

Quantitative Evaluation of the Labor Intensive Works Project: Baseline Analysis

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Abstract

Despite decades of development efforts in rural areas of Yemen, there is little systematic reporting on conditions in these areas. In this report, which draws on a new survey that we conducted as a baseline for the evaluation of the Labor Intensive Works Project (LIP), we examine four issues that are important for both understanding these areas and designing effective development programs: (1) economic activity, (2) economic well-being, (3) pro-poor project targeting, and (4) community infrastructure. We also provide an assessment of the effectiveness of the LIP's cash-for-work approach. We intend for this report to be a tool for future projects aiming to improve rural livelihoods in Yemen.

Summary

With nearly 70% of the population living in rural areas, there is a particular interest within the development community today to understand the needs of rural Yemenis and how best to target new resources to these areas. However, despite this interest in expanding development efforts in rural areas, there is little systematic data on either conditions in rural Yemen or how development agents might target development resources within rural areas.

In this report we exploit a baseline survey of the World Bank supported Labor Intensive Works Project (LIP) to study conditions in rural areas.¹ Though the LIP program specifically targets the poorest communities in the poorest rural regions, and thus is not representative of either all of Yemen or all of rural Yemen, these poor communities are likely to be those of most interest to external donors. Thus, we hope that the analysis here will provide a valuable policy tool.

A secondary goal of this study is to provide some preliminary findings for older LIP projects. Though the data here will serve as a baseline for a proper difference-in-difference impact evaluation with randomized treatment assignment, we also included some older LIP projects in the sample. While these data do not allow an evaluation of these older projects, it does provide a tool for studying the plausible impact of these older projects.

The survey's main findings are summarized below.

Economic Activity

Underemployment, and not necessarily unemployment, is the most meaningful problem faced by rural Yemenis. The LIP survey employed a novel instrument for measuring labor force participation, and despite being brief and simple to implement it seems to have provided broadly similar results to that from other more expansive government surveys. We find results broadly consistent with governmental household surveys - i.e. unemployment is relatively low, but underemployment is very high. Both our approach, and that of gov-

¹The LIP is now supported by several donors including the European Commission and the Department for International Development of the United Kingdom.

ernmental surveys, seems to significantly understate female labor force participation.

Despite high wages, underemployment leads to low total earned income. Wages in Yemen are high relative to other developing country. Despite this, or perhaps because of it, underemployment leads to very low total earned income. While older men earn more than younger men - which reflects lower underemployment rather than a differential in wages - younger women make significantly more than older women.

In-kind transfers make up a very large component of the total compensation for labor. Compensation for qat, food, and cigarettes often accounted for more than 50% of an individual's cash wage. The relative importance of these non-pecuniary transfers is higher among young men.

Location and type of work have little bearing on an individual's wage - they only impact total income through days worked. While men with permanent positions have larger annual incomes, this is a result of more days worked and not higher salaries. Similarly the advantage of work in urban areas seems to be the opportunity for finding more work days. Interestingly, while skilled workers make somewhat more than unskilled workers, men who work both skilled and unskilled positions are paid the highest.

Economic Well-Being

Rising levels of debt, not short-term issues like food shortages, are likely the main economic challenge that rural Yemeni households face. Food shortages, while common, have only a limited impact on caloric intake as families are able to borrow to meet their needs. However, while these food shortages have only a weak direct impact, they indirectly increase the debt burden of rural households so that the size of this debt is very large for many. While most of this debt is interest-free, there is little indication that people are paying it off but rather than it is increasing over time. The significance of this indebtedness is supported by the significant level of families pawning or selling important productive agriculture assets.

Targeting

Effective program targeting at the village-level is possible, within-village targeting is more difficult. The data-driven LIP approach was effective in identifying and targeting poor villages and communities. However, within-village targeting is likely to be more difficult to achieve; in particular, setting a low wage does not seem to be a useful tool for targeting resources to the poorest communities members.

Community Infrastructure

Water is a large component of total household expenditures. Expenditures are large - at an average of 10% of total household earned income - though expenditures are higher for households using within-household sources. And while it is unsurprising that there is a dramatic gap in the cost of getting water between dry and rainy seasons - reflecting the scarcity of water - it is interesting that transport costs are the dominant factor in determining the cost of water. Indeed, these transport costs are even more pronounced during dry seasons reflecting the difficulty of accessing water sources.

Agricultural land is heavily used, and this rate is even higher among terraces - though these account for less than one-third of all agricultural lands. The vast majority of privately held agricultural land is in use - with nearly 80% of all lands being used - suggesting that a shortage of cultivable land is a reason for urban migration. Despite their focus from the international community, terraces make up less than one-third of all lands and are only marginally more cultivated than other lands. Though harmful trees and bushes do not appear to be a widespread problem, they have impacted some communities quite significantly.

Transportation costs are very high in rural areas though this only has a small impact on the cost of key foodstuffs. The average cost of a one-way trip to the capital is more than 20% of a day laborer's expected daily wage - i.e. very high. Thus, there is a clear potential benefit from road construction projects. Despite these high costs, the markup on foodstuffs is relatively moderate, though still meaningful; interesting the markup seems to be fair in that is a function of transport costs and not the value of the item.

Participation in LIP

Most households participated in the project, however participation was unequal. That three-fourths of households participated in the project is certainly a success. However, participation was very unequal. Few women were able to participate and there was a large amount of inequality in the number of days that individuals were able to work in the project; the upper 20% of the beneficiaries received nearly 50% of the total number of paid days. Interestingly, only a small share of beneficiaries had returned to work on the project and they reported that they did not do it for the money but rather to help their families, their communities, and help improve their own land.

Ex-Post Assessment

LIP project selection and implementation seems to have been successful overall. Though LIP did not achieve the goal of providing demand-driven projects entirely, as only one-half of respondents felt that villagers had been incorporated into project selection, nearly all respondents felt that the project selected was important for their community. And though some individuals were dissatisfied with specific aspects of the project - especially certain

aspects of the cash stipend - beneficiaries seemed to be satisfied with the projects overall. Interestingly, the vast majority of beneficiaries reported spending their earnings on just two things: food and on repaying debt.

The ex-post assessment shows little medium-term impact for LIP. Though not a central goal of the project, it was hoped that the LIP would have some medium- and long-term impact on the beneficiaries lives. We find no impact on either consumption or investment with the exception of a possible positive impact on the purchase of mobile phones.

Introduction and Methodology

The Labor Intensive Works Project (LIP) is a cash-for-work program that provides paid employment opportunities in local infrastructure/development projects. Supported by the World Bank as a response to the 2007-2008 food crisis, the LIP targets poor communities in rural Yemen and then pays community members to construct some type of public works program.¹ This program had two major phases, the first of which began in the fall of 2008 and the second that will begin in the Spring of 2010.

This program differs significantly from other Social Fund for Development (SFD) programs in that it pays program beneficiaries a wage to participate in the project. Previous programs were implemented through national contractors, local contractors, or a collaboration with the community in which the community would provide free labor for the project.²

The LIP differs in a second dimension, which is the of particular importance for the current study. In particular, as the SFD hopes to estimate the true impact of the LIP program at both the individual and community level, the beneficiary communities of the second wave were selected randomly. This randomization, combined with baseline and follow-up data from both the randomly assigned treatment communities as well as a pool of controls, will allow for the first proper impact evaluation conducted (to our knowledge) in Yemen. The data used in this analysis are from the baseline survey for this impact evaluation; the follow-

¹The LIP is now supported by several donors including the European Council and the Department for International Development of the United Kingdom.

²Previous SFD programs employed one of three approaches:

1. National-level bidding: an open competitive bidding process where contractors from throughout the country would submit bids for the project. Most often used for construction of education facilities and health facilities
2. Community-level bidding: only contractors from communities neighboring the project were allowed to submit bids. Most commonly used for water harvesting and rural road projects.
3. Community contribution: the SFD would pay for project materials not available locally and the community would provide the labor and necessary local materials for the project. This approach has been used more in recent years for private/small group infrastructure projects like rooftop water harvesting units.

up survey will be conducted in the late spring of 2011.

This study has two central goals. The first is to provide a snapshot of conditions in rural Yemen during the summer of 2010. This is the focus of Chapters 2, 3, and 4 where we examine the economic activity, economic well-being, and community infrastructure in LIP communities.

The second is to introduce the LIP project and study its effectiveness using the available data. This is the focus of Chapters 5, 6, and 7 that study the effectiveness of LIP targeting and then use data from the first wave of LIP to study participation in LIP as well as the potential impact of LIP. Importantly, Chapter 7 - which considers the potential impact of LIP - relies on the second wave p

In this chapter we introduce the LIP project and this survey in three sections. The first section provides a general overview of the LIP. The second discusses the evaluation of the LIP second phase; the data used in the analysis presented here are the baseline for this randomized evaluation. A third section discusses an ex-post assessment, that compares 30 completed projects from the first wave of LIP to the baseline ‘pipeline’ projects from the second wave. The fourth section discusses that data used for this analysis, which are also the data that will be used for the final impact evaluation.

1.1 LIP Overview

Transferring development resources to poor, rural Yemeni communities is a difficult endeavor. The mountainous or desert terrain makes the provision of schools, hospitals, electrification and other government provided services expensive and inefficient. And efforts to transfer cash directly, such as the Social Welfare Fund, are reported to have faced significant difficulty in getting resources to the targeted individuals.

The LIP is a new approach developed by the SFD in collaboration with the World Bank to transfer resources to the most marginalized communities and individuals throughout rural Yemen. While the program is more limited, as it only works with a small fraction of the total Yemeni poor rural population, it transfers a significant amount of cash and resources to rural communities in a potentially effective and transparent fashion. And as the program can potentially be implemented relatively quickly, it may become a useful tool for transferring resources either proactively or as a response to crisis.

LIP aims to address the two most significant challenges facing rural areas in Yemen: infrastructural weaknesses and intertemporal poverty. The infrastructural weaknesses (e.g.

land erosion, lack of functional road) hinder the ability of these communities to develop and recent ecological and economic events (e.g. food crisis water shortage) have forced impoverished households to take on increasing amounts of debt to maintain basic levels of subsistence.

In order to simultaneously address both these issues, the LIP pays local people to participate in the construction of needed local development projects. The projects are selected by the community in collaboration with the SFD and all members of the community are allowed to participate. While the SFD selects which communities will benefit from these projects, household participation is only restricted by the willingness of individuals to work at the wage set by the SFD. This wage is designed to be fair, but below the market wages in neighboring areas so that only the truly needy within the community will choose to work in the project.

The first phase of the LIP began in the fall of 2008 with projects in a total of 99 communities. Twelve of these communities were studied as part of a qualitative study that focused on understanding the perceived impact of the cash stipend, the effectiveness of the within-community targeting and the difficulties that were encountered in the field. This evaluation served as a tool for helping the LIP better understand and improve their program and as a basis for the construction of this quantitative evaluation.

The second phase, whose communities are the focus of this study, began implementation in June of 2010. A total of approximately 100 communities received interventions as part of this second wave.

1.2 Evaluation of the Second Phase

The evaluation of the second phase of the LIP uses the most direct and transparent way possible: difference-in-difference using randomly assigned treatment. As the program incorporates both individual interventions (i.e. individual-level cash transfers) and community interventions (i.e. community development projects), the evaluation will seek to evaluate the impact of both types of interventions.

Community Randomization

Randomization was done at the community level. In order to allow for community-level randomization, the LIP project officers identified a sample of potential intervention communities that was double what they would be able to fund. The list of potential intervention communities was then provided to the staff of Monitoring and Evaluation Unit who were

empowered to select which villages would receive treatment during this second phase of the program.

Treatment assignment proceeded in several steps. First, communities were clustered by both governorate and by key community characteristics. The community characteristics that were used for this clustering were the two variables that the LIP project officers identified as the most important for understanding the difficulty in project implementation and success: community topology and the main source of income

Second, within each cluster, pairs of community were selected to participate in the evaluation. One of this pair was randomly assigned to receive the LIP intervention and the other to be a control community (i.e. not receive a project for at least one year).

A total of 60 community pairs, i.e. 60 treatment communities and 60 control communities, are included in the evaluation. As nearly 200 communities were identified for potential intervention by the LIP project officers, not all communities would be part of the evaluation. In order to identify communities that would participate in the evaluation, an algorithm was used to create pairs of communities using 80% of the sample within each of the governorates. Among the 71 pairs that were selected in this way, 11 were randomly assigned by to reserve pairs that would only become part of the evaluation if some complication happens in one of the 60 pairs selected for participation.

Baseline and Follow-up: Difference-in-difference

The difference-in-difference approach requires that we have data before and after the program so that we can study the impact of treatment on the change in the units that are treated. Surveys will therefore be carried out in both the treatment and control communities as follows:

1. Immediately before the projects begin in the ‘treatment communities (5/2010)
2. Twelve months after the projects begin (5/2011)

A major concern for the control communities is that their cooperation in this process can only be guaranteed if they can be promised a project within a relatively narrow window of time. Thus, while we might want to schedule the third survey 2-3 years after the project begins, this may not be a feasible option.

1.3 Ex-Post Assessment

While the central goal of this survey was to serve as a baseline for the impact evaluation of the second phase projects, a secondary goal is to use these data to quantify the potential impact of the first wave projects. Thus, 30 communities that had received LIP projects during the first wave of LIP were included in the survey.

The hope was that we could use the ex-post survey in these communities to study the potential impact of the LIP on medium-term consumption and investment outcomes. In particular, we were asked to use the standard SFD approach of comparing these completed projects to the second wave ‘pipeline’ projects to assess the impact of the first wave projects.

However, as there is no appropriate control group for these first wave projects, and there is not even any baseline data for these completed projects, the approach used here should not be called an ‘evaluation’. Instead, we refer to our study of these first wave projects as an assessment.

In comparing these ex-post projects to the pipeline, we use a slightly more sophisticated approach that has been used previously by the SFD. A significant concern for us is that the ex-post villages are different than those of the pipeline villages along both observable and unobservable dimensions. While we cannot ‘correct’ for unobservable differences, we can control for observable differences. To do this, we use the inverse probability weighting (IPW) approach of [Wooldridge \(2002\)](#) that allows us to adjust for observable differences between the pipeline and ex-post communities. While this approach does not fix our problem - i.e. that we have control group - it is the best we can do to help mitigate this problem.

1.4 LIP Baseline Survey

The LIP baseline survey contains data on a total of 150 LIP communities which include a total of 194 villages. 60 of these communities are the randomly assigned treatment communities, 60 are their control pair, and the final 30 communities are those from the first wave of LIP. While these villages do not provide a random sample of rural Yemen, or even a random sample of poor communities of rural Yemen, we believe that it will be possible to extrapolate many of the lessons learned here to other parts of rural Yemen. Indeed, the geographical coverage of the LIP data is quite extensive as demonstrated in Figure ??.

Household Sampling

A total of 12 households will be surveyed within each of the 120 communities included in the evaluation. As all households qualify for participation in the project, as long as they

are willing to work at the wage specified by the project, the 12 households will be randomly sample from the entire community with each household receiving equal weight.

LIP project officers created a complete list of households within the community as part of the feasibility assessment. As both treatment and control communities received the same feasibility assessment, these household lists are available for all communities that are part of the evaluation. Thus, they provide a natural tool for sampling households within the communities.

The household sampling proceeded as follows:

1. Two random households, one in the first half of the household list - according to the household number assigned to each household by the LIP and the second in the second half of the community, will be selected.
2. Five additional households from each the first and second half of the household list will be selected by selecting each third household in increasing order beginning from the two households selected in (1) (again based on the assigned household number).

Survey Components

The LIP baseline survey has two key components. The first component of the survey was a household survey. This survey included a variety of standard components: a household roster, dwelling characteristics, and a list of agricultural assets (both animals and land). However, it also included several other components. First, it included a detailed anthropometric section focusing on the height and weights of children which are clear ways of measuring the potential impact of the project on food security. Second, it included the food consumption module developed in in [Egel and Yeslam \(2010\)](#) for calculating caloric consumption. Third, it included detailed modules to assess local water and road infrastructure. Fourth, it included a set of questions focused at the first wave ex-post projects that assess participation in and satisfaction with the LIP project.³

The second component was a village questionnaire. In addition to standard questions on demographics and aggregated economic conditions, the survey contains detailed modules on roads and water infrastructure, recall questions about the benefit of the project (for the surveyed first wave villages), and a module that focuses on understanding the type of development projects that have been provided to these communities by other development actors.⁴

³This survey also contained a unique module on dispute adjudication - that module is not used in this analysis.

⁴This last module is intended as a control for the difference-in-difference estimation as we want to ‘control’

for the potential contaminating effect of other development donors.

Economic Activity

The goal of this chapter is two-fold. First, this chapter aims to provide a general overview of labor market conditions in rural Yemen; there are no other studies to our knowledge that provide a comprehensive background on the labor market activity of households in these areas. Second, it provides an understanding of the baseline economic conditions in the LIP areas that will be essential to the overall assessment of the LIP. In particular, as households are likely to forego other income generating opportunities to participate in the program in many cases, it is important to understand household labor supply before the project to avoid overstating the impact of the project.

This chapter examines four aspects of these households' economic activity which are essential to understanding the LIP. First, we provide a general overview of employment and unemployment within these communities to demonstrate the demand for the type of employment opportunity offered by the LIP. The second and third sections, which are important to understanding the implications of the LIP wage setting process, discuss first wages and income and then the importance of the non-pecuniary component of labor supply. A fourth section describes the location and seasonality of current labor supply; this final section is of particular importance in understanding the implications of implicitly encouraging community members to return to their communities to work.

2.1 Labor Supply

Adult men in rural areas are highly underemployed. Figures 2.1 and 2.2 report the total labor force activity during the past year and the past month, respectively, of residents of the LIP program areas. These figures report the responses to the question: "How many days did the person working during the past year/month?". Importantly, though the question was asked in general, respondents do not seem to have included work inside the home; however, men do seem to have included labor on their own land.

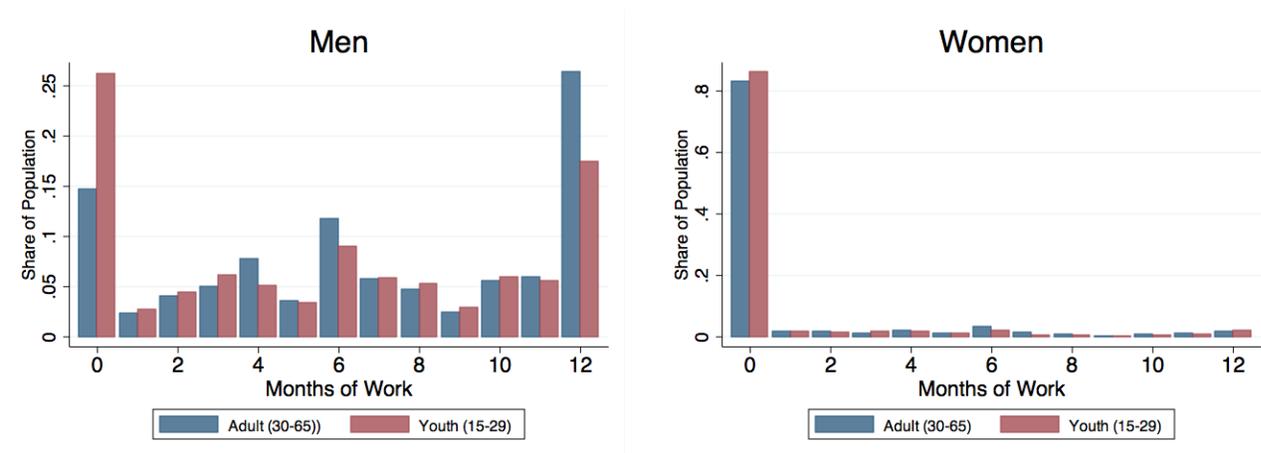
The left-panel of both figures demonstrate the very high degree of underemployment among adult men. Figure 2.1 is perhaps the most dramatic as it demonstrates that (1) over 15% of men reported zero days of outside work the past year, (2) one-half of all men reported working six months of the year or less, and (3) just over 20% of adult men were fully employed in that they worked every day of the year. As these responses seem to include work on one's own land - more than one-third of adult men reported self-employment in agriculture - this level of underemployment is particularly stark. Employment during the past month shows a similar result.

Though a significant number of adult women do participate in the formal economy, reported participation is lower than similar estimates. This difference is likely an artifact of the LIP survey instrument. Figures 2.1 and 2.2 indicate that nearly 20% of adult women are employed at least part-time. While this may seem high, as there is a common perception that rural women are not active labor market participants, Egel and Yeslam (2010) find that 60% of adult females reported earning an income of some type. This difference is likely because many traditional female income generating activities (e.g. handicrafts, selling produce) are not considered employment. This result suggests that asking woman about both their employment status as well as whether they earn an income is necessary to understand the dynamics of women's labor supply.

Unemployment among young men, while high, is not that severe in relative terms; both old and young women have similar labor force participation. The right-panels of Figures 2.1 and 2.2 examine the labor supply of young men and women - i.e. ages 15-29 - during the past year and past month, respectively.¹ Two key results emerge from these figures. The first is that youth unemployment - while substantial at over 40% - is only a bit higher than that of older men in their communities. This suggests that youth rural unemployment and underemployment is not as severe as previously suggested. Second, young women's labor force participation rates are almost identical to that of adults.

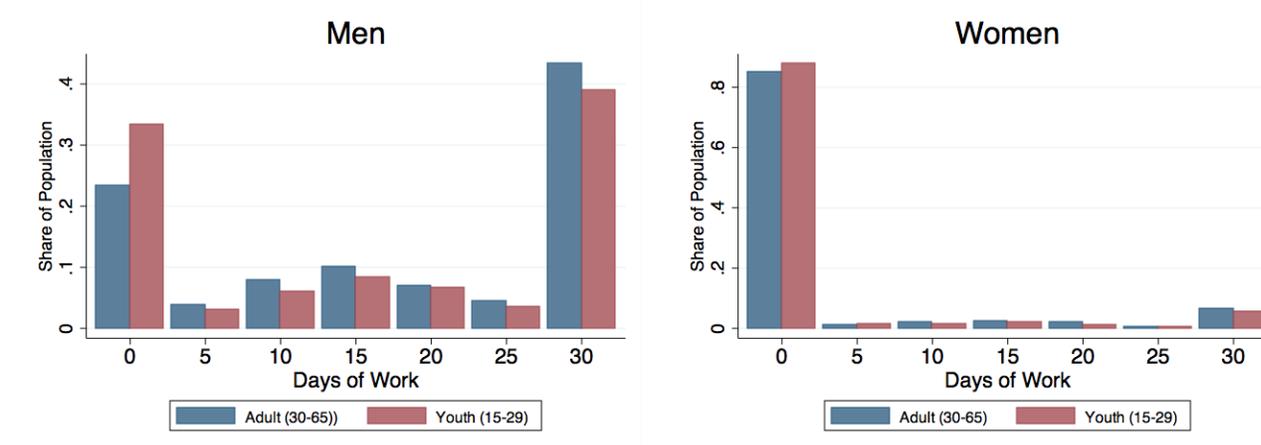
¹Note that all youth who are currently enrolled in school were dropped in calculating these labor force participation rates.

Figure 2.1: Total Annual Labor Supply



Note: Days of work are aggregated into one month bins - i.e. 30 days per bin.

Figure 2.2: Labor Supply during Past Month



Note: Days of work are aggregated into bins of 5 days each.

2.2 Income and Wages

Estimating income and wages in Yemen is notoriously difficult. Indeed, many Yemeni scholars believe that even the HBS - which has a very detailed income and wage module - is unlikely to accurately report either wages or aggregate household income. However, as increasing employment income - and in particular aggregate annual employment income - is a central goal of the program, a clear measure of both wages and income is imperative in evaluating LIP.

In this section we examine the effectiveness of LIP's simple employment module in capturing wages and total income. Thus, in addition to documenting what this module tells

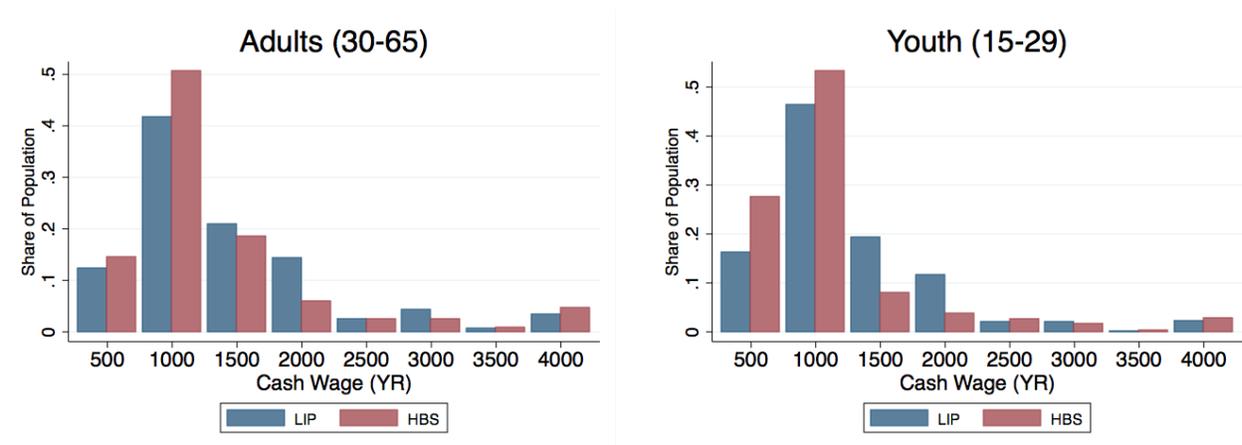
us about conditions in LIP areas, we also compare the results from our employment module to comparable data in the HBS.

Wages in rural Yemen are relatively high, even in rural areas; there seems to be limited wage inequality. Two important characteristics of labor in rural Yemen are demonstrated in Figure 2.3. First, wages in Yemen are relatively high, as compared to other developing countries. While unskilled rural laborers in India are making just over \$1 a day, nearly 70% of adult men make more than \$5 (1000 YR) a day and 40% of adult men making more than \$7.50 (1500 YR) a day. Thus, Yemeni wages - though low relative to a developed country - are quite high when compared to other developing countries. Second, the distribution of wages is relatively tight. This reflects the fact that few jobs in these areas require significant human capital (which we return to in Section 2.4 below).

LIP employment module returns remarkably reliable estimates of daily wages among adult males. The LIP employment module asks a very simple question - i.e. "What is your average daily wage/income?" - for each job that the individual reported working. The HBS, on the other hand, has a much richer set of questions about an individual's wage. In particular, it allows individuals to report different frequencies of payment (e.g. daily, weekly, monthly) for employment during the month before the survey. Thus, the LIP approach is an estimate of an individual's spot wage - i.e. the wage that they could reasonably hope to achieve - while the HBS allows calculation of an individual's average daily wage using all types of employment. The key question that arises then is: how reliable are the wage estimates from the LIP approach?

Figure 2.3 plots the wage distribution of the LIP sample as well as all rural men included in the HBS sample. Two key results emerge from this figure. First, the LIP approach for estimating the wages among adults seems to be roughly consistent with that achieved by the more sophisticated HBS module. Second, the LIP approach seems to be significantly less effective in estimating the wage of youth; in particular, the LIP approach seems to overestimate the daily wage of young people. This difference is not an issue, as will be discussed immediately below, as it reflects the fact that youth are much more likely to be underemployed.

Figure 2.3: Average Daily Wage in the HBS and LIP



Total earned income is low. In Table 2.1 we calculate total earned income for both a single month as well as the entire year disaggregated by gender and age. As the average household has one individual working and over six family members, the estimates of annual income in this figure - e.g. adult male makes \$1700 (340,000 YR) - imply that the average household is living on less than a dollar a day per person. While these earned incomes are bolstered by other sources of income, wage labor makes up the bulk of familial income.

Adults males make significantly more than younger men; there is a large gap in income between married and unmarried women. Table 2.1 also demonstrates that older men tend to make more income. While the difference in monthly incomes is insignificant, the difference in annual income is quite large which reflects the fact that men are more successful at securing long-term relationships with employers. This table also suggest that young women tend to make more than older women. This result is driven by the fact that unmarried working daughters tend to make nearly three times more than their married counterparts.

Previous surveys overstate total annual earned income. An important innovation in the LIP survey is a question that probes the number of days worked during the previous month and during the past year; these questions allow the researcher to estimate total income from labor for the month and for the year. Previous surveys, such as the HBS, only ask about an individual's daily wage and number of hours worked per week.

The implication of this difference is that it is impossible to accurately estimate total annual earned income using previous surveys as the number of work days must be assumed. The upward bias that this can introduce is demonstrated in Table 2.1; as the HBS and the

LIP return similar estimates of the average daily wage (see Figure 2.3), the difference in the estimates of total annual income is entirely a result of the necessary assumption about the number of days worked.

Table 2.1: Annual and Monthly Earned Income

			Annual Income (YR)		Monthly Income (YR)		N =
			Mean	SD	Mean	SD	
Male	Youth (15-29)	HBS	414,611	1,112,647	34,078	34,078	1831
		LIP	273,697	367,174	25,670	25,670	648
	Adult (30-65)	HBS	474,363	792,295	38,989	38,989	1799
		LIP	341,196	450,836	27,547	27,547	805
Female	Youth (15-29)	HBS	223,564	123,279	18,375	18,375	36
		LIP	182,007	603,257	12,288	12,288	72
	Adult (30-65)	HBS	175,320	93,166	14,410	14,410	31
		LIP	101,883	141,158	10,221	10,221	63

Note: HBS estimates of annual and monthly income assume 365 days worked in a year and 30 days worked in a month.

2.3 In-Kind Transfers

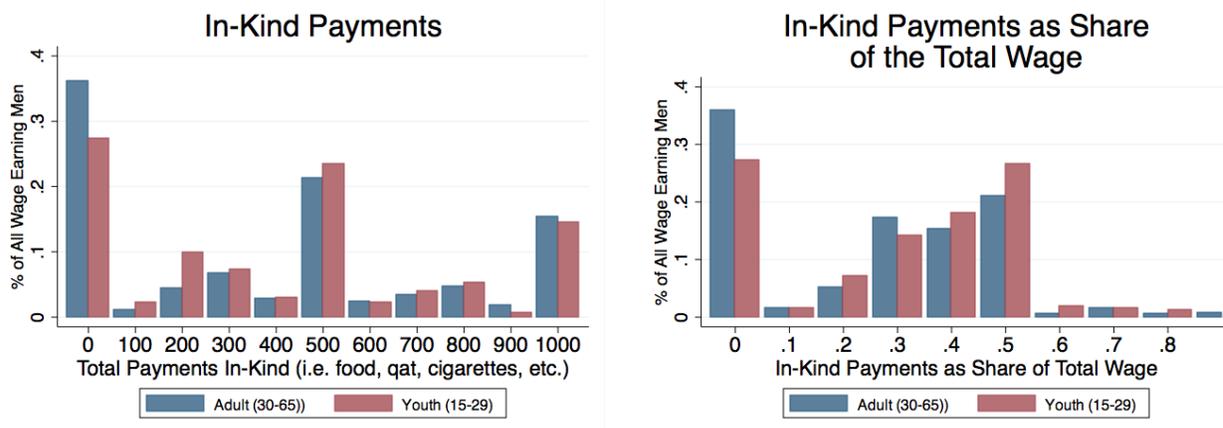
In-kind transfers make up a very large component of the total compensation for labor. Many laborers are given a variety of in-kind transfers as part of their work for an employer. These transfers typically include qat, cigarettes, food, and sometimes a place to sleep. Previous surveys have made little attempt to collect data on these in-kind transfers, though these transfers are very substantial.² Thus, we believe that our survey is the first to collect data on this non-pecuniary income.

In Figure 2.4 we report the in-kind transfers in two different ways. In the left-panel we report the distribution of the aggregate value of these transfers. More than 50% of working men, young and old alike, report in-kind transfers of at least 500 YR (\$2.50). This is likely to include the value of several meals (200-400 YR) as well as modest amount of qat (100-200 YR).

²It is not clear why other surveys have not asked for data on this as it is an important component of total compensation for rural labor - and we are certainly not the first to anticipate that these transfers might be substantial. As these in-kind transfers are non-pecuniary, it limits the 'development' of the transfer. However, this does not seem like a reason to ignore it.

The most dramatic result is in the right-panel of Figure 2.4 which reports the in-kind transfer as a share of the total daily wage (i.e. wage plus in-kind transfer). Indeed, more than one-quarter of the men reported in-kind transfers equivalent to their daily wage. And nearly 50% adult men reported that these in-kind transfers were more than half of their cash wage.

Figure 2.4: Average Daily Wage in the HBS and LIP



Young men receive larger in-kind transfers. A second result emerges from Figure 2.4: young men receive larger in-kind transfers than older men. As the *average value* of the in-kind transfers received by these youth is actually higher, this suggests one of two things: (1) There is a cultural difference between the younger and older men in their demand for qat or (2) They are more likely to be working in positions away from the home so that their employers are required to provide more services. We will return to this in the following section where we address the location and type of work.

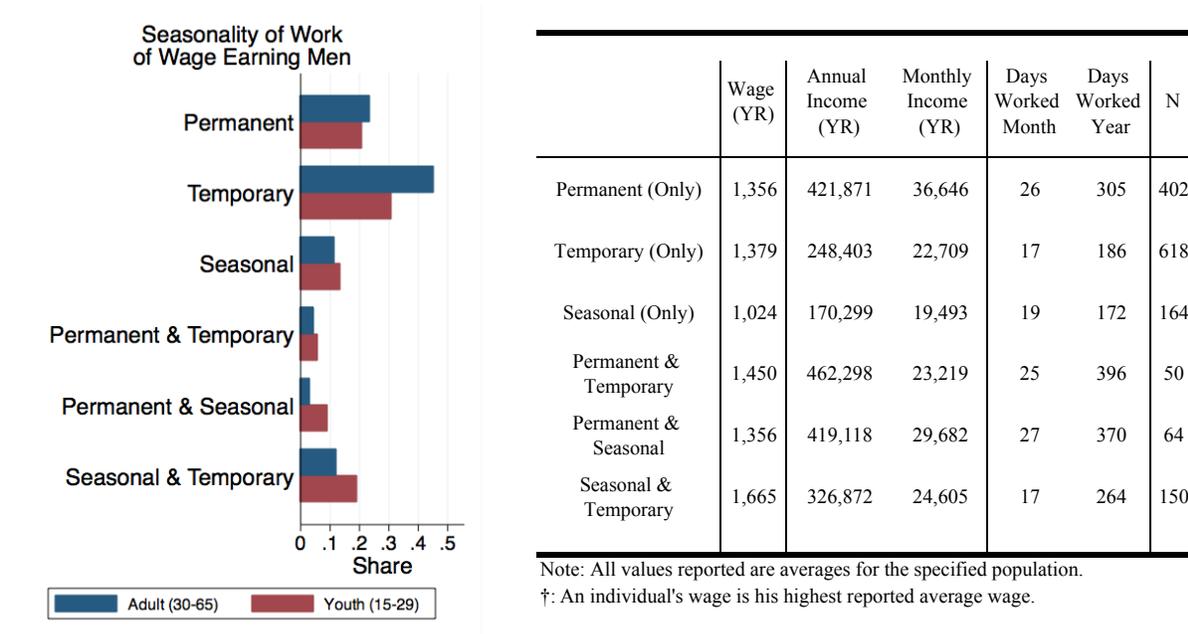
2.4 Type and Location of Work

Men with permanent positions have larger annual incomes, though this is a result of more days worked and not higher salaries; young men seem to have more employment flexibility. Rural Yemeni men are employed under a variety of different employment ‘contracts’. These include permanent (e.g. government work), temporary (e.g. day labor work), and seasonal (e.g. agricultural) contracts. In Figure 2.5 we examine the seasonality of labor across youth and adult men and the relationship between seasonality of work and the variety of labor market outcomes discussed throughout this section.

The left-panel of Figure 2.5 demonstrates the first two results. First, though 40 per-

cent of men reported only temporary positions, a significant portion (20 percent) reported permanent position; interestingly nearly 20 of men reported more than one type of contract. Second, young men are more significantly more likely to work more than one job; this fact does not seem to be driven by less youth working in permanent positions, they are only weakly less likely to be working in a permanent position.

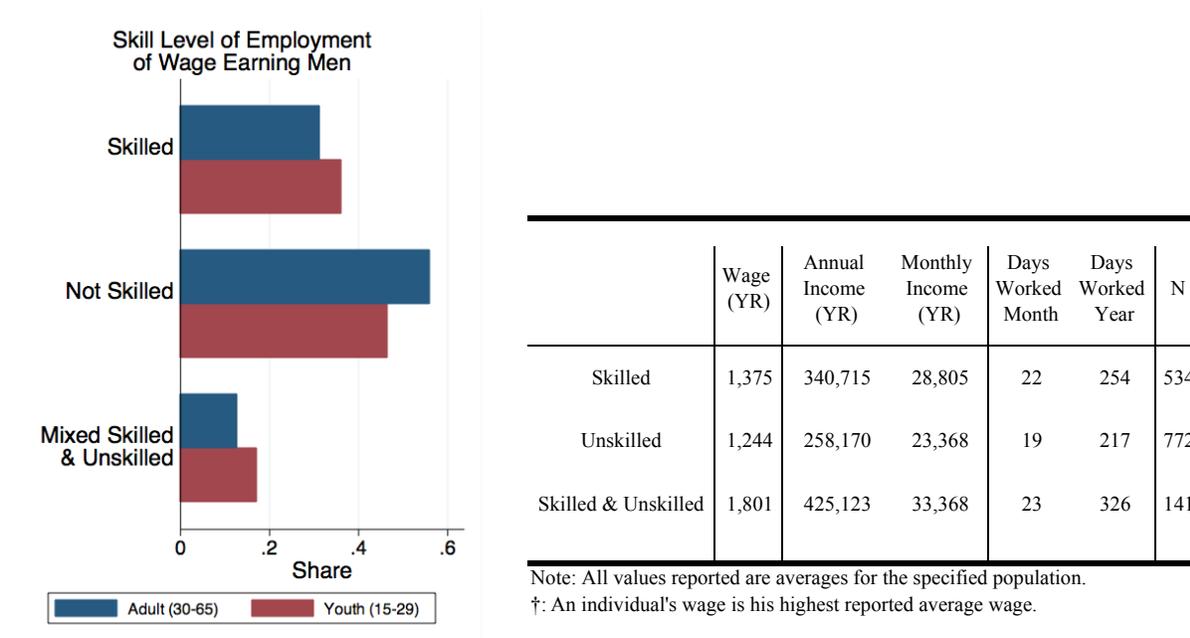
Figure 2.5: Employment Activity by Seasonality of Employment



Unsurprisingly, the type of employment contract has a strong impact on an individual's income - this is demonstrated by the difference between those with at least one permanent position in Figure 2.5. However, this result seems to be driven by a difference in the number of days worked rather than a difference in an individual's income. This clear result is the likely reason for the strong preference for stable work among Yemenis.

While skilled workers make somewhat more than unskilled workers, men who work both skilled and unskilled positions are paid the highest. Figure 2.6, which examines the skill level of male employment, shows that nearly half of men work in at least one skilled positions and that youth are more likely to have skilled positions. Surprisingly, skilled laborers earn only a modestly higher wage - the benefit of skilled labor seems to come from the increased reliability of employment. Interestingly, men who work both skilled and unskilled positions achieve both the highest wage, the most days worked, and the highest income. Importantly this does not simply reflect the fact that these men are working more than one job.

Figure 2.6: Employment Activity by Skill Level of Employment



Young men seem to have a preference for work within the village. The emigration of young men to the cities is a much discussed phenomenon. Thus, the result presented in the left-panel of Figure 2.7, which demonstrates that young men are significantly less likely to work in big cities - and instead to work in their own village, is certainly striking.

Jobs in cities are better paid, but there is little difference in the daily wage: the number of possible work days helps explain the preference for work in urban areas. That there is a gap between wages in urban and rural areas is unsurprising. However, this wage gap is much smaller than one would anticipate - the premium from working in a major city is only 20 percent, and work in a secondary city is actually less than that in the home village. Thus, the difference in daily wage *plus* the increased number of possible days of work seems to be what explains the reason for continued migration to urban areas.

Figure 2.7: Employment Activity by Location of Employment



	Wage (YR)	Annual Income (YR)	Monthly Income (YR)	Days Worked Month	Days Worked Year	N
Inside the Village	1,270	256,453	22,671	19	219	621
Rural Area Outside the Village	1,310	277,451	25,375	19	208	164
Major City Outside the Village	1,541	396,060	35,714	23	256	383
Secondary City Outside the Village	1,220	284,317	26,445	22	249	118
Inside Village & Rural Area Outside	1,364	338,789	22,097	21	310	53
Inside Village & Major City Outside	1,526	382,636	21,958	20	320	82
Inside Village & Secondary City Outside	1,210	392,389	27,829	29	360	19
Rural Area Outside & Major City Outside	1,740	461,040	23,600	22	311	10

Note: All values reported are averages for the specified population.
 †: An individual's wage is his highest reported average wage.

Economic Well-Being

The LIP was originally conceived as a response to increased food prices resulting from the food crisis of 2008. There was a belief that the impact of these food prices was particularly severe in rural areas and was inducing a variety of negative impacts including reduced consumption, the sale of productive assets, and increased levels of debt. [Egel and Yeslam \(2010\)](#) provide some evidence that these fears were well-founded.

Understanding the impact of the LIP on the economic well-being of the project beneficiaries is thus of clear importance. In this section we will provide the baseline analysis of three different types of metrics that will be used to study both the short-term and medium-term impact of this program. In particular, we will examine the impact of the project on (1) economic vulnerability, (2) investment, and (3) consumption.

Food shortages, while common, have only a limited nutritional impact: families are able to borrow to meet their needs. Access to food remains a significant concern among the development community in Yemen. And in recent months, given the continued economic challenges and conflicts, there has been significant concern that rural households will find it increasingly difficult to meet their basic nutritional needs.

It is unsurprising then that over 65% of the households reported suffering from food shortages during the previous 12 months during the summer of 2010 when this survey was conducted. However, what is surprising, is that only 20% of those suffering from a food shortage reported that this food shortage affected the total consumption of the household. Instead, purchasing food on credit from the store owner or borrowing from others was the major coping mechanism - with nearly 90% of the suffering households reporting that they used one of these mechanisms.

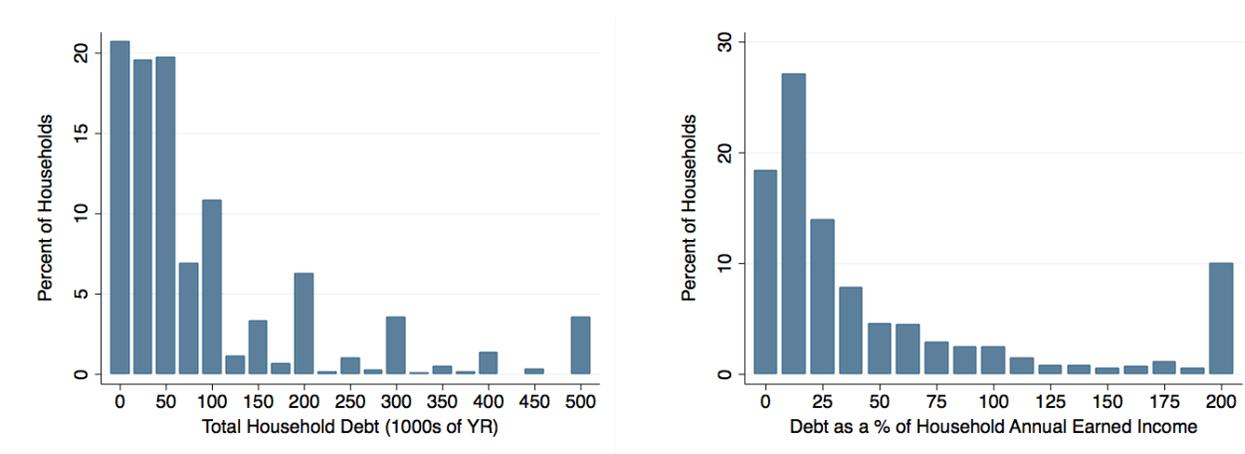
Most households have outstanding debt; for many the size of this debt is very large. Borrowing seems to be a key coping device for rural Yemenis - as demonstrated

above. While it is perhaps reassuring that rural credit markets seem to be functional, and that these credit markets insured against the negative impacts of the 2007-8 food crisis (see [Egel and Yeslam \(2010\)](#)), a key question remains. Namely, how severely indebted are these rural households?

Figure 3.1 examines the magnitude of the debt reported by LIP households. The left-panel reports the distribution of total household debt. While more than 20% of the sample reporting having no debt, forty percent of households reported debt of more than 50,000 YR (\$250) and nearly 11% of households reported a debt over YR200,000 (\$1,000).

The right-panel of this figure interprets the magnitude of this debt by reporting the ‘debt load’ of the households. The debt load, which is calculated here as debt as a share of household annual earned income, is one approach for measuring the severity of this debt - i.e. debt is only deleterious if it is difficult to pay back. While nearly 70% of households reported a relatively low debt load of less than 25%, many households had very high debt loads. Indeed, nearly 10% of households reported debt greater than 200% of their household annual earned income.

Figure 3.1: Debt Load among LIP Households



Notes:

- (1) Bars represent 50000 YR aggregates rounded up.
- (2) Debt is top-coded at 500000.

Notes:

- (1) Each bar represents 12.5 percentage points.
- (2) Relative debt is top-coded at 200%.

Most debt held by rural Yemenis is interest free; few owe money to the local leader. Though the magnitude of the debt held by rural Yemenis is significant, it is interesting that most of this money is owed to agents that are unlikely to charge interest. Indeed, while less than 1% of the households reporting owing money to a bank, the vast majority of households owed money to either the store keeper (68%) or other members of the communities (71%) - over 97% of households reported owing debt to one of these latter

groups.

Only 2% reported owing money to the local sheikh. This is a particularly interesting result is that it indicates that that tribal sheikhs do not play an important role in the financial affairs of the members of their communities.

Few households are actively paying off debt. More than 40% of households reported paying back at least some of their debt during the previous 12 months. While this is encouraging, and it is further encouraging that the average household actively paying off debt was able to pay back more than one-quarter of their debt, the majority of households reported making no effort to pay off their debt. As nearly 60% were unable to pay back any of their debt, and were instead likely to be borrowing even more, this indicates that the total debt load of rural Yemenis is increasing.¹

Significant numbers of households are pawning and selling important productive assets. Productive agricultural assets such as animals and land are key to the economic livelihoods of rural dwellers. Indeed, even though households rely on emigrant wage labor, agricultural production is still an important part of household income (see (Egel and Yeslam 2010)). Thus, the decision to sell or to pawn productive agricultural assets is a serious one and reflects relatively serious economic difficulties.

Overall, 11% of the households reporting pawning some type of asset and 15% reported selling some type of asset. This at first seems somewhat low as includes a variety of non-productive assets like gold and weapons. However, animals accounted for more than half of all asset sales and land accounted for more than half of all assets that were pawned.² Overall, 18% of households reported pawning or selling some type of productive agricultural asset.

¹It is also likely that those that did pay off their debt were borrowing at the same time. Thus, it is not clear that even these 40% were seeing a net decrease in outstanding debt. Unfortunately the survey module does not allow us to measure this.

²Pawning seems to serve as a substitute for the selling of land, as it is unlikely that the households will ever be able to recover land if they sell it.

Targeting

The data-driven LIP approach was effective in identifying and targeting poor villages and communities within subdistricts. A central goal of the LIP program was to provide financial resources to the poorest rural communities as these were expected to be most heavily impacted by the food crisis of 2008-2009. In order to identify these communities, the LIP used a novel approach based on existing governmental data. In particular, they used the 2004 Population Census in an effort to identify poor districts, poor subdistricts, and finally poor communities. These communities were then visited to verify that they had sufficient local capacity to support the LIP program.¹

We evaluate the LIP targeting in two different ways. The first approach for evaluating the effectiveness of this targeting is by comparing several key measures of village poverty for the LIP sample to those of the the subdistricts, districts, and governorates in which the LIP sample is located. Table 4.1 reports the summary statistics for nine key variables.

Two key results emerge from this table. First, the villages included in the LIP sample are poorer than other villages in their subdistrict, districts, and governorates along every dimension (note that enrollment goes the opposite direction of the other variables). Second, the selected sub-districts seem to be slightly wealthier, on average, than the districts that they are drawn from.

¹A second recent SFD program, the Rainfed Agricultural and Livestock Program, also used a targeting approach. However, they used a more ‘word of mouth’ data driven approach using governorates and districts that had been pre-identified. [Egel and Yeslam \(2010\)](#) provide more details and the targeting effectiveness of this program.

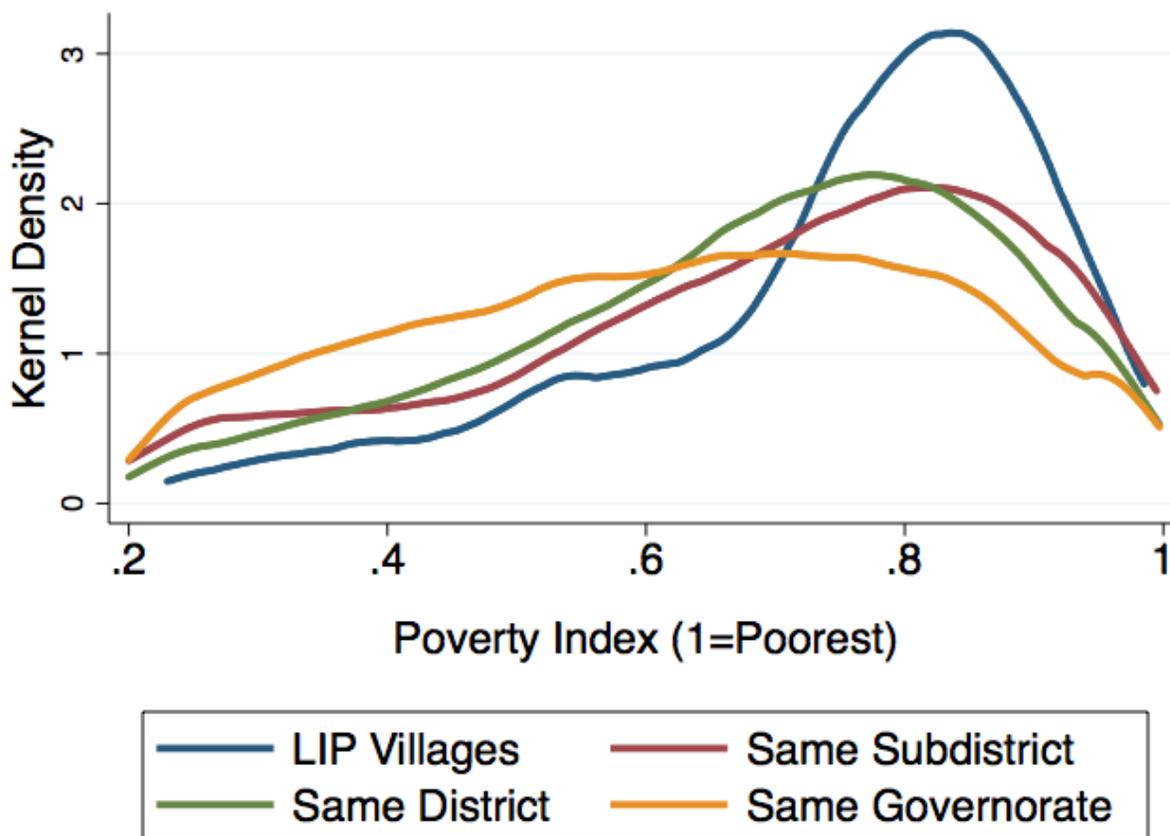
Table 4.1: Key Indicators among LIP Sample and Surrounding Areas

	LIP Sample		Same Subdistrict		Same District		Same Governorate	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
% of Homes using Wood, Coal, or Kerosene for Cooking	64	40	47	45	52	42	40	42
% of Homes without Sanitation	90	23	82	32	86	26	80	31
% of Households without Water from a Pipe	95	18	85	34	87	30	78	38
% of Households without Electricity for Lighting	90	26	78	39	82	34	69	42
% of Adult Males Illiterate	51	22	46	26	47	24	44	25
% of Adult Females Illiterate	89	15	87	17	87	16	84	17
% of Boys Enrolled in School	56	27	61	30	65	28	66	28
% of Girls Enrolled in School	33	28	35	30	38	29	40	30
% of Households Affected by Poverty	86	21	76	28	78	24	70	26
N =	194	194	3,564	3,564	11,380	11,380	33,365	33,365

The second approach for evaluating targeting effectiveness focuses on understanding the distribution of poverty rates in these villages, as compared to the first approach which compared averages. Figure 4.1 plots the distribution of a poverty index that was constructed as the average of the nine variables considered in Table 4.1.² In this figure it is clear that the LIP villages are mostly in the upper tail of the poverty distribution. However, as there is significant mass in the lower tail of the poverty distribution (i.e. poverty index less than 0.5), this indicates that some wealthier communities were also included.

²The boy and girl enrollment rates were adjusted to be the percent of children not enrolled in school.

Figure 4.1: Key Indicators among LIP Sample and Surrounding Areas



Program wages are unlikely to be an effective tool in achieving within village targeting. One of the goals of the LIP program is to limit the beneficiaries to the ‘neediest’ members of the community. However, rather than attempting to identify these individuals, the program instead sets a relatively low wage for the project work; the assumption is that community members with outside opportunities will choose not to participate in the program.

In practice, the wage is unlikely to be an effective tool for targeting. The complication is that community members demand a high wage for participating in the project because the work is hard - i.e. most first wave LIP projects report wages of approximately 1500 YR. However, as demonstrated in Figure 2.3, the vast majority of households make less than or equal to 1500 YR. And as the LIP offers guaranteed work for a specified duration of time, we would expect many individuals returning from outside the community to work on the project (we explore this in more detail in Chapter 7).

This has two implications. First, the expectation is that the vast majority of individuals in the community will want to participate. This is perhaps not a significant problem as all

these individuals are indeed poor, but it will be difficult to achieve any meaningful within community targeting. Second, and almost certainly more important, it is possible that the LIP may actually disrupt other local economic activity as individuals select to participate in the program over their standard place of employment. This would run contrary to the long-term development goals of the LIP and the SFD more broadly.

Community Infrastructure

5.1 Water

Water is a large component of total household expenditures; expenditures are higher for households using within-household sources. Despite the focus of the international media on the shortages of water in rural Yemen, there are studies - to our knowledge - that study the potential cost of water induced by that scarcity. As improving access to water sources is one of the LIP project-specific goals, a water module was included to estimate total household expenditures on water. Figure 5.1 reports the estimated total expenditures during the previous month.

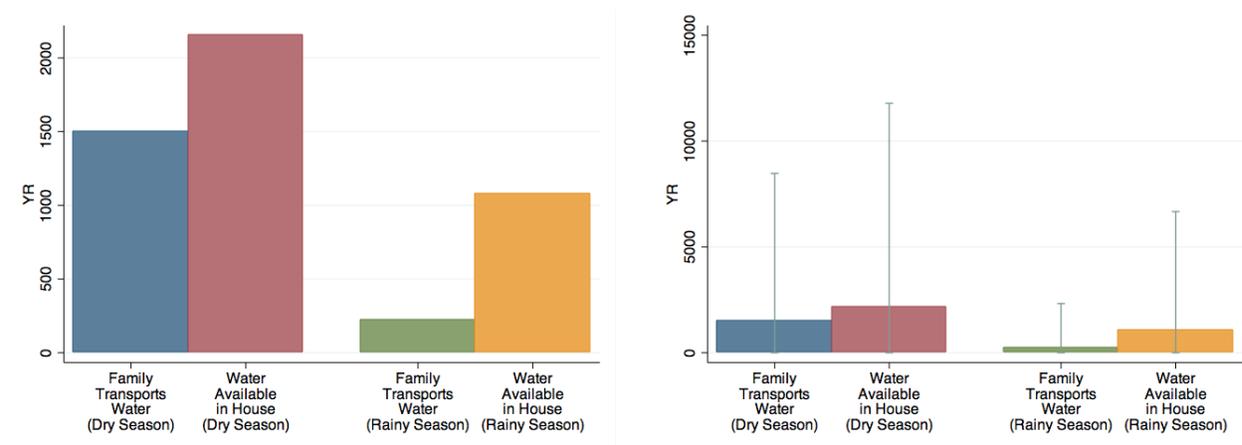
Three key results emerge from this figure. First, total expenditures on water are very substantial. Indeed, the estimates from Figure 5.1 imply that water accounts 10% of total earned income during the dry season.¹ And the very high variance in the cost of water reported in right-panel demonstrate that the cost of water may be ‘beggaring’ among some households.

Second, households with water inside the household pay more for water. This is unsurprising as the vast majority of households with water inside the home rely on either taps that have user fees or by purchasing from a waterseller’s truck. Third, the gap between the households transporting water and using water within the home is dramatically larger during the rainy season. This reflects the fact that the cost of owning a tap and transporting water by truck responds to increased access to water only weakly.²

¹The average adult male makes less than 30,000 YR during a month (see Table 2.1).

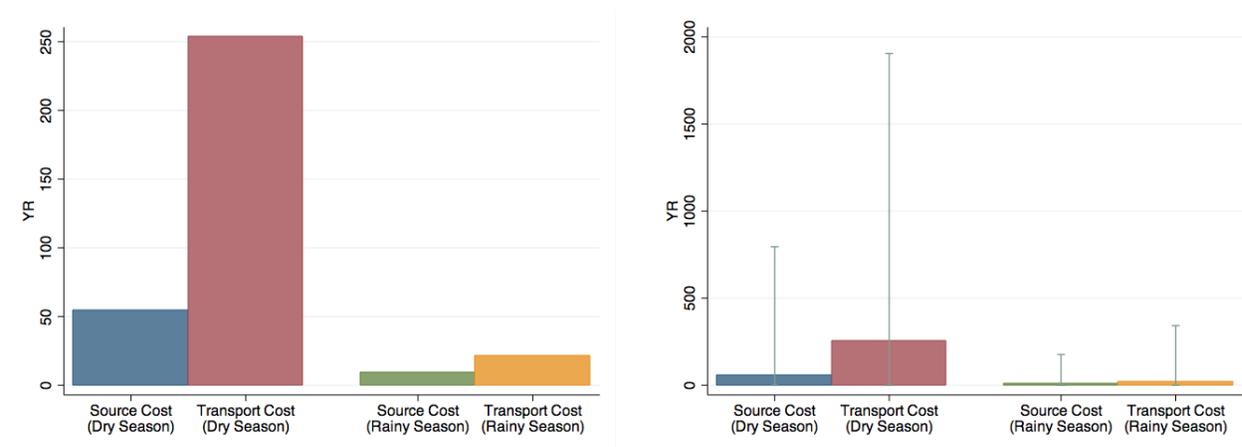
²Note: This gap could possibly be used to estimate the shadow value of rural women’s time as the survey contains the amount of time spent getting water.

Figure 5.1: Total Cost of Water for One Month



There is a dramatic gap in the cost of getting water between dry and rainy seasons; transport costs are the dominant factor in determining the cost of water. Above we examined water's aggregate cost to the household. While the high time cost of getting water in these areas is relatively well known - the average household that fetches water spends nearly 100 minutes getting water in the dry season and just under half that time in the rainy season - there is little available data on the financial cost of a trip. Thus, in Figure 5.2 we examine the cost of a single trip to the local water source.

Figure 5.2: Cost of One Trip to Get Water



Two interesting results emerge from this figure. First, the transport are by far the dominant cost of water access. Further, as the average household makes an average of 20 trips a week to get water, it is clear that transport costs dominate all other costs of accessing water. Note that this is only the *pecuniary* cost and does not assign any value to the time spent collecting water. This is strong evidence that improvements in transportation

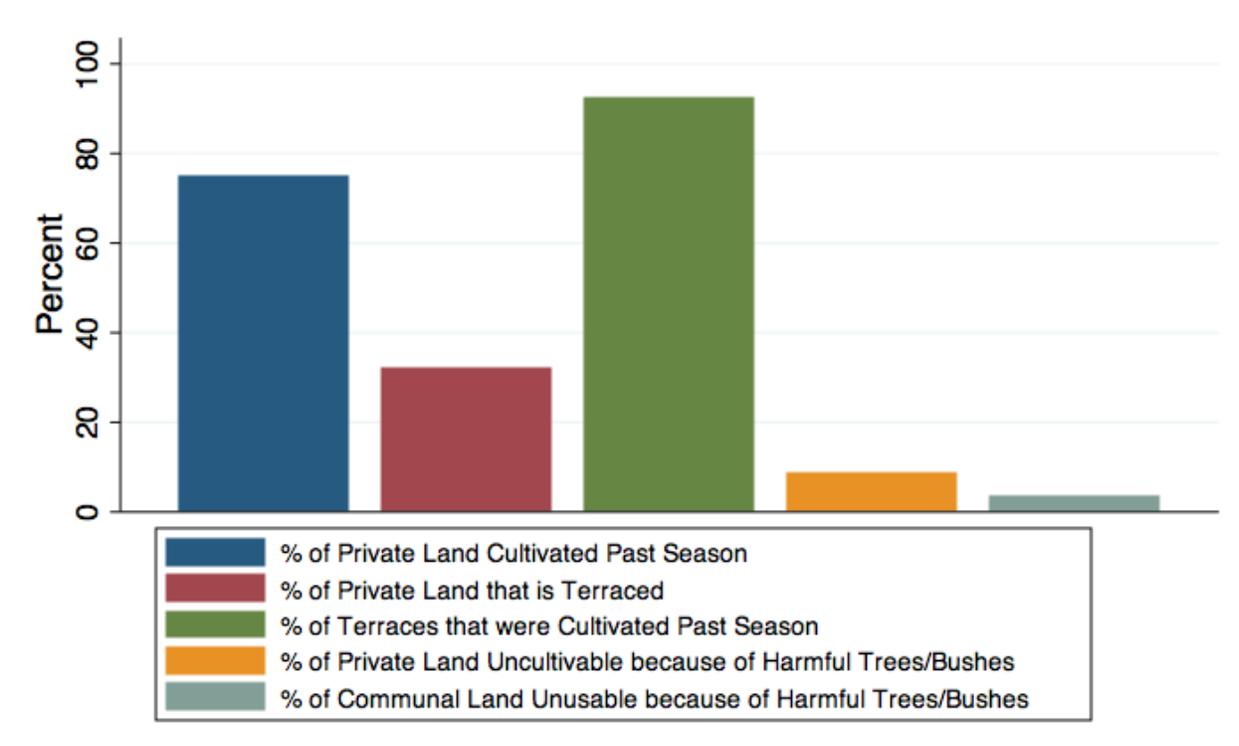
infrastructure will have significant benefit for rural communities. Second, it is much cheaper to get water during the rainy season with households reporting transportation costs during the rainy season to be one-tenth of their dry season value. This large gap is of perhaps particular interest as the transport time only fell by one half (as discussed above).

5.2 Land

This section analyzes land use patterns among LIP participants. An analysis of land inequality is provided in [Egel and Yeslam \(2010\)](#).

The vast majority of privately held agricultural land is in use. Despite the significant levels of emigration to urban areas and abroad, we found no meaningful evidence of labor scarcity in the LIP areas. Indeed, as demonstrated in [Figure 5.3](#), nearly 80% of all private land was cultivated. As some privately held land is anticipated to be uncultivable, this indicates that the vast majority of cultivable land was cultivated. This suggests that a shortage of cultivable land may be an important reason for urban migration.

Figure 5.3: Land Cultivation, Terraces, and Unusable Land



Terraces make up less than a third of all agricultural land; cultivation rates

are only slightly higher on terraced lands. Terraces are an important component of rural agriculture as they are typically where higher value crops (e.g. coffee) are grown. However, despite their importance for rural agriculture, and their prominence in discussions of Yemeni agriculture, they account for less than one-third of privately held cultivable land in these rural areas. Further, as they are only slightly more likely to be cultivated (Figure 5.3), this suggests that non-terraced lands are of at least equal importance to these communities.

Harmful trees and bushes do not appear to be a widespread problem; however, they impacted some communities quite significantly. One of LIP projects is the recovery of land affected by harmful trees and bushes. As demonstrated in Figure 5.3, we find little evidence that this a widespread problem - less than 10% of agricultural land seems to be affected by this problem. However, though only one in nine respondents reported that this affected their community at all, the affected communities reported losing an average of 30% of land to the harmful trees and bushes (not displayed) - indicating that this can be a significant, if localized, problem.

5.3 Roads

Transportation in rural areas is very expensive. Road construction is a very popular development initiative in rural areas. The construction of these roads creates local jobs, improves access to health and other services, and lowers the cost of accessing more urban areas by laborers or other individuals.³

The relatively high cost of transportation from these rural areas to urban centers is demonstrated in Table 5.1. Indeed, the average cost of a one-way trip to the capital is more than 20% of a day laborer's expected daily wage. Given this high cost, it is perhaps unsurprising that households made few trips to the market each week: 18% of households reported zero trips to the market per week and 63% reported making exactly one trip to the market.⁴

Markup on foodstuffs in rural villages is meaningful, but not overly large. A second way of measuring access to these rural areas is by measuring the price gap between the local market and the village store of key commercial of goods. Table 5.1 examines two of these

³Note that the type of road projects differs widely across donors. One important distinction is between that of the Yemeni government and that of the SFD: while the SFD uses primarily local labor to create local jobs, the Yemeni government prefers to use a national contractor to ensure quality and keep costs down.

⁴This is also likely a key reason why many emigrant laborers prefer to stay in the cities during the week rather than returning home.

goods: a 20 kg sack of wheat and a canister of gas. Interestingly, while there is a meaningful markup of both of these goods, this markup seems to be based on the weight/difficulty of transport of the item rather than on the item's value. Indeed, the markup on gas is nearly three times in percentage terms, but only 40% higher in real terms.

Table 5.1: Roads and Transportation

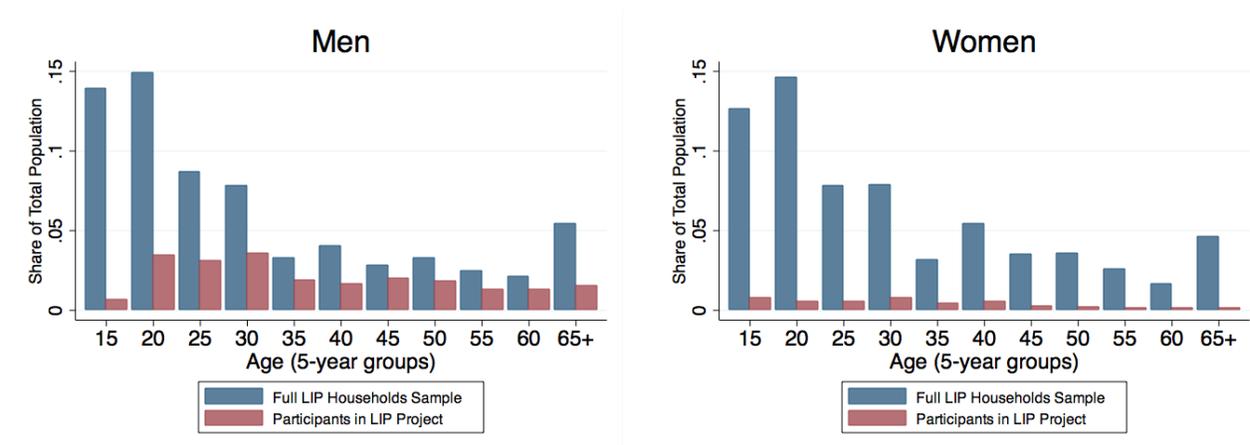
		Mean	SD	N =
Distance to Closest City (minues)		95	242	1793
Cost of Traveling to Closest City (YR)		272	425	1697
Wheat	Cost in Village (YR)	4,268	499	1327
	Cost in Town (YR)	4,096	1,011	1673
	Markup (YR)	278	269	1213
	Markup (%)	7	7	1213
Gas	Cost in Village (YR)	1,324	421	941
	Cost in Town (YR)	1,171	607	1029
	Markup (YR)	196	208	814
	Markup (%)	21	52	814

Participation in LIP

Most households participated in the project; younger men were less likely to participate and few women participated. Based on the 30 communities that were visited for the ex-post assessment, the vast majority (75%) of households participated in the project. However, our data suggest that these participation rates could still have been higher if the program had been better advertised - two of the leading causes that households did not participate were that the head of household was not present during signup (25% of households not participating) and family did not know about project (13%). And while the leading reason was that households were not able to work (25%), households not participating in the project do not seem to be any worse off than those that did participate in the project; the average total earned income among the two groups is roughly equivalent.

Nearly 40% of adults, i.e. men and women ages 15 and over, participated in the project. However, this participation was skewed heavily towards men with very few women participating as demonstrated in Figure 6.1. This figure also demonstrates a bias towards the participation of older men - participation rates are higher among men ages 31-60 than among younger cohorts. This bias reflects the approach used for distributing LIP resources, work is assigned to households and they can allocate this work within the household as they wish.

Figure 6.1: Participation Rates by Age

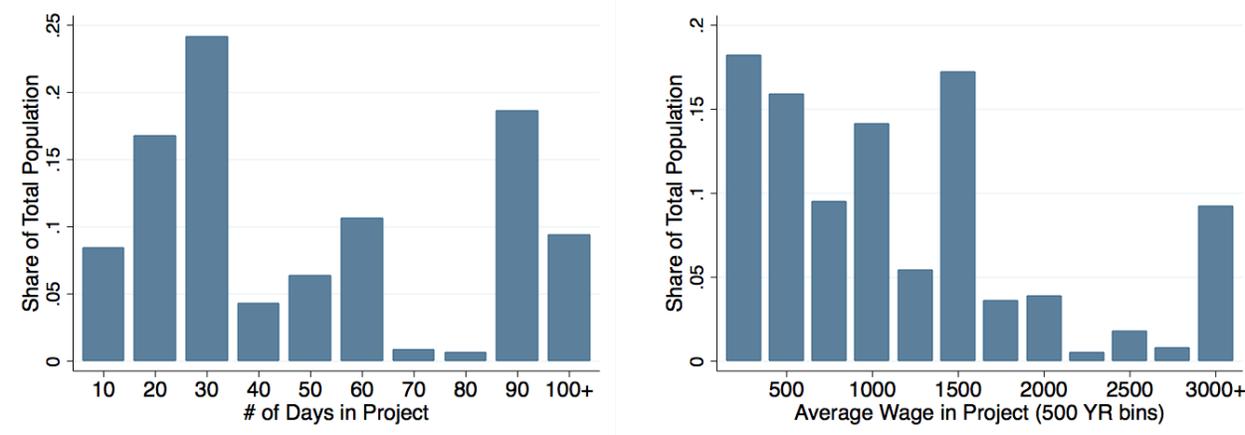


The distribution of both days worked wages in the LIP project are unequal. Though the average participant received nearly two months of full time work, i.e. 50 working days, the actual distribution of days worked is bimodal - with some individuals working many days in the project and others working very few. Indeed, as demonstrated in the left-panel of Figure 6.2, one-third of participants worked more than 80 days in the project while nearly one-half worked 30 days or less.

A similar inequality is seen within project wages. While the average project wage of approximately 1,300 YR is relatively reasonable, the distribution is unequal. This is demonstrated in the right-panel of Figure 6.2. Indeed, one-third of all participants reported average daily wages of under 500 YR while nearly one-third reported wages of 1,500 YR or more. This gap largely reflects differences paid to different groups of individuals: as an example, the average woman was paid only 700 YR as compared to an average rate for men of 1,400.

An important component of this inequality was the individuals that provided either skilled labor or transportation support. Though there was almost unanimous agreement in focus group discussions that the participation of these individuals was essential to the success of the projects, they tended to work more days and get paid at a higher rate than other community members (Al-Iryani and Egel 2010). Despite accounting for only 16% of the total work force, skilled workers received 18% of the total days in the project and 24% of the total money wages.

Figure 6.2: Days Worked and Wages in the Project



Note: Project wages are calculated as total compensation for the project divided by the days worked in the project.

A small but significant share of people hired others to work for them; an inability to work explained only a small share. The LIP qualitative evaluation observed that beneficiaries would sometimes hire others to work in their place (Al-Iryani and Egel 2010). 7% of the beneficiaries in the ex-post communities reported hiring someone to work on their behalf. Less than one-fourth of these beneficiaries reported hiring a replacement because of an inability to work; indeed, people were much more likely to find a replacement if they did not want to work or had found a better opportunity. Surprisingly, those that could not work were much more likely to pay their replacements.¹

Only a small share of LIP beneficiaries returned to the village to work in the project; the potential benefit of the project to the community seems to have been their primary motive. A concern of the project is that work in the project would substitute for other economic opportunities. However, this does not seem to have been a significant issue as less than 10% of the sampled project participants reported returning to work on the project. And while a few reported that they returned because the program offered a higher wage (15%), the majority reported that they worked in the project to be near their family (75%), the project benefited the community (52%), or the project benefited their family (40%). Interestingly, the average returnee reporting making a salary of just over 2000 YR in their previous job which was generally higher than the wage that could be earned

¹The survey does contain specific questions about how much the surrogate was paid and how much was captured by the original beneficiary. However, the responses to these questions are quite erratic and suggests that the questions were not fully understood. The agency issues involved with this question probably make it a bit tricky for a typical LIP beneficiary to answer.

by working in the project.

Ex-Post Assessment

This baseline survey included 30 communities that had received LIP projects during the first wave of LIP. In this chapter we use data from LIP beneficiary households in these communities to conduct an ex-post assessment of the LIP program.

First, in the following section we examine self reports from LIP beneficiary households about their perceived benefit from the program. In particular, we study how they report spending their money as well as their overall satisfaction with project selection and program implementation.

Second, in the second and third section of this chapter we study the potential impact of the LIP on medium-term consumption and investment.¹ Though there is no proper control group - so that it is perhaps incorrect to use the word “evaluation” in the title of this section - we use the standard SFD approach of comparing completed projects to pipeline projects.

There are two important caveats to this second approach:

1. The results that follow - which are certainly not encouraging of the success of the program - should not be taken, in any way, to be a measurement of the true impact of the LIP project. Indeed, our results suggest that LIP beneficiary are actually worse off than the other households in the LIP baseline survey.² While these results may be disheartening to LIP implementers and supporters, these results are likely an artifact of the empirical approach used here; in particular, the control group used in the pipeline approach (i.e. those households that are about to receive programs) may be different from the treated group for reasons unrelated to the program. Comparing these results to the LIP impact evaluation that will use this baseline (to be finished Spring 2011)

¹An original goal was to also study the potential diversionary impact of LIP - i.e. beneficiaries may forego other income generating opportunities to participate in the program ([Jalan and Ravallion 1999](#)). As structured now, it is not possible to evaluate this in the ex-post communities.

²We avoid using the term “control” here as it is inappropriate to consider the other households in the survey to be controls.

will provide a useful tool for validating this claim.

2. In comparing these ex-post projects to the pipeline, we use a slightly more sophisticated approach that has been used previously by the SFD. A significant concern for us is that the ex-post villages are different than those of the pipeline villages along both observable and unobservable dimensions. While we cannot ‘correct’ for unobservable differences, we can control for observable differences. To do this, we use the inverse probability weighting (IPW) approach of [Wooldridge \(2002\)](#) that allows us to adjust for observable differences between the pipeline and ex-post communities.³

7.1 Reported Benefits

Project selection seems to have been very successful; villagers were incorporated in the selection process. [Al-Iryani and Egel \(2010\)](#) found evidence that project selection was top-down and that some communities (5 out of 12 surveyed) were dissatisfied with the selected project. We do not find any evidence of that here. Indeed, more than 95% of respondents reported that the project was greatly needed by the community.

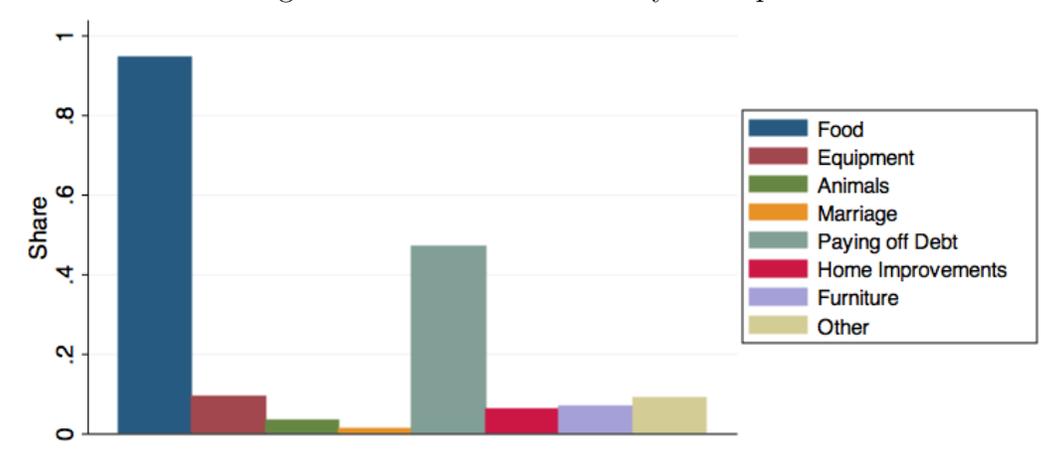
LIP seems to have been successful in incorporating villagers into the project selection process in many cases. Indeed, the majority (53%) of people reported that villagers had participated in this process while only 22% reported a role for the village leader and 24% reported a role for the project officer.⁴ While this should certainly be seen as a success, there is still room for improvement; as the LIP projects are purportedly demand-driven, all participants should feel that they were incorporated in the decision making process.

The vast majority of beneficiaries reported spending their earnings on just two things: food and on repaying debt. The qualitative study found evidence suggesting that meaningful numbers of people used their LIP earnings to purchase small investments - e.g. animals, marriage, etc. . However, our data suggest that most beneficiaries used the money for only two things - food and repaying debt - as demonstrated in [Figure 7.1](#). While the results from this table are encouraging, the results from the qualitative study suggest that the purchases of food are not necessarily on staple on items, but rather on non-essential foods (e.g. energy drinks, cookies, etc.), and that the debt repayments were offset by increased borrowing ([Al-Iryani and Egel 2010](#)).

³In some of the tables below, i.e. when it is possible as there are not an overwhelming number of cases to consider, we report both the IPW and the unweighted estimates. As the IPW is our preferred approach, we only report these results when space is constrained.

⁴Respondents were allowed to provide more than one answer.

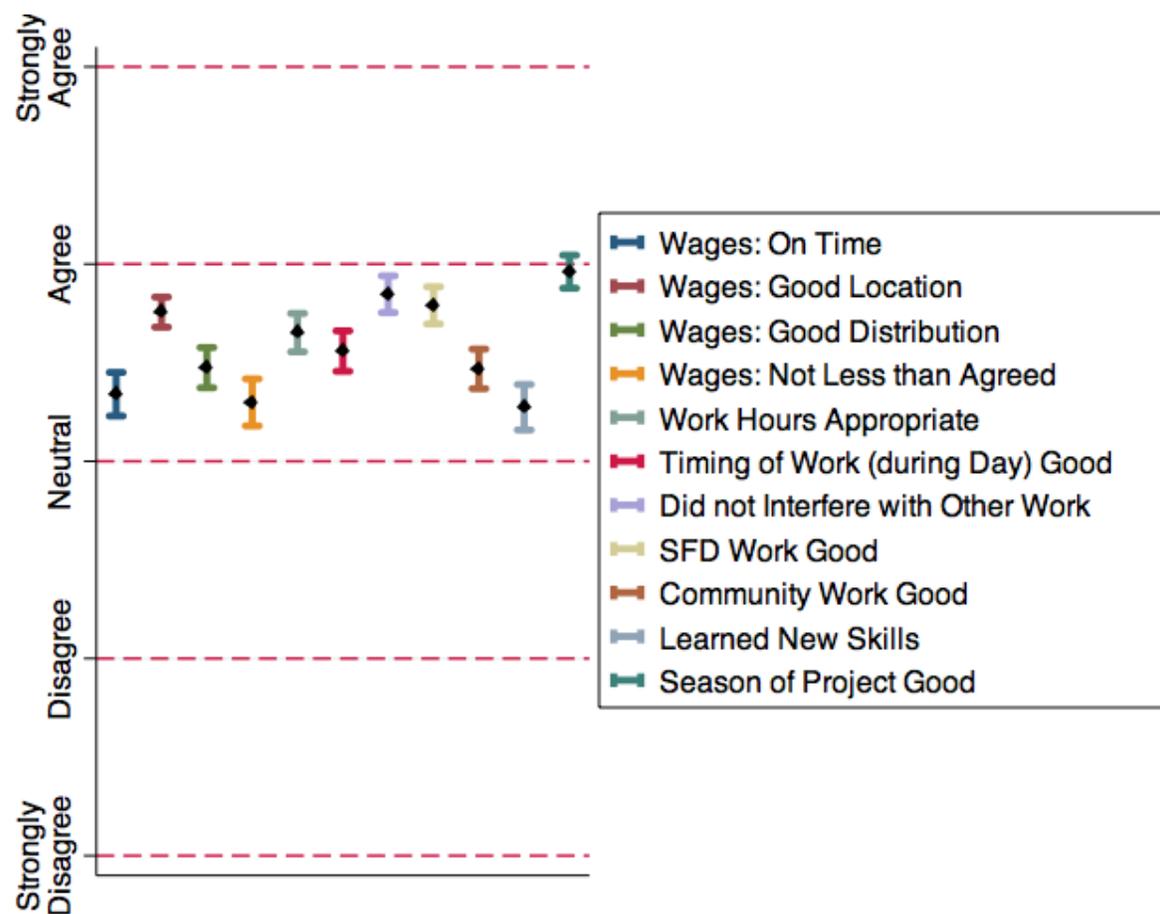
Figure 7.1: How RALP Money was Spent



Beneficiaries were satisfied, but not overwhelming happy, with all aspects of the project. A second way to evaluate the overall benefit of the project is to ask participants about their perception of the project. In Figure 7.2 we report the results from a series of questions asking about perceptions of the project. Overall, the respondents seemed to be satisfied with the project, with the mean respondent reporting between ‘neutral’ and ‘in agreement’ for each of the eleven possible categories.

However, in many of these cases, a significant number of people responded disagreement. Indeed, over 25% of respondents reported that their wages were late, 25% reported being paid less than had been agreed upon, and nearly one-third mentioned that they had not learned anything from the project. Thus, while there seems to be overall satisfaction with the project, there certainly seems to be room for improvement.

Figure 7.2: Perceptions of the LIP Project



Note: Figure reports the mean and 95% confidence interval. Respondents had five responses to choose from: (1) Completely agree, (2) Agree, (3) Neutral, (4) Disagree, and (5) Disagree completely.

7.2 Consumption

The LIP seems to have had no medium-term impact on household food security. One potential medium-term indirect impact of the LIP is enhanced food security. In particular, if households are able to save or invest some of their earnings from the program we would anticipate that they (1) might be more resistant to economic shocks and (2) have enhanced food consumption in future periods as those investments pay off.

We find no impact for LIP on food security. First, we find that LIP households were not less likely to suffer from food shortages during the previous month. Second, we find no meaningful impact of the LIP program on most foodstuffs. Table 7.1, which reports the difference between the LIP beneficiary households and all other households (weighted and unweighted), demonstrates this result. While we do find a significant impact of LIP on the

number of calories, which suggests that there may have been some positive impact, we do not find a meaningful impact on any of the protein- or vitamin-rich foods. This result is consistent with [Al-Iryani and Egel \(2010\)](#) that concludes that most households spend their money almost immediately and save or invest very little.

Table 7.1: Potential Impact of LIP on Food Consumption

Weights:	None			IPW		
	Δ	SE	Sig. Diff?	Δ	SE	Sig. Diff?
Calories	97.4	39.0	**	135.9	48.1	***
Red Meat	-0.27	0.10	***	-0.09	0.14	
Chicken	-0.07	0.18		-0.17	0.21	
Fish	1.69	0.65	***	0.36	0.49	
Eggs	1.30	0.47	***	-0.06	0.43	
Tuna	0.41	0.31		-0.12	0.26	
Milk	1.90	1.04	*	1.57	1.23	
Honey	-0.37	0.16	**	-0.19	0.22	
Vegetables	0.27	0.49		-0.18	0.51	
Fruit	-0.32	0.29		-0.89	0.25	

Notes: (1) Δ is the mean difference between LIP and non-LIP beneficiary households.

(2) *: 10% significant, **: 5% significant, ***: 1% significant.

The LIP also has no impact on the expenditures qat, cigarettes, medicine, or household supplies. In Table 7.2 we examine the potential impact of the LIP program on consumption of qat, cigarettes, medicine, and household supplies. Given the above analysis for food consumption, it is unsurprising that we observe no impact of LIP participation on qat or cigarette consumption. However, we also find no meaningful impact on medical expenditures during the past year, which includes the time of the LIP intervention, or the purchase of a variety of home furnishings. We do find some weak evidence that LIP households spent more on housing and kitchen items, but only the unweighted estimate shows a significant difference.

Table 7.2: Potential Impact of LIP on Key Expenditure Items

Weights:	None			IPW		
	Δ	SE	Sig. Diff?	Δ	SE	Sig. Diff?
Qat (past month)	-367	422		-544	476	
Cigarettes, Tobacco, Shoma (past month)	88	137		5	168	
Medicine and Treatment (past 12 months)	14,349	14,571		12,486	17,272	
Clothes and Shoes (past 12 months)	9,870	4,227	**	5,431	5,428	
Blankets and Bedding (past 12 months)	265	525		-800	552	
Housing/Kitchen Items (last 12 months)	1,400	547	**	750	562	

Notes: (1) Δ is the mean difference between LIP and non-LIP beneficiary households.

(2) *: 10% significant, **: 5% significant, ***: 1% significant.

7.3 Investment

While the stated goals of the cash stipend are short-term, it is expected that there may be medium-term impacts of considerable importance. In particular, as this cash stipend is earned with 2-3 months of labor and the money is paid out in a few relatively large payments, it might be expected that this money would be used for investment in addition to simply smoothing consumption as was found by [Sadoulet, de Janvry, and Davis \(2001\)](#) and [Gertler, Martinez, and Rubio \(2006\)](#). As this investment may lead to a magnification of the benefit, a so-called multiplier effect, capturing the benefit of this investment is essential.

There is no positive impact of LIP on animal assets. One of the key suggestive results in [Al-Iryani and Egel \(2010\)](#) is that households use their LIP to invest in animal assets but that they are then later compelled to sell those animal assets. Though the qualitative approach of the previous approach did not allow estimation of the net impact of the LIP program on household assets, it seemed that it was likely zero or negative.

Here we find a similar result. Indeed, in [Figure 7.3](#) we find that LIP beneficiary households have significantly less goats, sheep, donkeys, and beehives.⁵ Further, they purchased significantly less sheep and beehives during this period. We do not find a net positive impact on any of these animal assets.

⁵Note that this table only reports the results with the IPW re-weighting as this is the preferred specification.

Table 7.3: Potential Impact of LIP on Animal Assets

	Owned			In Partnership			Purchased - Last Six Months		
Weights:	IPW			IPW			IPW		
	Δ	SE	Sig. Diff?	Δ	SE	Sig. Diff?	Δ	SE	Sig. Diff?
Cows/Bulls	0.1	0.1		0.0	0.0		-0.01	0.01	
Goats	-1.84	0.33	***	-0.15	0.07	**	0.02	0.04	
Sheep	-3.13	1.55	**	0.02	0.15		-0.06	0.03	**
Donkeys	-0.19	0.04	***	-0.01	0.00	***	0.00	0.01	
Camels	-0.02	0.02		0.00	0.00		0.00	0.00	
Beehives	-0.89	0.26	***	-0.10	0.08		-0.13	0.06	**
Chickens	-3.03	2.55		-0.04	0.01	***	-0.01	0.02	

Notes: (1) Δ is the mean difference between LIP and non-LIP beneficiary households.

(2) *: 10% significant, **: 5% significant, ***: 1% significant.

There is no net impact of LIP on asset holdings; there is some evidence that LIP beneficiaries were more likely to purchase mobile phones. In addition to animal assets, several households studied in [Al-Iryani and Egel \(2010\)](#) reported purchasing sewing machines, mobile phones, or other small assets. In the left column of 7.4 we examine the potential impact of LIP on these small assets by studying whether LIP beneficiaries are more likely to own any of these assets. Overall we find no net impact. Surprisingly we find that the LIP households are more likely to have televisions and less likely to have water pumps; this is again suggestive of the weakness of comparing to pipeline projects.

Table 7.4: Potential Impact of LIP on Other Investments

Weights:	Owned			Purchased During Last 6 Months		
	Δ	IPW SD	Sig. Diff?	Δ	IPW SD	Sig. Diff?
Building/Land for Rent	-0.2	0.3		-	-	
Taxi/Bus	-0.3	0.2	*	-	-	
Motorcycle	-0.4	0.2		-	-	
Television/Washing Machine	0.3	0.1	***	0.2	0.2	
Sewing Machine	-0.3	0.1	*	-	-	
Fixed Telephone	-0.1	0.2		-	-	
Mobile Phone	0.0	0.1		0.4	0.1	***
Gas Tank	0.2	0.1	**	0.0	0.2	
Stove	0.2	0.1		-0.1	0.2	
Oven	0.0	0.1		-0.4	0.3	
Radio	-0.1	0.1		0.0	0.2	
Gas Lamp	-0.1	0.1		-0.5	0.3	*
Kerosene Lamp	0.0	0.1		-0.1	0.2	
Generator/Water Pump	-0.44	0.13	***	0.15	0.29	

Notes: (1) Δ is the mean difference between LIP and non-LIP beneficiary households.

(2) *: 10% significant, **: 5% significant, ***: 1% significant.

In the second column of Table 7.4 we study whether LIP beneficiary households were more likely to purchase any of these assets during the previous 6 months. For 13 of the 14 possible goods we find no significant effect; however, we do find a strongly significant positive impact for mobile phones. This result is also relatively robust; as mobile phones were the most purchased asset, this result is not simply being driven by outliers. Though any firm conclusions will need to wait until the forthcoming impact evaluation, this result does suggest that LIP beneficiaries used their additional income to purchase mobile phones.

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