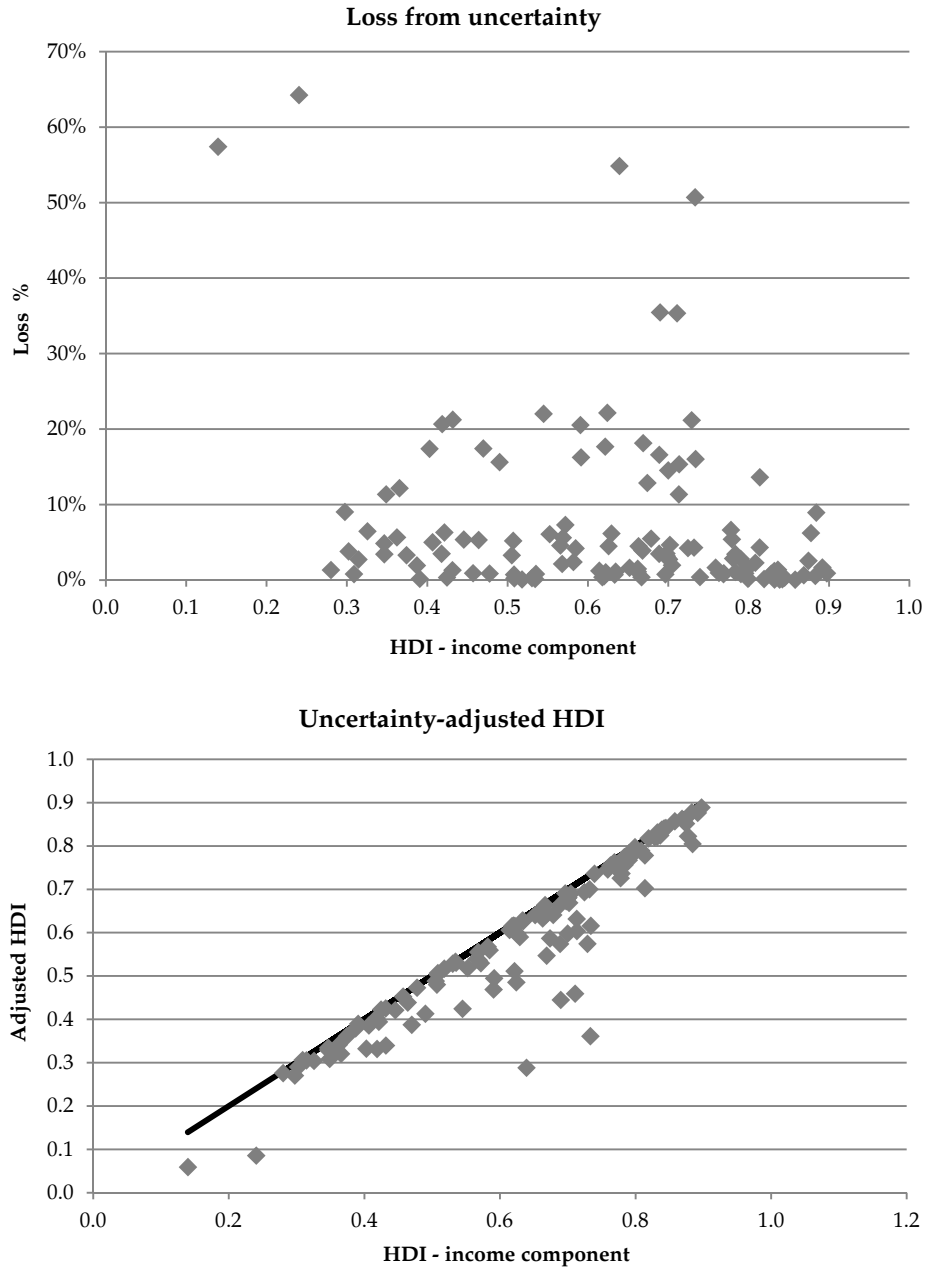


**Figure A4: GNI per capita growth**  
(annual percent)

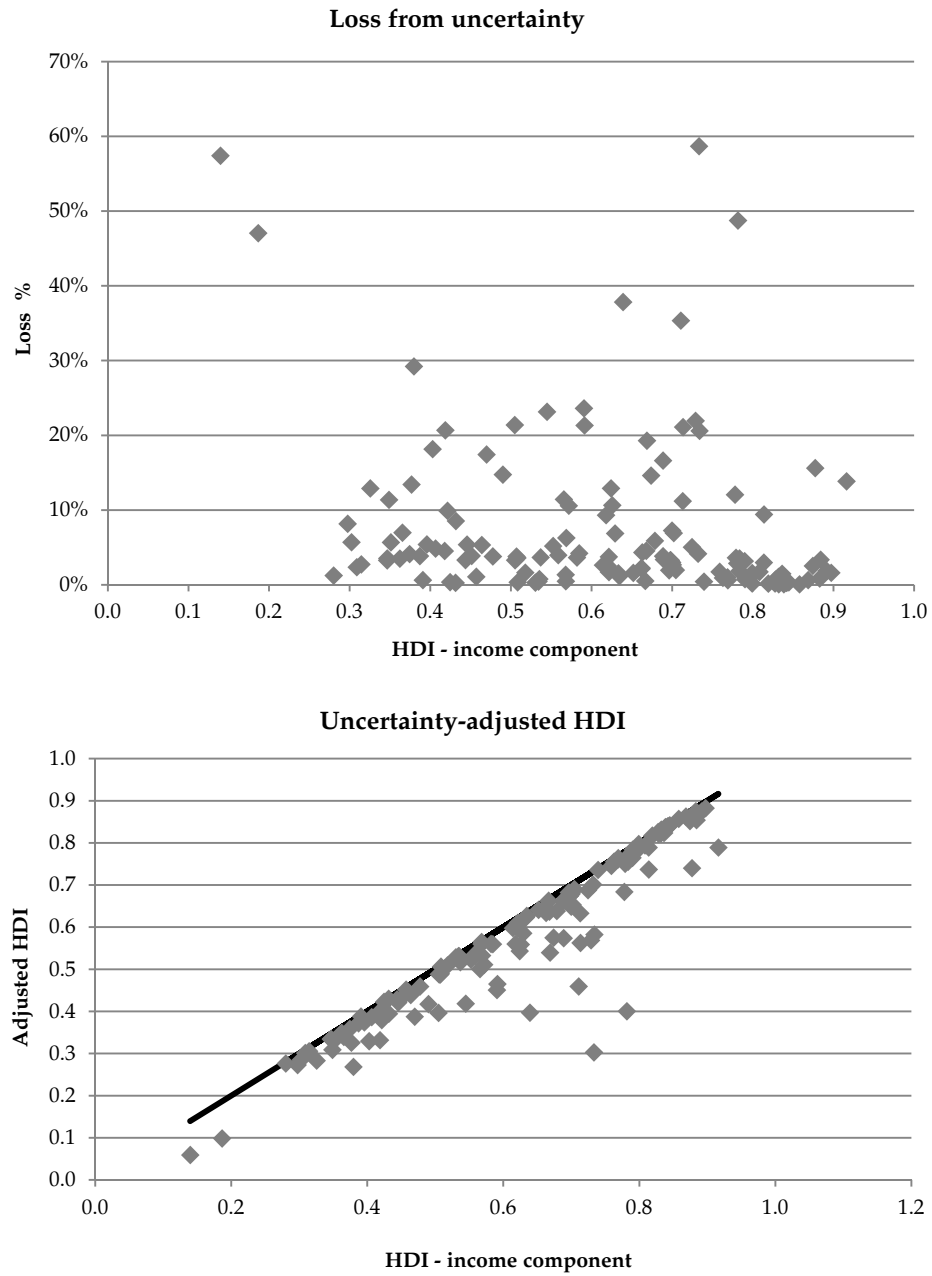




**Figure A5: Household final consumption expenditure**  
(annual percent growth)



**Figure A7: Household final consumption expenditure, etc.  
(annual percent growth)**



## **Microinsurance in Pakistan: Progress, Problems, and Prospects**

**Theresa Thompson Chaudhry\* and Fazilda Nabeel\*\***

### **Abstract**

*Microinsurance in Pakistan is still in its nascent stages. More than half of the current microinsurance policies in effect in Pakistan are offered through the Benazir Income Support Program (BISP), with the remainder provided in conjunction with microcredit services offered by various microfinance institutions (MFIs), microfinance banks, nongovernment organizations, and rural support programs (RSPs). The policies offered by the microcredit sector are mainly credit-life policies, which cover loan balances in the event of the borrower's death. In addition, some lenders—principally the RSPs—offer small health insurance policies covering the hospitalization of the borrower and (sometimes) their spouse. As catastrophic health expenses and deaths in the family are among the most important economic stressors that households face, it makes sense that microinsurance should first make inroads in these areas.*

*It is difficult to say what impact microinsurance has had in Pakistan, since few rigorous evaluations have been undertaken to date. What we do know is that utilization has been low, explained by providers as limited client awareness of the benefits and coverage. In the short to medium term, microinsurance outreach can be expanded by offering health microinsurance (HMI) coverage to microcredit borrowers' entire households, and by offering HMI to all community members within an RSP, rather than only microloan borrowers and their spouses. Partnering with mobile phone operators for automated, digital payments can also significantly expand potential customer volume while reducing transaction costs. HMIs might also be combined with health savings accounts that households can use to pay for medications and outpatient services not covered by HMI plans. Provinces could also leverage the existing database of poverty scorecards implemented by BISP to channel partially government-subsidized microinsurance policies toward poor households just above the BISP threshold.*

**Keywords:** Microinsurance, social insurance, poor, Pakistan.

**JEL classification:** G21.

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## 1. Introduction: Defining Microinsurance

Broadly speaking, microinsurance is insurance for the poor. When it comes to defining the term more specifically or categorizing specific products such as “microinsurance”, there is some lack of consensus. According to Churchill and McCord (2012), microinsurance can typically be characterized by: (i) the target group served (the poor, or more generally, those underserved by traditional insurance products); (ii) caps on the amount of coverage and premiums (low compared to traditional insurance products); (iii) the type of provider (such as “self-help groups” and other community-based organizations); and (iv) the distribution channel (including nongovernment organizations [NGOs], microfinance institutions [MFIs], and others). In addition, microinsurance often caters to the specific types of risk faced by the poor. It is often also characterized as being simpler to administer than traditional insurance.

## 2. Trends in Microinsurance Coverage

An estimated 500 million individuals are covered by microinsurance worldwide, 60 percent of who are in India (Churchill & McCord, 2012). In India, a combination of state-sponsored health insurance coverage and government mandates to the insurance sector to expand coverage to underserved segments of the population have been principally responsible for its large and rapidly growing share of the global microinsurance market. Over a period of just five years, India’s RSBY program alone has enrolled 110 million individuals (Fan, 2013).

The microinsurance market in Pakistan has remained small. We estimate the number of policies in Pakistan to be nearly 7.4 million (see Table 1).<sup>1</sup> This is likely an underestimate, since data are unavailable (or not included) on a number of ongoing pilots, small life insurance policies through the Pakistan Post, and some new programs such as life/disability microinsurance and mobile phone microinsurance schemes including Zong and Telenor. On the other hand, it is estimated that at least 300 million people are covered by microinsurance in India.

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<sup>1</sup> Note that this is the number of policies and not the number of people insured, since some individuals have both life and health insurance.

**Table 1: Microinsurance policies in Pakistan: December 2012/January 2013**

Province	Microcredit-linked microinsurance (credit life and health)	BISP life	BISP health	Naya Jeevan (approx.)	Other private HMI	Total
Punjab	2,172,808	1,355,785	319,911	3,000		3,848,504
Sindh	555,860	1,617,879		19,400		2,193,139
KP	53,445	862,278		1,000		915,723
Balochistan	6,937	208,966				215,903
AJK	46,087	68,818				114,905
Gilgit- Baltistan	10,135	24,424			32,832	67,391
Unknown						
<b>Total</b>	<b>2,854,194</b>	<b>4,138,150</b>	<b>319,911</b>	<b>23,400</b>		<b>7,368,087</b>

AJK = Azad Jammu and Kashmir, BISP = Benazir Income Support Program, HMI = health microinsurance, KP = Khyber Pakhtunkhwa.

Sources: MicroWatch, BISP, New Jubilee, interview with Naya Jeevan.

According to the Securities and Exchange Commission of Pakistan (SECP), the penetration of all insurance (not just microinsurance) was only 0.7 percent of GDP in 2010. The World Bank reports that 1.9 percent of Pakistanis have some form of insurance coverage (Nenova, Niang, & Ahmad, 2009). Within South Asia, insurance penetration in India is the highest at 5.1 percent of GDP, followed by Sri Lanka at 1.4 percent, and Bangladesh at 0.9 percent (Swiss Re, 2010). Data for 2010 from the Organisation for Economic Co-operation and Development (2012) indicates 9 percent penetration among its member countries. Until recently, the vast majority of microinsurance policies held in Pakistan were offered in conjunction with microcredit.

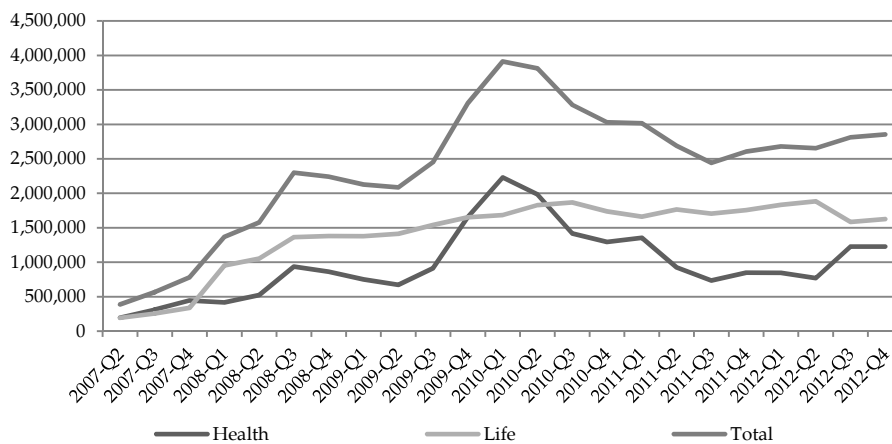
Credit life microinsurance has been available in Pakistan since around 2001<sup>2</sup> and has expanded rapidly in the last five years. Starting with 387,900 policies in 2007 (the earliest statistic available), 1.2 million and 1.6 million individuals were covered as of December 2012 by credit life and health insurance policies, respectively, offered through the microfinance sector (Pakistan Microfinance Network, 2007, 2012). In 2012, 42 percent of these policies were offered through rural support programs (RSPs), with the remainder offered by other microfinance providers. Most microcredit

<sup>2</sup> Interview with Maham Tarar (Kashf Foundation): Kashf has been offering credit life insurance since around 2001.

providers offer some form of microinsurance; as of 2011, out of 16 organizations, 11 provided credit life policies and 7 had health microinsurance (HMI) schemes (Pakistan Microfinance Network, 2011).

As Figure 1 shows, life insurance (specifically credit life) has been trending upward. The number of health insurance policies spiked widely and then peaked in the first quarter of 2010. This coincided with the initiation of the First Microinsurance Agency's (FMiA) health insurance schemes and the National Rural Support Programme's (NRSP) short-lived policy change (in Q4 2009, which was reversed by Q3 2010) under which their health policy covered all household members rather than just borrower and spouse.

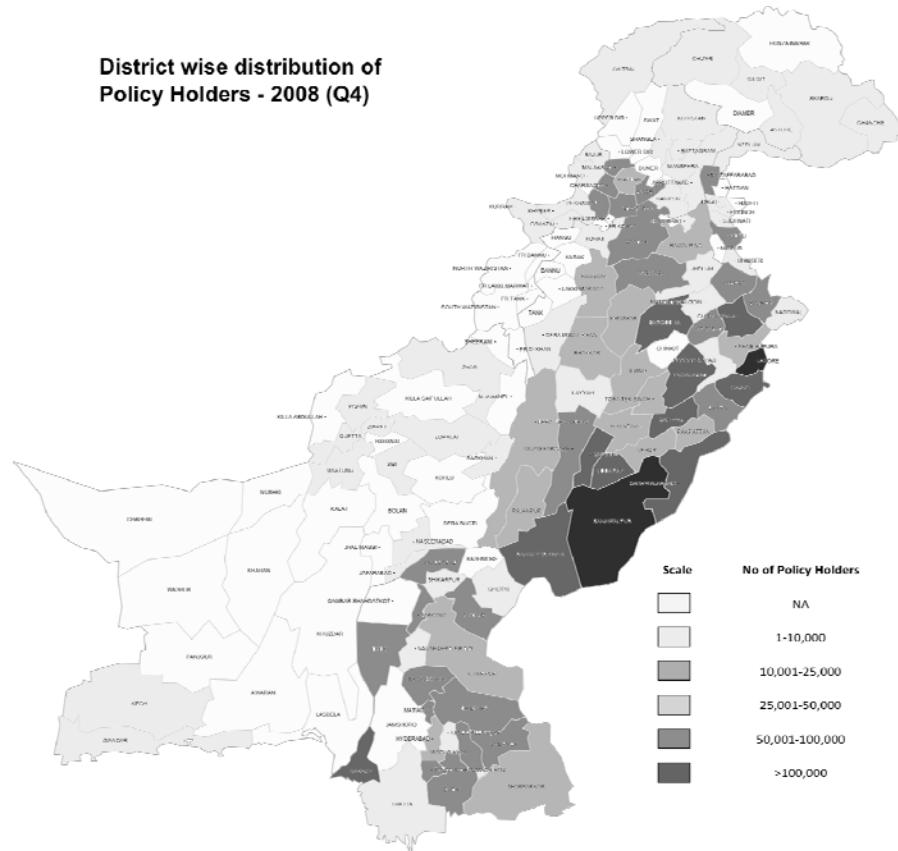
**Figure 1: Microinsurance outreach through the microfinance sector:  
Number of policyholders**



Microinsurance outreach in Pakistan was initially low and mainly concentrated in the rural areas, since the bulk of the providers were RSPs, which primarily operate in rural areas. Over time, the rural-urban balance has improved with the increased participation of MFIs in the microinsurance sector. Since 2008, the distribution of microinsurance in terms of the number of policyholders has become more concentrated in Punjab and Sindh (see Figure 2). Some parts of the Northern Areas also have access to microinsurance, but the numbers are quite low, ranging between 1,000 and 10,000 policyholders.<sup>3</sup>

<sup>3</sup> The data to which the maps refer have been collected by the Pakistan Microfinance Network in various editions of their newsletter, *MicroWatch*. According to Malik Khoja of Jubilee Life, the number of people insured in the Northern Areas has exceeded 10,000 since 2008.

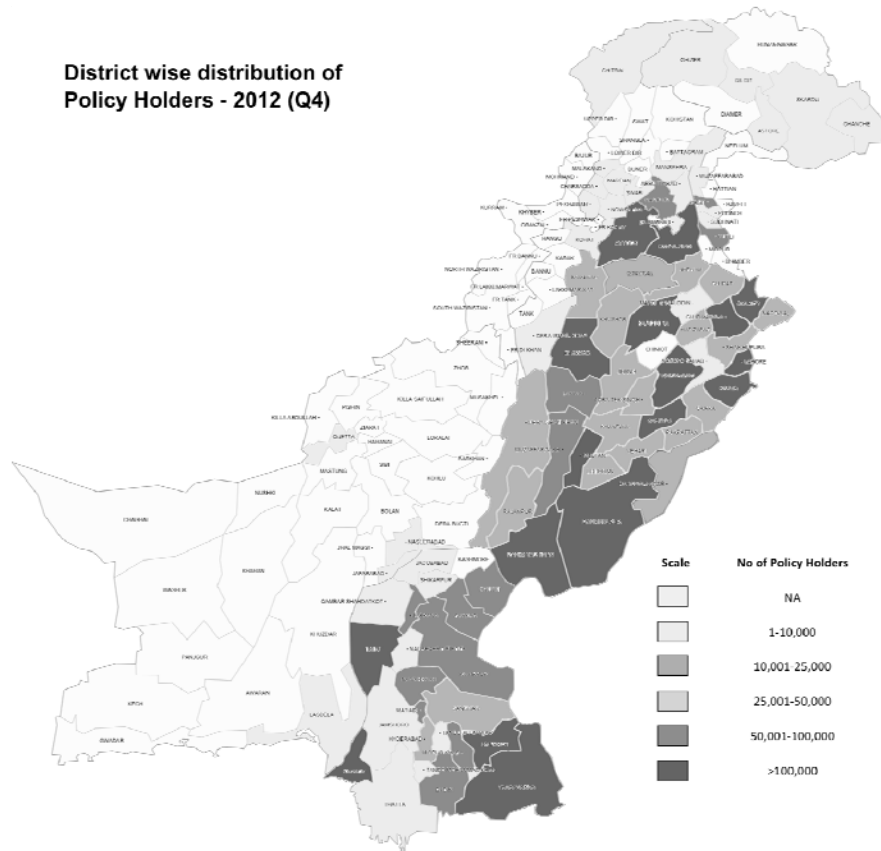
**Figure 2: Microinsurance policies through the microfinance sector, Q4 2008**



Source: Map constructed using data from MicroWatch, issue 10.

A somewhat disconcerting trend in district-wise outreach over the four-year period 2008–12 is that the geographical spread of microinsurance has been shrinking (see Figure 3). In 2008, microinsurance was spread across at least some districts in Balochistan, but by 2012 there were few microfinance operations outside Quetta. Within Punjab, there has been considerable progress in expanding the number of policyholders in the larger, more affluent districts such as Lahore, Gujranwala, Rawalpindi, Faisalabad, Sargodha, and Multan, increasing their number to above 100,000. At the same time, microinsurance penetration and outreach have declined drastically in other districts such as Bahawalpur.

**Figure 3: Microinsurance policies through the microfinance sector, Q4 2012**



*Source:* Map constructed using data from MicroWatch, issue 26.

### 3. Sources of Risk and Demand for Microinsurance in Pakistan

The Pakistan Safety Net Survey reports that the largest shocks facing families are death, disability, or serious illness in the family; two thirds of respondents had experienced at least one shock in the previous three years (World Bank, 2007). The Benazir Income Support Program (BISP) has, accordingly, included life and health insurance as two key components of its program.

These risks are important for all poor and vulnerable households, not just the ultra-poor. A focus group of microcredit clients from the Kashf Foundation and NRSP ranked death and serious illness in the family as the two most stressful shocks (McGuinness & Tounytsky, 2006).



According to focus group discussions<sup>4</sup> carried out for the SECP's (2012) recent diagnostic report on microinsurance, the costs related to illness are the greatest event-related burden that many households face, with the expenses exceeding those of marriage, death, and childbirth. The burden of health-related expenses was reported to be significantly higher in rural areas due to the transportation costs associated with fewer hospital facilities in many areas. In all areas, focus group participants ranked health insurance as their top insurance priority, followed by life, agriculture, and business failure insurance. In rural areas, natural disaster insurance was second only to health.

#### **4. Microinsurance and the Potential for Poverty Alleviation**

Without formal insurance, the poor deal with risks and shocks (whether realized or potential) by way of the limited, mainly informal, options available to them. These include the build-up and use of precautionary savings; gifts given to and received from friends, neighbors, and/or relations; the sale of assets, including jewelry and land; income diversification strategies; and risk-mitigating production decisions such as planting drought- or pest-resistant crop varieties instead of high-yield ones or growing food over cash crops (Dercon & Kirchberger, 2008).

According to the Pakistan Safety Net Survey, the poor and ultra-poor often engage in harmful behaviors when faced with economic shocks: they may reduce food consumption, or take their children out of school and/or send them out to work (World Bank, 2007). McGuinness and Tounytsky (2006) show that a focus group of microcredit customers reported using savings, informal loans (from friends, family, or moneylenders), or MFI loans; decreasing household consumption; working extra hours; or selling assets to deal with shocks such as family deaths and serious illness. Many of the same coping strategies were cited by focus group discussions conducted by the SECP (2012) for its diagnostic study of microinsurance in Pakistan.

The literature reviewed by Dercon and Kirchberger (2008) hypothesizes that microinsurance can serve as a poverty alleviation device in three ways. First, it helps households deal with emergencies in such a way that they are not forced to sell off productive assets and are kept from falling into deeper poverty, particularly when informal insurance

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<sup>4</sup> The focus groups discussions took place in urban (Lahore, Karachi), semi-urban (Rawalpindi, Hyderabad), and rural (Mianwali, Hyderabad, and Nawabshah) areas of Punjab and Sindh.

mechanisms are incomplete.<sup>5</sup> Second, microinsurance allows households to make investments that might help get them out of poverty – investments they may be otherwise hesitant to undertake because of the higher risk involved in higher-return projects. Evidence for the relationship between risk and agricultural production decisions can be found for Pakistan in Kurosaki and Fafchamps (2002) and for India in Mobarak and Rosenzweig (2012). Finally, insurance provides households the peace of mind needed to reduce their precautionary savings, increasing not only investment but also current consumption (of food, health, and education, for example).

## 5. Informal Insurance Arrangements

Even when consumption smoothing does take place in villages among neighbors and relatives, risk-sharing arrangements that are localized can only help with idiosyncratic or household-level events; aggregate shocks at the village level cannot be mediated in this way. On the other hand, consumption smoothing can also occur within kinship networks that extend beyond village boundaries, as documented in India (Mobarak & Rosenzweig, 2012). Nonetheless, microinsurance can potentially improve risk sharing when the insured pool expands beyond the limitations of informal networks as long as the transaction costs are not too high.

Research on informal insurance in Pakistan is based for the most part on a three-year panel dataset spanning four rural districts in the late 1980s, collected by the International Food Policy Research Institute (IFPRI). Using a variety of methods, these studies have tested for the presence of informal insurance mechanisms and correlates of insurance and risk aversion. In most, but not all, cases, the model of full insurance is rejected. Informal insurance is less likely to be observed where incomes are correlated and, surprisingly, where risk aversion is higher (Dubois, 2005). Transaction costs can reduce the level of informal insurance (Murgai, Winters, Sadoulet, & de Janvry, 2002) while financial intermediaries may enhance commitment to informal insurance arrangements (Foster & Rosenzweig, 1996). The literature documents risk-mitigating strategies such as precautionary savings (Alderman, 1996) and shifting planting away from cash crops (Kurosaki & Fafchamps, 2002), in addition to loss-coping strategies such as reducing consumption and selling assets (Alderman, 1996).

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<sup>5</sup> Incomplete consumption smoothing has been documented in several studies, including Townsend (1994) for India and Fafchamps and Lund (2001) for the Philippines. Newer research on (in)complete informal insurance has moved away from tests for consumption smoothing, since the lack thereof might not simply capture the depth of risk sharing but could also reflect heterogeneous risk preferences within the community.

Alderman and Garcia (1993) and Dubois (2005) use the IFPRI dataset to test for full informal insurance. They reject the model of full insurance since individual consumption co-varies with respect to individual income (instead of village-level consumption), and the impact of individual household income is greater (rather than smaller) when village-level variables are included. Dubois also tests for informal insurance at the village level, this time allowing for heterogeneous risk preferences. The study rejects the hypothesis of full insurance at the village level in 30 percent of villages – more so in Khyber Pakhtunkhwa (KP) and Sindh than in Punjab. Informal insurance is less present in villages where incomes are highly correlated, and (surprisingly) where average risk aversion is higher.

Kurosaki and Fafchamps (2002) and Alderman (1996) provide evidence on strategies to mitigate risk and to cope with loss, some of which can be damaging either to farm efficiency or to the household. Kurosaki and Fafchamps use agricultural production and consumption data from the late 1980s on Sheikhpura and find that, despite fairly efficient risk sharing within villages, farmers planted excess fodder to mitigate the risk associated with volatile prices for livestock feed, given the sensitivity of milk returns to fodder price.<sup>6</sup> Risk aversion also led farmers to plant less Basmati rice. The authors measured farmers' risk aversion, finding it to be negatively associated with land and livestock ownership but unrelated (on average) to education.

Alderman (1996) uses the IFPRI dataset to see how savings and consumption behaviors react to shocks in income.<sup>7</sup> One finding is that savings rates are higher in villages where the variability of yields is higher, supporting the hypothesis of precautionary saving. Even when preceded by a positive shock, a negative income shock is associated with increased debt. Moreover, when households face two consecutive negative shocks, they experience a reduction in per capita consumption and proceed to sell their assets.

Foster and Rosenzweig (1996) present a theoretical model supported by simulations of data on rural households in India and Pakistan. They demonstrate that the presence of financial intermediaries (village banks) improves consumption smoothing by increasing the liquidity of assets, which, in turn, enhances commitment to informal insurance arrangements.<sup>8</sup>

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<sup>6</sup> The test for full insurance was that, controlling for village-level consumption, individual household consumption did not vary with individual income.

<sup>7</sup> The districts were Attock and Faisalabad (Punjab), Badin (Sindh), Dir (KP), and Kalat (Balochistan).

<sup>8</sup> The data came from the IFPRI dataset collected in 1986–89 from 52 villages in Punjab, KP, and Sindh.

Murgai et al. (2002) use data on canal water exchange in Punjab to illustrate how the level of informal insurance and size of informal insurance networks depend on the transaction costs associated with forming and enforcing such networks. Given the lack of a constant flow of water through the canal, farmers must trade irrigation time with each other so that they can meet their land's water requirements. The authors suggest that informal insurance may not necessarily take place at the village level or even be restricted to village boundaries but rather within smaller areas (such as a neighborhood) or at least among more homogeneous groups (such as kin). They find that about half the farmers surveyed belonged to a water-trading cluster, with the size of the farm (and, therefore, water variability) determining membership. The size of the water exchange group is positively related to kinship and negatively related to geographical distance.

## **6. Client Base for Microinsurance in Pakistan**

The perceived client base for microinsurance includes the vulnerable (defined as households with an income equal to 100–125 percent of the poverty line) and the quasi-nonpoor (with an income equal to 125–200 percent of the poverty line). Jointly, they make up 80 million people or more than 50 percent of Pakistan's population (SECP, 2012). The SECP argues that those below the poverty line are unlikely to be able to afford insurance, whereas higher-income groups should be able to purchase traditional insurance on their own.

### **6.1. Current Microinsurance Clients in Pakistan**

Aside from the relatively new social insurance schemes initiated by the Pakistan government through the BISP, most microinsurance policies in Pakistan are offered in conjunction with microcredit through MFIs and RSPs. Naya Jeevan—a new insurance intermediary working through corporate value chains (suppliers, distributors, retailers, microretailers)—has also made a small number of HMI policies available.

Since January 2011, the Pakistan government has offered life insurance through BISP, offering household heads premium-free policies of PRs 100,000 (approximately USD 1,000 in 2012 USD). As of 2012, 4.1 million individuals have coverage through this program (BISP, 2012). BISP is also rolling out health insurance: the first pilot has been underway in Faisalabad since April 2012 with plans to expand coverage to five more districts (and up to 1.5 million individuals in all) over the next year or so.

According to numbers provided by the Pakistan Microfinance Network (2012), there were 2.4 million active microfinance borrowers and 2.8 million individuals covered by microinsurance policies served by the microfinance sector as of December 2012. More than half the microinsurance policies held by microcredit clients are credit life policies (1.6 million), which cover the cost of repaying the loan in case of the borrower's death. Most of the remaining microinsurance products offered by the microcredit sector are health insurance policies covering the borrower and in some cases his/her spouse. Insurance policies to cover collateralized assets against which a loan has been taken (e.g., livestock, motorcycles) are available on a limited basis with coverage lasting until the loan has been repaid.<sup>9</sup> The Pakistan Poverty Alleviation Fund (PPAF) is piloting general livestock insurance for small livestock holders.

### **6.2. Life/Disability Microinsurance**

Until 2011, the life microinsurance market was predominately made up by the credit life insurance policies offered (and mostly mandated) by MFIs. The number of credit life policies numbered approximately 1.8 million at the end of the second quarter of 2011. In June 2012, BISP more than doubled the penetration of life microinsurance when 2 million BISP beneficiary households came under life insurance cover. Coverage was expanded to all 4.1 million BISP recipient households as of June 2012. The program intends to have all 7.1 million BISP-eligible households enrolled by 2015.<sup>10</sup>

### **6.3. Microloan-Associated Life Insurance**

Credit life insurance was the first type of microinsurance offered in Pakistan and is typically mandatory for microcredit borrowers. The policy ensures that the outstanding balance of the loan is forgiven in case of the borrower's death. In some instances, such as Kashf, the policy also covers the borrower's "nominee" (loan co-signer), who is typically the household's main breadwinner.<sup>11</sup> The cost of the policy is typically 1–2 percent of the loan amount. Occasionally, the borrower is not charged explicitly for the insurance (Khushhali Bank).<sup>12</sup>

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<sup>9</sup> Tameer Microfinance Bank requires insurance on motorcycles (covering theft and damage) until the loan has been repaid. It is also piloting similar insurance on livestock loans.

<sup>10</sup> Approximately 3 million BISP-eligible households are not yet receiving benefits (cash, insurance, training, etc.) because the household's beneficiary lacks government-issued identification (CNIC).

<sup>11</sup> This has been the case since 2004.

<sup>12</sup> Correspondence with Shahriz Khan (Khushhali Bank).

Microfinance providers mainly offer their credit life policies through private insurers. Jubilee Life Insurance insures a number of microcredit providers—including Kashf, Khushhali Bank, the First MicroFinance Bank (FMFB), and ORIX—covering over 680,000 individuals. In at least one instance (Tameer Microfinance Bank), the organization self-insures its clients, forgiving loans in case of the borrower’s death and incorporating the cost into the mark-up on loans.<sup>13</sup>

Critics of credit life policies say that these policies mainly benefit the lender and provide low value for consumers. The experience of Jubilee Life Insurance, however, does not support this. It reports an 84 percent incurred claims ratio (the ratio of payouts to premiums collected) for its business with Kashf’s clients in 2012 (see Table 2). Some of the credit life policies that microfinance providers offer in Pakistan do include several of the suggested value-added attributes, such as a payout in addition to loan forgiveness or coverage for additional members of the household.

**Table 2: Kashf’s credit life experience**

From	To	No. of borrowers	Premium	No. of claims	Claim amount	Death claim ratio
1 Jul 2004	30 Jun 2005	5,238	2,560,316	122	2,303,250	90%
1 Jul 2005	30 Jun 2006	31,162	7,930,422	340	6,274,500	79%
1 Jul 2006	30 Jun 2007	76,996	39,075,489	1,198	20,444,053	52%
1 Jul 2007	31 Dec 2007	271,126	31,970,369	1,128	17,991,347	56%
1 Jan 2008	31 Dec 2008	318,957	48,466,862	2,547	40,564,532	84%
1 Jan 2009	31 Dec 2009	64,166	9,924,360	437	7,020,971	71%
1 Jan 2010	31 Dec 2010	108,694	17,249,036	670	12,442,690	72%
1 Jan 2011	31 Dec 2011	109,034	21,988,499	874	17,850,790	81%
			179,165,353		124,892,133	

*Source:* Authors’ correspondence with Kashf.

For example, NRSP’s HMI program (offered to its microcredit clients) pays out PRs 15,000 for accidental death/disability of the borrower. Its Urban Poverty Alleviation Program—an urban microcredit program—provides credit life (loan forgiveness) in case the borrower dies, plus 50 percent of the loan value as a death benefit in case of the borrower or spouse’s death (NRSP, 2010). Kashf’s and Asasah’s credit life policies pay out a death benefit of PRs 5,000 in conjunction with its credit life policy, and cover the death of the borrower and spouse. These schemes have low

<sup>13</sup> Tameer was previously working with New Jubilee for credit life insurance.

payouts but also low premiums, which makes them affordable. However, the low level of coverage means that they will not be much more than funeral insurance.

#### 6.4. BISP Life Insurance

BISP provides a fully subsidized life insurance program with coverage that is significant relative to the incomes of the ultra-poor households covered.<sup>14</sup> The insurance pays out PRs 100,000 on the death of the family's adult breadwinner (up to the age of 65 for men or 70 for women). Currently, 78 percent of those insured under the program are male.<sup>15</sup> Claims have been low so far—only about 6,900 out of an anticipated 9,600 as of January 2013 (see Table 3 below for a regional breakdown of coverage and claims in 2011).<sup>16</sup> Consequently, the cost of the program has been significantly lower than expected. Program administrators suspect that current death rates are significantly lower than in the 1998 census from which the premium calculations were made. Other possible reasons include lack of awareness of coverage and the displacement of households due to floods.

**Table 3: BISP life insurance coverage and payouts by province/region, 2011**

Province/region	Enrollment	Claims paid
Punjab	517,002	2,294
Sindh	725,759	2,306
KP	530,337	1,972
Balochistan	185,964	485
AJK	51,082	414
Gilgit-Baltistan	21,062	319
<b>Total</b>	<b>2,031,206</b>	<b>6,890</b>

Source: BISP.

<sup>14</sup> BISP intends to capture the ultra-poor. Households with poverty scores lower than 16.17—comprising about 17 percent of the population or 7.1 million households—qualify for program benefits. In comparison, the general poor, according to interviews with BISP, have poverty scores under 32.

<sup>15</sup> While the recipient of BISP's cash transfer program is typically a woman in the household, the choice of the "breadwinner" to be covered by BISP's life insurance policy favors males over females and working members over nonworking members of household. This is aimed at protecting the lives of non-working household members.

<sup>16</sup> Interview with Col. Dr. Javed Abbas (BISP), February 2013.

BISP is working with the State Life Insurance Corporation (SLIC) to manage the funds and administer the life insurance benefits. Instead of paying out premiums for the families covered by BISP life insurance, payouts to beneficiaries are made from a claim reserve fund that is maintained with and invested by SLIC. In addition, BISP compensates SLIC for administrative costs.

### 6.5. Increasing Value to Life Microinsurance Clients

In the case of credit life insurance, policies could have greater value for clients if they offered the option of higher levels of coverage at higher premiums. In the case of BISP's life insurance, and in the case that credit life policies offer increased coverage, client value could be increased by giving the beneficiary the option of dividing the benefits into multiple payments, to avoid having the windfall spent in the immediate aftermath of the breadwinner's death, either on funeral expenses or captured by relatives. The impact of adding such an option could be studied easily in the context of a randomized control trial (RCT).

## 7. HMI in Pakistan

While most microfinance providers in Pakistan offer credit life insurance, some have also ventured into the HMI market. The largest players are RSPs such as NRSP and government-funded social protection programs such as BISP. A number of HMI programs have died in infancy, having not made it out of the pilot stage, including the programs introduced by Kashf and FMiA (an offshoot of the Aga Khan Agency for Microfinance). In the first case, utilization was low and clients were provided little value; in the second case, financial viability became an issue. While FMiA is no longer in operation, Jubilee Life has continued to service its clients. There are currently a number of new, comparatively small HMI programs including Naya Jeevan (2011), Pak-Qatar Takaful (2011), Khushhali Bank (2013) and Tameer Microfinance Bank (2010).

HMI is among the most complex insurance instruments to design and implement, particularly because health delivery is a *service* that needs to be provided to individuals, rather than a simple one-time payout, such as in a life insurance or agricultural insurance policy. In addition, for an HMI program to achieve its intended goals, a number of factors must be exactly right (Leatherman, Christensen, & Holtz, 2012). These include:

- The correct design of the HMI product (the amount of coverage and premium, exclusions, cashless reimbursement systems, etc.)



- The quality of the health infrastructure (including hospitals, clinics, and their equipment)
- The quality of the health service delivery (training and incentives of doctors, nurses, and other staff)
- Consumer education (understanding of how to utilize the insurance and what is/is not covered)

Problems along any of these dimensions may cause a well-intentioned HMI program to fail.

### 7.1. NRSP

NRSP is a private, not-for-profit community organization (CO) that was started with seed money provided by the Government of Pakistan in 1992. Its main work involves organizing rural residents into small COs, whose members are permitted to take out microcredit loans and encouraged to use accrued savings for local development projects (NRSP, 2013b).<sup>17</sup> As of December 2012, there were almost 150,000 COs comprising approximately 2.3 million members divided almost equally between women and men (NRSP, 2013a). There were nearly 380,000 active microcredit borrowers, three quarters of them women (NRSP, 2012). According to MicroWatch, NRSP had issued nearly 750,000 insurance policies as of the fourth quarter in 2012, although these include both health and credit life policies (Pakistan Microfinance Network, n.d.).

NRSP has offered a health insurance scheme in partnership with Adamjee Insurance since 2005. The program has evolved over the last seven years, with incremental changes intended to improve the product's design and cost effectiveness. Initially, the scheme was offered to all members of the NRSP community with an annual premium of PRs 250 for coverage up to PRs 25,000; uptake of the product was voluntary for community members.

However, the organization soon realized that, in order to increase enrollment and reduce the administrative costs of collecting premiums, the HMI scheme had to be linked to its microcredit program. As a result, in 2006 the premium was included in the loan processing and reduced to PRs 100 for health and accidental death/disability coverage of PRs 15,000 for both the borrower and his/her spouse, in effect resulting in an annual premium of

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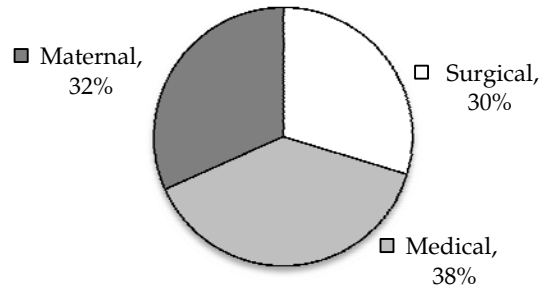
<sup>17</sup> Some microcredit schemes are also offered in urban areas: Islamabad/Rawalpindi, Faisalabad, Multan, and Karachi.

PRs 50 per person.<sup>18</sup> Currently, the annual premium is PRs 100 per person (for all microcredit clients and their spouses), and coverage has been extended to childbirth and an additional benefit for natural death. Currently, 243,337 active loans are covered under NRSP's Microfinance and Enterprise Development Program (covered by HMI) (NRSP, 2013a).

In the initial years of operation, NRSP suffered from a low claims ratio of 23 percent,<sup>19</sup> which it attributed to low product awareness among clients. Product marketing and promotion and customer orientation programs carried out in subsequent years increased the claims ratio consistently to about 60 percent<sup>20</sup> (cumulative) up to 2012. The claims ratio for 2010/11 (alone) was 61 percent. Other key factors that have helped are the inclusion of the spouse in benefit coverage. In 2011, NRSP introduced a cashless system for insurance benefits for some areas at listed panel hospitals. However, if receiving hospitalization at a nonpanel hospital, the client needs to file for reimbursement as before.<sup>21</sup>

Figure 4 shows the different types of claims received by NRSP in 2011/12. As far as coverage is concerned, the insurance scheme excludes pre-existing conditions. The HMI scheme provides coverage for pregnancy and childbirth, and is capped at PRs 10,000. Thirty-two percent of all claims received under NRSP insurance schemes are for maternal health (NRSP, 2012). Since 2011, it has expanded its maternal health insurance coverage to include family planning services as well.<sup>22</sup>

**Figure 4: NRSP's breakdown of claims by category**



*Source:* NRSP (2012).

<sup>18</sup> Interview with Jawad Rehmani (NRSP).

<sup>19</sup> Interview with Jawad Rehmani (NRSP).

<sup>20</sup> Interview with Jawad Rehmani (NRSP). The cumulative loss ratio (2006–12) was 74 percent.

<sup>21</sup> Focus group discussions held by the World Bank suggested that clients perceived little value due to the manual reimbursement system: they either lacked the money to obtain treatment or found the system of filing for a reimbursement too difficult (World Bank, 2012).

<sup>22</sup> Interview with Jawad Rehmani (NRSP).

NRSP is in the planning stages of including entire families in its HMI scheme. This product variant is also intended to be a cashless facility covering the entire family, with an expected annual premium of PRs 500–600. The sum insured will also be higher—up to PRs 25,000 per person.<sup>23</sup>

## 7.2. BISP

BISP is Pakistan's largest social protection scheme to date. The program's cornerstone is a monthly cash grant program that pays PRs 1,000 to extremely poor households in the country. BISP is a targeted program, where households have been identified through a poverty scorecard developed with the World Bank. As of January 2013, BISP had a total of 4.1 million benefit recipient households.<sup>24</sup>

BISP's HMI initiative, Waseelah-e-Sehat, was launched in April 2012 in Faisalabad in collaboration with SLIC. It is still in its pilot phase, and is supported by the Government of Pakistan, which, in turn has received funds from the World Bank and GIZ. In the first year of the pilot, BISP was paying PRs 2,250 per family per annum to SLIC. The program has a unique financing arrangement with SLIC: from the total premiums paid by BISP, SLIC is allowed to keep only 5 percent of the net proceeds after deducting administrative charges (15 percent) and the claims paid. The remaining 95 percent of the profit generated (if any) is transferred back to BISP. What makes this financing arrangement even more interesting is that any loss incurred is borne by SLIC in its entirety.<sup>25</sup> Based on the cost experience so far, BISP has been able to negotiate down the premium to PRs 1,800 for when the program is rolled out in other districts.

The pilot launched in Faisalabad district in 2012 provides in-patient care to all 49,000 cash grant beneficiary households in the district's six *tehsils*. The scheme provides for free hospitalization for up to six members of a beneficiary household for up to PRs 25,000 per beneficiary annually, through eight private panel hospitals. Each of the panel hospitals, chosen through eligibility criteria designed by GIZ, has a BISP helpdesk. While the coverage amount of PRs 25,000 appears small, as of February 2013, only six families in the pilot had exhausted the benefits. To reduce moral hazard,

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<sup>23</sup> Interview with Jawad Rehmani (NRSP).

<sup>24</sup> Apart from its basic cash transfer program, BISP has initiated a number of supporting programs for skills development and improving the productivity of the poor, with the intention of helping them "graduate out of poverty." These include Waseelah-e-Rozgar (technical education), Waseelah-e-Sehat (HMI), Waseelah-e-Haq (small business loans for women), and Waseelah-e-Taleem (education).

<sup>25</sup> Interview with Col. Javed Abbas (BISP).

certain procedures such as hospitalized normal and caesarian deliveries have been capped at PRs 5,000 and PRs 7,000, respectively.<sup>26</sup>

BISP's HMI scheme has the advantage of no age exclusions for coverage. However, the plan includes only essential hospitalization, with many important diseases such as cancer, bypass surgeries, and transplants being excluded from the umbrella of coverage. BISP is working to enhance coverage by linking households to the Bait-ul-Maal fund.

BISP's microinsurance includes comprehensive maternity coverage, including hospitalized normal deliveries and caesarians. It is considering offering vouchers for prenatal care and transport<sup>27</sup> as well once the scheme is rolled out to other districts across the country. Early data from the pilot in Faisalabad indicates that the majority of procedures performed on individuals covered by the scheme have been gynecological, highlighting the program's important role in women's health (Table 4).

BISP currently offers a cashless facility to its clients through a "sehat (health) card" that allows them to receive medical care at listed private hospitals on the panel. In Faisalabad, where the pilot was initially rolled out, every tehsil has a hospital so that the average distance to any hospital for the client is 5–10 km.<sup>28</sup> However, this is not the case for other districts, where rolling out the pilot will be a challenge because of supply-side issues, specifically the proximity of hospitals.

**Table 4: Procedures performed on covered individuals (BISP health insurance pilot 2012)**

Type of procedure	Number of procedures
Caesarian	42
Normal delivery (NVD)	41
Hysterectomy	25
Dilation and curettage (D&C)	21
Appendectomy	14
Hernia	12

Source: BISP.

<sup>26</sup> The moral hazard is that medical providers would seek revenues with unnecessary procedures.

<sup>27</sup> The proposed voucher is worth PRs 1,000 for transport for three visits for the family.

<sup>28</sup> This is the average for rural and urban areas; the distance for rural (urban) households is, on average, higher (lower) than this figure.

Hospitalization utilization during the initial phase of the Faisalabad pilot has been low.<sup>29</sup> While some clients complained they had been denied hospital admission by SLIC doctors, the program's administrators have suggested that the low utilization is probably due to the high opportunity cost of availing medical care for the poorest of the poor, many of whom depend on piece rates and daily wages for subsistence.

BISP has contracted with SLIC to expand the HMI scheme in four additional districts: Badin (Sindh), Nowshera (KP), Quetta (Balochistan), Diamir (Gilgit-Baltistan), and Muzaffargarh or Ponch (AJK). Given the lack of private health infrastructure in some areas, BISP is considering empanelling public and military hospitals to ensure access to all insured households. However, one bottleneck is that public hospitals are not currently permitted to retain the generated funds.

### *7.3. Other Microcredit-Linked HMI Products*

Jubilee Life Insurance works with a number of microfinance providers to offer HMI products, including Asasah, the Sindh Agricultural and Forestry Workers Coordinating Organization (SAFWCO), Jinnah Welfare Society (JWS), FMFB, and former FMiA clients. These policies cover hospitalization expenses up to PRs 35,000 per person (for SAFWCO) for the entire family, and PRs 50,000 per person (for Asasah) for the borrower and spouse, at a panel of private hospitals through a cashless system. Asasah charges PRs 650 for the combined health and credit life premium, both mandatory for borrowers. There is no prescreening for insurance coverage, effectively covering pre-existing conditions. Asasah offers maternity benefits only for C-sections. Although exact figures were not made available, Jubilee Life reports that it has experienced losses on its HMI business; the organization currently has around 87,500 HMI clients.

Tameer Microfinance Bank offers a voluntary HMI product in partnership with AsiaCare. The premium amount is PRs 650 per annum per person for coverage of up to PRs 35,000; Tameer does not retain any part of the premium. Initially, the annual coverage was PRs 50,000, which AsiaCare later revised downward to PRs 35,000 per year. The product is only available to Tameer Bank's clients (microsavers, regular borrowers, and even emergency loan borrowers).<sup>30</sup> Other family members are not

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<sup>29</sup> Col. Dr. Javed Abbas at BISP estimates that the rate of hospitalization for the poorest households, despite their higher disease burden, is probably about 2 percent; this stands in comparison to 3.5–4 percent for the Pakistani population overall.

<sup>30</sup> Interview with Kashif Ahmed and Usman Malik (Tameer Microfinance Bank).

eligible. The product covers hospitalization only, but does not include essential medical services for women such as hospitalized normal deliveries and caesarians. Pre-existing conditions are covered but after 45 days of taking up the policy. The ratio of men to women covered under HMI by Tameer is 60:40. About 19,000 health policies were sold in 2012.

Khushhali Bank launched its first HMI scheme in March 2013, also in partnership with AsiaCare. The annual premium is PRs 750 for Rs 35,000 coverage. The policy covers hospitalization, surgery, and cancer treatments, but excludes maternity care.

#### *7.4. Kashf's HMI Experience*

In November 2007, Kashf initiated a six-month HMI pilot for clients and their nominees of three Lahore branches. During the pilot, uptake of the HMI product was mandatory for new or repeat microcredit borrowers, leading some clients to switch branches. The premium was PRs 700 for PRs 25,000 coverage for a one-year period for the borrower and her nominee, in most instances a spouse, father, or brother. Pre-existing conditions were covered at 50 percent for the first three months of the policy. Borrowers were hesitant (but required) to purchase the policy as an upfront payment associated with the disbursement of the loan; some were able to halve the premium to be paid by claiming that their spouse did not live with them (Khan, 2008).

The program suffered from low recognized value among its clients. According to 10,590 clients who received coverage under the pilot, 31 out of 34 claims were paid out by September 2008 (Kashf Foundation, 2008). PRs 3.7 million was collected in premiums, but only PRs 0.39 million was paid out (out of initial claims of about PRs 0.53 million) for a payout/premium ratio of only 10.5 percent. Despite focus groups of clients pointing out that pregnancy complications/caesarians were among the most expensive medical conditions they might have to deal with, the pilot policies did not cover costs related to childbirth (normal or caesarian) or many other gynecological problems (other than malignancies, ectopic pregnancy, miscarriage, and preeclampsia). Clients were not well informed about the limitations and exclusions of their policy, and were disappointed when they were told that their costs would not be covered (Khan, 2008).

The system was cashless for only some of the panel hospitals, and for those operating through reimbursement, claims took two to four months to process. The biggest problem in terms of client value, however, was probably that the majority of the panel hospitals were public

facilities.<sup>31</sup> Public hospitals already provide doctors' services free of charge, so the insurance was only covering diagnostic charges, lab tests, medication, and operating room and ICU charges. Clients complained of poor service and being turned away for lack of beds (Khan, 2008). They were also reluctant to visit the military hospital on the panel and confused that they were authorized to obtain treatment there (Khan, 2008).

Kashf plans to initiate a new HMI pilot that will expand coverage to children and include pregnancy-related costs.<sup>32</sup> Jubilee Life Insurance has estimated that, for PRs 25,000 coverage, the premium will be around PRs 1,100 per household. Kashf has a large number of clients—currently about 200,000—and enough to gain negotiation leverage with insurance companies. It has also started working with UBL Omni and Telenor Easypaisa to make mobile phone-enabled deposits and loan payments. These mobile technology platforms could also be used to spread out payments on HMI policies.

### **7.5. HMI Outside the Microcredit Sector**

Naya Jeevan, a not-for-profit social enterprise founded in 2007, began offering HMI in 2011. It follows a unique HMI model for providing low-income families and the working poor access to quality healthcare. An estimated population of 76 million in Pakistan is formally or informally connected to the supply chains of major corporations, whom Naya Jeevan aims to insure: these include suppliers (farmers, agribusiness, raw material providers), logistics companies (distributors), and vendors (wholesalers, retailers, and microretailers) (Naya Jeevan, 2012).

Naya Jeevan hopes that major corporations wishing to improve their image with respect to corporate social responsibility may be willing to co-finance the insurance of these low-income staff and contractors at lower levels of coverage and premiums compared to the plans offered to management-level corporate employees. It intends for the majority of insurance premium contributions to be made by the primary employer (80 percent) and the remainder made by the beneficiary (10 percent) and the employer's employer/contractor/sponsor (10 percent).

Currently, Naya Jeevan offers two variants of the health insurance product. The first is an HMI product for low-income employees in the

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<sup>31</sup> The original panel hospitals were: Lahore General (public), Ittefaq Trust (private), and the Combined Military Hospital (military). Later added were the Services Hospital (public), Sir Ganga Ram (public), the Punjab Institute of Cardiology (public), Mayo Hospital (public), and Fatima Memorial.

<sup>32</sup> Interview with Maham Tarar (Kashf Foundation).

formal and informal sectors with a maximum income of PRs 15,000–25,000 per household, for coverage up to PRs 200,000.<sup>33</sup> The organization approaches employers in the formal sector (e.g., Unilever) as well as employers of domestic staff (drivers, housemaids, cooks, etc.) to fund the insurance premiums for their employees. The second product variant, currently in the pilot phase, follows the self-insurance model: instead of transferring the risk to the employer, low-income individuals pay for HMI themselves via a community-based risk-pooling platform.

The two products are also priced differently: the former costs PRs 200 per worker per month, while the latter is a self-pay option priced at PRs 150 per individual per month (or PRs 5 per day auto-debited from their mobile phone). The difference in price is to account for an adverse selection bias as employers may have a greater propensity to enroll their least healthy employees in an HMI plan. Coverage is up to PRs 150,000 per person per year. For every dollar of incoming insurance contribution (revenue), 60–80 cents are used to buy health plans from insurance underwriters (suppliers). The remainder is used to cover additional client services, mostly 24/7 telephone access to a team of family medical doctors, discounted access to outpatient services, annual health risk assessments, group orientation for beneficiaries, and preventive health education.

Naya Jeevan's HMI model consists of a *core health plan* that covers inpatient expenses for hospitalization in addition to outpatient services needed 20 days prior to and post-hospitalization. In addition, a team of six in-house doctors navigates members through the various steps of the medical treatment process via a network of 190 private hospitals nationwide. For corporate groups, the organization offers coverage of pre-existing conditions for enrolling a group larger than 200 clients.<sup>34</sup> Naya Jeevan also offers a comprehensive pregnancy and childbirth plan for clients covering prenatal and postnatal care for both natural births and surgeries at an additional PRs 50 per month, subject to a 10-month waiting period.

As of June 2013, about 24,000 beneficiaries are part of the employer-funded healthcare plan enrolled across more than 100 organizations, including Unilever, Sanofi, Philips Electronics, Pakistan International Container Terminal, and Jafferjees. Currently, 80 percent of the beneficiaries are concentrated in urban centers in Sindh, particularly Karachi.

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<sup>33</sup> In some cases, the income cap for eligibility for HMI by Naya Jeevan is raised to PRs 25,000 per month. This may be at the employer's discretion or because there is more than one earning member in the family. Typically, its clients consist of blue-collar workers.

<sup>34</sup> For domestic workers in the informal sector, Naya Jeevan makes its own pool and effectively provides coverage for pre-existing conditions.



The self-insurance model is being piloted in Sultanabad—an urban slum in Karachi where a subset of 25,000 beneficiaries was randomly selected from a population of about 250,000. Out of this subset of 25,000, 5,000 beneficiaries have been enrolled in the comprehensive healthcare plan, which is initially free of charge (funded by USAID). The remaining 20,000 have access to all the value-added services in the form of a preventive healthcare plan. The aim of the pilot is to measure the impact of HMI and assess whether exposure to the product enhances its uptake and the perceived value of HMI for the population.

In the coming year, Naya Jeevan hopes to pair up with a major telecom provider in Pakistan and start offering its healthcare products to low-income clients via mobile phone-enabled enrolment. It also plans to expand its current network of about 30 primary care partners nationwide and conduct health assessment examinations to extend coverage to areas outside urban Sindh.

Naya Jeevan's business model is innovative and has drawn international attention and donations, but whether the model is financially sustainable and scalable remains to be seen. The cost of the insurance, at PRs 1,800–2,400 per person per annum is significantly higher than that of all other HMI plans in Pakistan. According to its CEO and founder, Dr Asher Hasan, the organization aims to achieve financial sustainability by 2015 if it can reach a client base of 150,000. As with other forms of microinsurance, there have been limited assessments of the impact of such programs. Naya Jeevan is partnering with international academics to measure the impact of the Sultanabad pilot.

#### *7.6. FMiA's Experience in the Northern Areas*

The Aga Khan Agency for Development created FMiA in 2007 to provide HMI to clients in Hunza, Gilgit, and Ghizar in the Northern Areas. The policy was comprehensive, offering PRs 25,000 coverage per family member per year; one yearly doctor's visit for each family member; inpatient maternity, prenatal, and postnatal care (from 2009 onward); and a PRs 25,000 life insurance policy for one breadwinner (McGuinness & Mandel, 2010). The annual cost of the policy was PRs 400 per person. The system was cashless for military and Aga Khan network facilities. The insurance was offered by Jubilee Life, which is also owned by the Aga Khan Development Network.

The policies were marketed through local service organizations, village organizations, and women's organizations. At least 50 percent of

the members of the local village organizations or women's organizations concerned (organized by the Aga Khan Rural Support Program) were also required to sign up to reduce adverse selection. By December 2008, despite a short enrollment period, more than 19,000 individuals had enrolled in the HMI program (McGuinness & Mandel, 2010).

Due to its inability to become financially sustainable, FMiA closed down its operations in 2011 but Jubilee Life Insurance still offers HMI in these areas in partnership with COs. Since November 2011, it has changed the premium to a family-level rather than a per-person premium. The premium is PRs 2,000–2,300 for a family of five and PRs 300 for additional members.<sup>35</sup>

### 7.7. HMI: Discussion

HMI policies in Pakistan tend to focus on catastrophic events such as hospitalization, and typically exclude chronic illness and outpatient visits. Given that microinsurance does not screen applicants, this is necessary to avoid adverse selection where only the sick enroll. Some policies cover women's issues including caesarian deliveries, but many do not. For the policies that do include women's reproductive health, these make up a large share of the claims (NRSP, BISP). This highlights the need to include such cover, but premiums also need to be high enough to ensure financial sustainability.

In order to discourage doctors from converting normal deliveries into caesarian procedures, both BISP and NRSP have caps on coverage (PRs 7,000–10,000) so that the patient has to cover at least half the cost. Some programs cover cancer treatments, but not all. Programs that function by reimbursement tend to have low claims ratios and, therefore, lower client satisfaction and value (Kashf's pilot, NRSP) (Khan, 2008; World Bank, 2012). NRSP is moving toward a cashless system (in Punjab, and soon in Sindh).<sup>36</sup> In rural areas, transportation to health facilities is an important issue (SECP, 2012; McGuinness & Mandel, 2010) that could be covered by vouchers. NRSP's microinsurance is one of the few that does cover transportation costs.

Clients' feedback suggests that they do not experience high levels of satisfaction from policies when they do not submit any claim, and sometimes expect that at least part of the premium should be returned or a

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<sup>35</sup> Interview with Malik Khoja (New Jubilee).

<sup>36</sup> Interview with Jawad Rehmani (NRSP).

discount for the following year applied in case a claim is not filed (McGuinness & Tounytsky, 2006, for Pakistan; Platteau & Ontiveros, 2013, for India). An option potentially worth exploring is a combination of health savings accounts (HSAs) and catastrophic insurance coverage.

It is true that HSAs have been attempted in a limited number of countries, including Singapore, China, South Africa, and the US, with effects that have generally been less than positive for consumers. These have included cost shifting from the government to patients (Singapore and China) or reductions in benefits as in South Africa (Thomson & Mossialos, 2008). In the US, the uptake of HSAs along with high-deductible plans has been low, along with customer satisfaction, compared to traditional insurance (Glied, 2008). In these contexts, HSAs were set up to reduce healthcare expenditures on the premise that moral hazard leads traditionally insured individuals to overuse healthcare.

In Pakistan, on the other hand, most people have had no exposure to traditional health insurance (covering routine care and outpatient services) nor is it available to the majority of the population, given the prohibitive cost and adverse selection concerns. The HMI plans currently offered in Pakistan are akin to the “catastrophic coverage” policies in the US, and mainly cover hospitalization while limiting or excluding coverage of outpatient visits, outpatient medication, maternity services, and chronic or pre-existing conditions. As a result of these limitations, the utilization of covered services tends to be low and the insured may feel that they should be reimbursed at least part of their premium.

One proposal for a combined HMI and HSA plan is as follows: a family could contribute between PRs 200 and PRs 300 a month, where PRs 100–150 per month would go toward HMI (i.e., a PRs 1,200–1,800 family per annum premium) and the remainder would go toward an HSA. The HMI would provide catastrophic coverage for hospitalization, surgery, and some chronic conditions, while the HSA could be used to pay for outpatient visits and medication.

If health savings accumulate, monthly contributions could go down and if HSAs fall below a certain threshold, the required monthly contributions would go up. Clients will have the satisfaction of feeling that they are gaining some tangible benefits from the monthly contributions they make, and will have to pay less when they do not use medical services. A recent RCT in Kenya found that informal HSAs had over a 90 percent take-up rate and allowed households to accumulate savings that were later used to cover medical emergencies (Dupas & Robinson, 2013).

## 8. Other Insurance Providers: Pakistan Postal Insurance and Mobile Microinsurance

### 8.1. Pakistan Postal Insurance

The Pakistan Post Office offers a variety of insurance policies, some of which—given the range of options for coverage (starting at PRs 50,000 and up to PRs 5 million)—could be considered microinsurance. A wide variety of options are available to suit the individual needs of families, including whole-life policies (payout at age 85 or at time of death), endowment policies (paid at expiration of term or at death), joint-life policies (two persons insured), three-payment plans (share of payout disbursed at three points in time during term of policy), education and marriage endowments (paid after 5–17 years or at death), disability insurance, child protection (one child aged 1–17 and one parent insured), and group insurance. The number and characteristics of people currently insured is not known, but there were 252,810 policies in effect in 2004 (Nenova et al., 2009).

### 8.2. Mobile Microinsurance

Branchless banking in Pakistan, introduced in 2008, has recorded consistent growth by leveraging the mobile technology network. The total number of branchless banking accounts had increased to more than 1,815,611 and total deposits were valued at PRs 839 million as of September 2012 (State Bank of Pakistan, 2012). This growth has been led by two main products: Telenor Easypaisa and UBL Omni.

The substantial penetration of mobile phones in Pakistan is seen as a way to increase the microinsured, by means of telecom companies (SECP, 2012). Mobile subscription in Pakistan had already reached 114 million users in December 2011, meaning that about 60 percent of the population had access to a mobile phone (Pakistan Microfinance Network, 2012). With a number of microfinance providers already using branchless banking, there is an opportunity to use the same methods to enroll and receive payments for microinsurance (Pakistan Microfinance Network, 2012).<sup>37</sup>

Some life insurance policies already operate this way, collecting payments by means of the telecom companies on a weekly or even daily basis (SECP, 2012). These include Easypaisa and Zong, which both work with Adamjee Life. They are simple to administer (clients sign up by phone

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<sup>37</sup> Asasah and SAFWCO allow borrowers to use Easypaisa for disbursement and repayment; the Thardeep Rural Development Program, Rural Community Development Society, JWS, and Kashf use Omni for repayment only (Pakistan Microfinance Network, 2012).

call or text message) and premiums do not have to be paid as a lump sum—both characteristics that make them easy to afford for lower-income segments and compatible with established microinsurance models.

Easypaisa (a project of Tameer Microfinance Bank, in partnership with Telenor) launched Easypaisa Khushaal in 2012, under which complimentary life insurance is given to customers who maintain a minimum balance in their mobile accounts and sign up for the service (Easypaisa, 2013). The amount of coverage depends on the balance maintained (see Table 5). While there is no explicit insurance premium, the insurance coverage is not “free” in the sense that Easypaisa balances do not earn any interest, so that holding large sums in the account presents an opportunity cost.

**Table 5: Minimum balances and insurance benefits from Easypaisa (PRs)**

Easypaisa balance	Benefit (natural death)	Benefit (accidental death)	Additional monthly benefit for balances > PRs 25,000
2,000–5,000	50,000	100,000	
5,001–10,000	100,000	200,000	
10,001–25,000	250,000	500,000	
> 25,000	500,000	1,000,000	5,000 per month for 5 years

Source: Easypaisa (2013).

Zong has offered accidental death and disability insurance since 2011, with premiums deducted daily from the client’s mobile phone balance (Zong, 2013). The rates and level of coverage are given in Table 6.

**Table 6: Zong accidental death and disability insurance: Coverage and rates (PRs)**

Plan	Accidental death/ disability benefit	Funeral expense benefit in case of accidental death	Daily user charges	Daily deduction from mobile balance (with taxes)
1	100,000	5,000	2	2.10
2	200,000	5,000	4	4.27
3	300,000	5,000	5	5.29

Source: Zong (2013).

## 9. Impacts of Microinsurance

Scientific evaluation of microinsurance through an RCT requires the participation of an evaluation team before any new insurance product

is marketed, and preferably during the design phase of the product. An RCT requires collecting baseline information on the target population, and then marketing and/or subsidizing the product for a random sample of the target population so that the “treatment” effect can be measured against the “control” group to eliminate the bias of self-selection into the program. There has only been one completed impact evaluation of microinsurance in Pakistan using the RCT method (Landmann & Froelich, 2013), and one ongoing experiment (Naya Jeevan).

Landmann and Froelich (2013) find a reduction in child labor incidence (especially in hazardous occupations) and fewer missed schooldays (particularly for boys) among families near selected branches in Hyderabad where NRSP had, on a pilot basis, allowed additional family members to enroll in its HMI scheme.

## **10. Scaling up Microinsurance**

In the short to medium term, life microinsurance could be scaled up by covering spouses and offering supplemental higher levels of coverage. Focus group discussions held by the World Bank (2007) and Microfinance Opportunities (McGuinness & Tounytsky, 2006) suggest that clients gain value from SLIC’s regular education endowment and life policies, which pay a lump sum after a term of 15–20 years or on the death of the insured. These policies combine commitment savings with life insurance. Linking branchless banking with microfinance providers to offer insurance products and lower the transaction costs incurred by SLIC and Pakistan Postal Insurance may unleash demand.

HMI could be scaled up in the short to medium term by covering microfinance customers’ entire families. Currently, NRSP’s HMI scheme covers only borrowers and their spouses, but if plans go through to offer a family plan, coverage would increase significantly. Enrolling the families of its 2.3 million CO members—rather than just the 200,000–250,000 rural borrowers and their spouses—would also provide a significant boost. Although NRSP had marketed its HMI plan to the COs when it started, it found the administrative costs of collecting the premiums prohibitive. In this context, payment through mobile accounts could reduce transaction costs. Another way of scaling up microinsurance would be for the provinces to offer insurance to poor households who just miss the BISP cut-off; the poverty scorecard data is already available and this would considerably improve the reach of the social safety net.

With HMI, the problems associated with adverse selection (that only the sick are willing to purchase insurance) could be mitigated through mandatory enrollment. If HMI is voluntary, one option would be to require that a certain percentage of the community signs up for the group to qualify. FMiA attempted this with mixed results, so it is not a guarantee that the product would be sustainable.

## 11. Conclusions

When microinsurance is voluntary, take-up rates are low and renewal rates even lower. A survey of eight index and health insurance programs in developing countries had take-up rates of 6 to 36 percent, with many in the teens (Churchill & McCord, 2013). While there is some correlation between financial literacy and insurance ownership, the study found that educating individuals about insurance had some impact on the take-up of index insurance but no effect with respect to health insurance.

In the US, nearly all (97 percent) of the 61 percent of workers offered life insurance by their employers take it up (US Bureau of Labor Statistics, 2012). Therefore, life insurance as an employment benefit may be a way to increase the number of formal sector employees insured. Of course, those employed in the formal sector in Pakistan already have access to the Employees Old-Age Benefits Institution (EOBI), which makes disability payments to injured workers and also pays survivor benefits. Families of active-duty military personnel also have access to low-cost or free healthcare.

On the other hand, people do not always purchase the level of insurance they need, nor do they necessarily take up free insurance, even in developed countries. One study has shown that at least a third of near-retirement households in the US were underinsured and would experience a significant reduction in their standard of living if the breadwinner passed away (Bernheim, Forni, Gokhale, & Kotlikoff, 1999). In the US, two thirds of Medicaid-eligible children are uninsured (Baicker, Congdon, & Mullainathan, 2012),<sup>38</sup> 25 percent of individuals without health insurance were offered subsidized plans through their employers but opted out (Baicker et al., 2012).

In some cases, affordability and screening by insurance companies may have been an issue, but not all; 20 percent of the uninsured have household incomes of USD 75,000 or more. One study has estimated that between 25 and 75 percent of the uninsured in the US can afford health

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<sup>38</sup> Medicaid is the US government's free health insurance program for low-income individuals.

insurance but have opted out (see Baicker et al., 2012). Outcomes for the uninsured are often worse than for the insured, as shown by an RCT on the impact Medicaid. The study also suggests behavioral/psychological reasons for the large number of uninsured, including the complexity of the choice, (mis)perceptions of risk, present bias, context, and framing.

Some of these behavioral/psychological reasons were offered and tested on a population in India where the uptake of HMI was very low. Ito and Kono (2010) have found evidence of the effects of both prospect theory (where individuals are risk-loving with respect to losses, leading to underinsurance) and hyperbolic discounting (present bias).

These figures lower hopes that insurance penetration can reach high levels in developing countries where financial literacy is low. McGuinness and Mandel (2010) find that only 13 percent of families subscribed to FMiA's HMI program. NRSP has had to link HMI to its lending operations to build up its numbers and lower the cost of collecting premiums. Tameer's health insurance program is new, but comprises only 19,000 clients out of nearly 155,000 active borrowers. Kashf's clients complained about the mandatory nature of the HMI pilot.

As for achieving premium prices that will offer good value to microinsurance clients, BISP's experience in developing its health insurance component and negotiating with insurance companies (eventually opting for a state-owned insurer) for a large group of clients offers some important insights. The private insurance market is thin, and when BISP put out an expression of interest to the insurance industry, eight companies put in bids, out of which only four companies qualified under the World Bank's criteria.

At least one company has suggested that it would be willing to insure under a system of reimbursement rather than the cashless system that BISP advocated. Private companies, stating that insuring the ultra-poor is very risky, formed a consortium and proposed charging a premium three to four times what BISP is currently paying SLIC.<sup>39</sup> Such a high proposed premium may have resulted from lack of information about the risk to be insured and/or a thin insurance market. As a result, SLIC, which was previously mandated to offer only life insurance, has now received the mandate and statutory government funding needed to offer BISP's HMI.

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<sup>39</sup> Interview with Col. Dr Javed Abbas (BISP).



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*Annex***Life microinsurance in Pakistan**

<b>Microcredit provider</b>	<b>Details</b>
Kashf Foundation	Credit life offered; mandatory for microcredit customers. Premium is 2 percent of the loan amount for a loan up to PRs 20,000 and 1 percent of the remaining loan amount. Premium covers both the microcredit client and her nominee (husband or other male breadwinner of the family). In addition, funeral charges of PRs 5,000 are paid (correspondence with Kashf).
Khushhali Bank	Credit life insurance for borrowers, covering death/disability of borrower. Sum insured is the outstanding loan amount. Premium built-in loan processing. Covers borrower only and only loan amount. No funeral charges paid.
NRSP	Credit life offered for urban clients. In case of death, the outstanding loan balance and interest is paid, and 50 percent of the loan amount disbursed is paid to the borrower's heir/family to cover funeral expenses (NRSP, 2012).
Tameer Bank	Credit life offered. If a person dies, the loan is waived, in addition to a funeral charge of PRs 5,000. Life insurance is mandatory for all microcredit clients and is built into the markup for microcredit that the bank is already charging them (correspondence with Tameer Bank).
FMFB	Credit life offered. Premium is linked to loan amount: PRs 50–350 for loan amount of PRs 5,000–150,000. Covers only borrower. Linked to loan duration. Separate premium for death benefits insurance: funeral charges PRs 10,000 (normal death), PRs 20,000 in case of accidental death (correspondence with FMFB).
Akhuwat	Islamic microcredit institution. Offers micro- <i>takaful</i> (Islamic credit life). PRs 100 is paid toward premium for life insurance. In case of death, loan balance is waived. Funeral charges of PRs 5,000 are also paid. This product is mandatory for all microcredit borrowers (correspondence with Akhuwat).
Asasah	A total premium amount of PRs 650 is charged, which covers both life and health insurance. In case of death of borrower, up to PRs 50,000 of the outstanding loan amount is waived and PRs 50,000 is paid in funeral charges (correspondence with Asasah).
PRSP	Life insurance (death, accidental death, and disability offered in partnership with SLIC).

<b>Microcredit provider</b>	<b>Details</b>
BISP	Group life insurance (GLI). Under this scheme, insurance cover of PRs 100,000 is paid out on the death of the male breadwinner of the family. The insurance is underwritten by the state-owned SLIC and BISP pays SLIC the premium on behalf of poor households. In the first phase, 2 million poor households already receiving BISP cash grants were provided with GLI. Coverage has subsequently been extended to all 4.1 million cash grant beneficiary households as of June 2012, and the scheme been made compulsory for all cash grant beneficiary households (correspondence with BISP).
Pak-Oman Microfinance Bank	Offers credit life insurance in partnership with ALICO/AIG insurance.
Daamen	Credit life. Premium is 3 percent of the loan and covers the outstanding loan amount along with PRs 7,000 in funeral charges in case of death of borrower (correspondence with Daamen).
SAFCO Support Foundation (formerly SAFWCO)	Credit life, which provides coverage to client's family if the client dies during the period of repayment (one year or six months as per agreement). Premium is 1 percent of loan amount. In case of client's death, the entire remaining amount is waived. The entire amount deposited with the organization (except service charges) is returned to the client's family members/nominee.

### **HMI Initiatives in Pakistan**

#### **Discontinued programs**

<b>HMI provider</b>	<b>Program duration</b>	<b>Details</b>
Kashf Foundation	2007–08	Pilot health insurance product launched in 2007. Premium was PRs 350 per person for coverage amount. The product was mandatory for all clients who had taken a loan from pilot branches.
FMiA	2007–11	Premium charged depended on location and partner organization. In Gilgit-Baltistan, it started at PRs 350 per person per year for coverage of PRs 25,000 in 2007. FMiA closed down due to sustainability issues but Jubilee Life still offers health insurance in these areas in partnership with COs.

### Ongoing programs

HMI provider	Started	Details
Tameer/AsiaCare	2010	HMI product offered in partnership with AsiaCare. Premium amount is PRs 650 per annum per person for coverage up to PRs 35,000. Coverage is only for the individual and does not include spouse or other family members. About 19,000 health policies were disbursed in 2012.
Naya Jeevan/Saudi Pak, Pak Qatar, Allianz-EFU, IGI, Warid Telecom	2010	Two products: (i) Employer co-financed health insurance product for low-income employees in the formal and informal sectors with a maximum monthly income of PRs 20,000. Premium is paid by the employer and amounts to PRs 200 per worker per month for a coverage amount of PRs 150,000. The program has about 24,000 beneficiaries enrolled as of June 2013. (ii) Self-insurance product (in pilot stage with a treatment group of 5,000 people) offered directly for uptake by low-income individuals where they pay their own premium of PRs 150 per person per month or PRs 5/day. Naya Jeevan plans to offer health insurance through a mobile network in partnership with Warid Telecom.
Asasah/Jubilee Life	2011	HMI is mandatory for all microcredit clients. Premium is PRs 650 per annum for coverage up to PRs 50,000 each for borrower and spouse. Coverage only includes hospitalization. Part of the same premium is paid toward credit life insurance, which is also mandatory for Asasah's clients. Hospitalized normal deliveries are not included, but other contingencies such as caesarians and hysterectomy are covered. The cumulative number of individuals insured from January 2011 to December 2012 is 14,121. Total number of active policyholders is 5,584.
BISP/State Life Insurance	2012	Pilot with 50,000 families started in April 2012. Premium of PRs 2,250 per annum per family for coverage up to PRs 25,000 for all family members. Premium is paid by the Government of Pakistan for families selected through the poverty scorecard.
Pak-Qatar Takaful	2011	?

HMI provider	Started	Details
Zong/Adamjee Life	2012	Insurance for accidental death or disability caused by an accident or terrorism. Daily premium varies between PRs 2 and 5 (USD 0.2–0.5) for annual cover of PRs 100,000–300,000.
PPAF and partner organizations: PPAF/SAFWCO PPAF/JWS PPAF/BRAC PPAF/RCDS	2011	PPAF has run various pilot projects with its partner organizations: with JWS in Gujranwala and Hafizabad, RCDS in Sheikhpura and Nankana Sahib, and SAFWCO. A total of 13,000 individuals covered in one year. PPAF has also carried out a pilot in collaboration with BRAC for district Lasbela in Balochistan, covering 15,000 individuals. The results of these pilots are mixed. The policies dispersed by JWS, for example, did not yield satisfactory results and suffered from low claims ratios. Certain partners have continued with the policies after the pilots ended (PPAF, 2012).
FMFB	2009	FMFB started offering HMI in partnership with Jubilee Life in Karachi and northern Punjab. Premium varies according to the geographical region: PRs 800 per annum per family in Karachi and PRs 950–1,000 in northern Punjab. Coverage amount is PRs 50,000 per household for hospitalization only. The entire family is covered except the borrower's parents. Hospitalized normal deliveries are not covered. Pre-existing conditions are covered 50 percent for first three months and 100 percent thereafter. Health insurance is mandatory for all FMFB's microfinance clients.



HMI provider	Started	Details
Rural Support Program Network (RSPN)/Adamjee	2005	First HMI scheme in Pakistan, providing hospitalization and accident insurance coverage to low-income rural population across the country. There are 10 RSPs in Pakistan under the RSPN umbrella, of which six offer HMI. Health insurance covers hospitalization costs, accidental injuries, disability compensation, and compensation in case of accidental death. Annual premium set at PRs 250. Limits per insured person are PRs 25,000 (for hospitalization) and PRs 25,000 (for accidental death) for a total of PRs 50,000. Coverage includes all associated procedures relating to pregnancy and also vouchers for transportation. The total cumulative number of policyholders was 3,380,609 as of June 2012, of which 914,377 are men and 2,466,232 are women ( <i>RSPN Outreach</i> , issue 14).
NRSP		Largest provider of HMI in Pakistan, accounting for about 50 percent of all health policyholders. Premium amount is a total of PRs 100 per annum for both borrower and spouse. Coverage includes only inpatient hospitalization due to illness and accidental death or permanent disability resulting from accidental bodily injury with a limit of PRs 15,000. Cumulative number of policyholders up to June 2012 was 2,379,905.
Aga Khan Rural Support Program		Cumulative number of policyholders for HMI was 621,184 as of the second quarter of 2012 ( <i>RSPN Outreach</i> , issue 14).
Sarhad Rural Support Program		Aims to provide free health insurance to 32,000 families under the microhealth program component of the Bacha Khan Poverty Alleviation Project in eight union councils in Upper Dir. The cumulative number of HMI policyholders was 27,400 as of the second quarter of 2012.
Sindh Rural Support Organization		Cumulative number of HMI policyholders was 204,696 as of the second quarter of 2012.
Thardeep Rural Development Program		Cumulative number of HMI policyholders was 127,409 as of the second quarter of 2012.
Ghazi Barotha Taraqiati Idara		Cumulative number of HMI policy holders was 20,075 as of the second quarter of 2012.

### Future programs

HMI provider	Expected start date	Details
Kashf Foundation	2013	Product in design stage.
Khushhali Bank	March 2013	Plans to offer Sehat Khushali—an HMI product to be launched in March 2013 in partnership with AsiaCare. The pilot will be launched in six different cities (Hyderabad, Sukkur, Rahimyar Khan, Lahore, Okara, and Mardan) for two months, after which the product will be rolled out on a commercial basis in other districts. Premium amount is set at PRs 750 per person annually for coverage amount up to PRs 35,000 for hospitalization only in AsiaCare’s panel hospitals. If treatment is availed at a nonpanel hospital, only 60 percent of the incurred expenses will be reimbursed by AsiaCare.
NRSP/Adamjee family coverage		NRSP is currently involved with Adamjee Insurance in designing a pilot project that will cover clients’ entire families in an HMI scheme. This product variant is also intended to be a cashless facility covering the entire family, with an expected premium of PRs 500–600 per annum. The sum insured will also be higher: up to PRs 25,000 per family member.
Daamen	June 2013	Daamen is currently in discussion with Adamjee Insurance to launch an HMI product. Premium is expected to be PRs 200 for hospitalization coverage for the entire loan tenure (12 months). The premium covers both borrower and spouse for hospitalization expenses up to PRs 25,000. Reproductive services such as hospitalized normal deliveries and caesarians not covered.

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