Short-term Labor Migration from Rural North India: Evidence from New Survey Data

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Abstract

Despite high rates of internal migration, India is urbanizing relatively slowly. This paper uses new data from rural north India to study short-term migration to urban areas and its role in rural livelihoods. First, we demonstrate the importance of data collection techniques tailored to understanding short-term migration. Second, we consider how traditional theories of migration apply in this context, where the fixed costs of migration are low, the opportunity costs vary by season, and where migration is negatively selective for education and economic status. We conclude by considering the implications of this migration for theories of development and development policies.

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1 Introduction

India is urbanizing at a slower rate than is predicted by its income and current level of urbanization (Deshingkar and Anderson, 2004). Relative to the size of the population, there is comparatively little permanent migration out of rural areas and into cities. However, large flows of internal migrants have been documented in India. Indeed, the importance of short-term, circular labor migration from Indian villages has been studied in many parts of the country (Haberfeld et al., 1999; Mosse et al., 2002; Rogaly, 1998; Banerjee and Duflo, 2007; Badiani and Safir, 2009; Keshri and Bhagat, 2012, 2013; Deshingkar and Farrington, 2009; Breman, 1996). An estimated 80 percent of migrants in India who leave rural areas for work each year spend less than six months away from the village.[1]

As Foster and Rosenzweig (2008) explain, research on short-term migration, sometimes called seasonal or circular migration, and the shift from agricultural to non-agricultural work, is limited by the nature of existing data sets. Data collection is hindered by the practical difficulty of finding migrants, by the complications migration poses to defining sampling frames and households, by survey respondents forgetting or overlooking short trips, and by questionnaires that simply do not ask about short trips.

In addition to constraints on empirical analysis, some prominent theoretical models of migration and economic development may be better tailored to understanding longer term migration than short-term, circular migration (Mosse et al., 2002). Economists have at times conceived dual developing economies: one rural and agricultural and one urban and non-agricultural (Harris and Todaro, 1970). In this widely adopted framework, development entails the permanent movement of households from the agricultural sector into the non-agricultural sector. Such models typically assume large costs of moving between sectors.

In this paper, we present results from newly collected survey data which help illumi-

[1] Authors' calculations from NSS Employment and Unemployment Survey, Round 64.

nate how rural, agricultural households in India take advantage of urban, non-agricultural employment opportunities through short-term migration that is not aimed at a permanent shift to urban areas. Our sample comprises 705 households in 70 villages in rural Rajasthan, Gujarat, and Madhya Pradesh. Additionally, we collected detailed questionnaires about the migration histories of 2,224 adults. Among the households that we studied, short-term migration was both common and frequent.

This paper makes two principal contributions to the literature on short-term migration. First, we describe a survey instrument targeted at understanding short-term migration, and explain how data such as these contribute to understanding migration in a country whose national surveys have placed greater emphasis on long term migration. Surveys and theories which implicitly define such short-term migration away – such as by asking only about trips which are at least a month long – will be likely to overlook the livelihood strategies that we document. Second, we examine how the type of short-term migration in this sample fits into existing theoretical frameworks. We explore how the determinants of migration vary by agricultural season, and find that measures of a household's opportunity cost of sending a migrant, such as irrigation and number of adults, predict migration; moreover, migrants are negatively selected on education and measures of economic status.

A central fact about the short-term migration that we document is that although it is short-term, it is a permanent part of households' long-term economic strategies. This migration is not quite like the long-term migration described by theories in the spirit of Harris-Todaro, partially because it does not require forfeiting agricultural profit, exactly because migration is sensitive to opportunity costs and mostly occurs when agriculture is unproductive. It is differs somewhat from theories in the New Economics of Labor Migration: it is not a diversification of income streams within the household (indeed household members often migrate together), but rather a diversification across the seasons of the year. Perhaps most importantly, it is a repeated annual strategy for these households: trips are short, but

the livelihood strategy is long-lasting.

The paper is organized as follows: section 2 describes a data collection effort specifically tailored to understanding short-term migration. Section 3 describes the geographic and social context of the population we study. Section 4 considers the economic motivation for migration through the lens of traditional theories of migration and presents our empirical results. Section 5 concludes by describing the implications of this kind of migration for our understanding of economic development and the transition from agricultural to non-agricultural employment.

2 Data

Our primary data source is a survey conducted during the summer of 2010 in a high migration region overlapping the borders of Rajasthan, Gujarat, and Madhya Pradesh. We collected data about over 5000 people in 705 households from 70 villages. The location of the sample villages are shown on the map in figure 1, and are spread over four districts: Banswara in Rajasthan, Jhabua and Ratlam in Madhya Pradesh, and Dahod in Gujarat. The population studied was specially selected in order to learn about short-term labor migration.

Two prior migration surveys have been done in the same region that we study. Mosse et al. (2002) interviewed 2,588 households from 42 villages in Rajasthan, Madhya Pradesh and Gujarat as part of a Department for International Development funded program that lasted four years and targeted families who earned their livelihoods from rain-fed agriculture. Haberfeld et al. (1999) interviewed 645 households from eight villages of Dungarpur district of Rajasthan. Our survey builds on these studies: our detailed adult questionnaires allow for in-depth analysis of individual migrants' experiences more than ten years after these surveys took place. Amidst high recent rates of economic growth in India, it is notable that many aspects of life in the study region, such as dire poverty and reliance on rain

fed agriculture and migration, remain so similar to what was found by these surveys years earlier. Additionally, although both of these papers mention that migration rates differ by season, this paper contributes a quantitative analysis of how the determinants of migration also differ by season.

2.1 A data collection strategy designed around short-term migrants

The data collection was tailored to learning about short-term migration, but without omitting long-term migration. Like India's National Sample Survey (NSS), we defined long-term labor migrants to be household members who spend 180 days or more away from the village for work. However, the NSS defines short-term labor migrants as household members who spend between 30 and 180 days outside of the village for work. In order to capture as much migration as possible, we defined short-term labor migrants as household members who spend two or more days outside the village for work in the last year. The consequences of using this definition, rather than the standard definition of 30 days of migration or more, will discussed in greater detail in section 2.3.

We also used an expansive definition of a household. A household was defined as a group of people who live in the same dwelling for at least 30 days a year, share food from a common source when they are together, and pool economic resources. The National Sample Survey's Employment and Unemployment module, by contrast, uses a more stringent requirement that a person spend at least 180 days living under the same roof. By shortening the residency requirement, we were able to capture information about adults who make important economic contributions to these rural households but who would not have been included in other surveys. About a third of adults in the sample who spend time working outside the village in the year before the survey spent between 6 and 11 months outside the

village for work.[2]

We asked individuals about migration for the last five years, and collected more detailed information about trips in the last four seasons. We interviewed all adults between the ages of 14 and 69, rather than relying on the head of household's reports about other members' migration. This was especially useful for collecting sensitive information, such as wage information, and take-home earnings.

In order to help respondents recall migration trips, we posed questions in terms of seasons, rather than, for example, calendar months, with which our respondents, who had little formal schooling, were unfamiliar. Despite these efforts, we still suspect some underreporting of past migration. Although we asked each respondent to tell us about her migration for the previous five years, few people could remember any details of trips beyond three years back. In contrast, respondents did often remember the first time they migrated, or even the first two or three years of migration.

The analysis presented in section 4 is based on questions we asked migrants about trips taken outside the village for work during the last four seasons. Due to space constraints and to avoid survey fatigue, only the four most recent trips in the last four seasons were recorded. This way of collecting the data may under-represent the experiences of those who took more than four trips, because not all of their trips were recorded. Except in tables 3 and 4, which use only data from the most recent trip, all analyses use data on the four most recent trips. The results are similar, however, if we look only at the most recent trip taken.

2.2 Sample selection & response rates

The survey location was selected for two reasons. First, short-term migration rates from the study region are high (Mosse et al., 2002). Second, the area marks the intersection of three

[2]These adults are unlikely to be guests for two reasons. First, the definition of household specifically asked about those who pool economic resources. Second, we found that these adults are highly likely to do agricultural work when they are in the village, something that guests would not be expected to do.

states. By surveying along the border of the three states, it was possible to survey villages with access to the same migration destinations but with varying state-level policies.

The specific villages surveyed were selected based on pair-wise matching across state boundaries using proximity to each other, land composition (irrigated land, cultivable non-irrigated land, culturable waste[3]), population density, and caste composition. Data for all of these characteristics was taken from the 2001 census. This pairwise matching was designed to help compare migration in villages in Rajasthan and Madhya Pradesh, which had a strong implementation of a large public employment program (NREGA), with villages in Gujarat, which did not. See Anonymous (2012) for more information about this program and its effects. Additionally, more detailed information on village and household selection is provided in appendix A.

For each household in the sample, a household survey, answered by the household head or other knowledgeable person, as well as individual adult surveys for each person aged 14 to 69 were attempted. Figure 2 shows the response rates for households and adults. For adults who were away from the village at the time of the survey, the household head or other knowledgable household member was asked to respond to a smaller set of questions about his/her family member's migration and local work. In the regression analysis in section 4, 19% of the adults included in the regression had their migration data reported by another member of the household because they were not available to complete an adult survey. Most of these people were away from the village for work.

2.3 Existing data sets omit some short-term migrants

As mentioned above, detailed survey data about the nature of short-term labor migration is limited. The major employment survey in India is the Employment and Unemployment Survey, conducted by the National Sample Survey Office of India (NSS). This survey asks

[3]Culturable waste includes lands available for cultivation but not cultivated in the past five years.

respondents about the total time spent outside the village for work in the past year. People who have spent a total of between 30 and 180 days in the past year working outside the village are counted as short-term migrants. People who spend more than 180 days outside the village are considered long term migrants. In contrast, our survey asked respondents to report any migrant work for which they spent two nights or more outside the village for work.[4] This allowed us to capture short trips, of which many were between 15 and 30 days. The median length of a trip in the last four seasons in our sample was 30 days, and 13% of migrants worked for less than 30 days outside the village in the last year. Due to the short length of many trips, the NSS strategy would significantly understate migration in our sample.

3 Context: Short-term migration from rural northwest India

This section describes key features of migration from the study region. In sum, we find that households in the region are extremely poor, that migration is frequent but that it tends to be short and seasonal, with low fixed costs of participating. Labor markets are informal and conditions at work sites are difficult.

3.1 Households in the sample

Table 1 presents summary statistics about the households in the sample. The panel on "household wealth" shows that households in the sample are very poor: 93% of households have a dirt floor, only 28.7% have electricity and only 1.4% have a television set.[5] The panel

[4] In practice, adults from the sample villages did not commute to migrant worksites, as the villages were too far from centers of economic activity to come and go in the same day, or even every couple of days, by public transportation.

[5] For comparison, 43% of rural households in India's 2005 Demographic and Health Survey had dirt floors, 56% had electricity and 30% had television sets.

on "agriculture" in table 1 shows that while almost all of the households in the survey own land, the size of average holdings are low.

The "household demgraphics" panel shows that households are large: the average household has 7 people. In approximately 63% of households, the head self-identifies as Scheduled Tribe (ST). ST is a group recognized by the central government of India as economically and socially disadvantaged. There is affirmative action for STs in government jobs as well as at educational institutions. The fraction of households belonging to a group that the central government would recognize as ST may actually be much higher than this; many respondents reported not knowing what category they belonged to.[6]

The "migration" panel in table 1 over 80 percent of households sent a migrant outside the village for work for two or more days in the year before the survey. However, permanent migration, defined as having a member leave to start a new household for reasons other than marriage in the last five years, was very low. Less than four percent of households sent a permanent migrant for reasons other than marriage in the five years before the survey.

3.2 Demographic characteristics of migrants

Figure 3 presents the fraction of people of each age in our sample who migrated for work or accompanied someone who migrated for work in the past year.[7] The figure shows the fitted values from local polynomial regressions of an indicator variable that is equal to one if the individual migrated in the year before the survey on age. The results are presented separately for males and females. The probability of migration for adults increases sharply between the ages of 15 and 30. Over 80 percent of 20 to 30 year old males, and over 60 per

[6]That many households would not know their categories considering the government benefits of group membership, it is important to stress just how excluded and isolated this group is. Many people had no education, and so would not be competing for government jobs or slots at institutions of higher learning.

[7]For most adults, their migration data is taken from the adult survey that they answered. Information on some adults, who were away from the village for work at the time of the survey, was reported by another household member. Similarly, children's migration was recorded along with the migration record of the adult with whom they traveled.

cent of 20 to 30 year old females made at least one migration trip in the year before the survey.

Strikingly, migration is also quite common among children–almost 30% of children under 14 years old migrated in the year before the survey. Anonymous (2013) finds low rates of labor among migrating children. However, she suggests other negative welfare implications of high migration rates among children.

3.3 Migration is seasonal

There are three main agricultural seasons in the study region: monsoon (July-October), winter (November-February) and summer (March-June). Agriculture is predominantly rain-fed with the main growing season during the monsoon. Corn is planted during the monsoon for home consumption, and the fodder from the corn is saved for feeding animals. About half of the households in the sample have any irrigation, and they are more likely to plant crops, mainly wheat, during the winter. Crops are rarely grown during the summer.

Table 2 shows both the fraction of adults who migrated in each season of 2009-2010 and the average number of days adults reported spending cultivating their own land. It suggests that the seasonality of migration is tightly linked to the seasonality of agriculture. The monsoon is the time when the most rain falls, making it possible to grow crops whether or not the household has access to irrigation. The average adult respondent spent 78 days cultivating his own land in the monsoon season of 2009, and only 10 percent of adults spent time doing migrant work outside of the village during this season.[8] In contrast, 35 percent of the 2224 adults who completed the adult survey were living outside of their village for work at some point during the summer season of 2010, and 29 percent spent time outside the village during winter 2009-2010.

[8]The inverse relationship between migration and agricultural work is present at the household level as well. In the year before the survey, households spent on average 27 adult work days on cultivation in summer, 98 adult work days on cultivation last winter and 247 adult work days on cultivation last monsoon season.

3.4 Monetary costs of migration are low

Table 3 summarizes information on some of the costs of migration. This survey will not be able to speak to all of the costs of migration; we did not, for instance, look at the impact of migration on migrants' health, or social standing in the village. However, the data that we did collect indicates that migration costs little money, but causes much discomfort.[9]

Migrants themselves typically pay for the travel to their place of work. Respondents' last trips were on average 304 km away from their villages.[10] On average, it cost migrants 126 rupees, or approximately a day's wages, to travel to their destinations. Most travel by bus or jeep.

An important cost of migration is its discomfort. One of the authors conducted open ended interviews with many of the respondents about how they felt about the experience of migrating. Among other difficulties, such as high fuel and food prices, many talked about the lack of shelter. Indeed, 85% of those who answered the adult survey had no formal shelter while away from the village. Some cooked and slept at the construction site where they were working, but 58% simply did these things out in the open in public places.

3.5 Trips are short and employment is informal

Respondents' trips are short: the mean length of a trip is 48 days, and the median is 30 days. 99% of trips recorded in the detailed migration histories covering the four months before the survey were less than 4 months long.

Table 4 describes further characteristics of migrants' employment for the most recent trip. On the most recent trip, 83% went to an urban destination. Surat, a city in Gujarat,

[9] See Mosse et al. (2002) for more information on worksites.

[10] It is important to note that about half of migrants could not tell us the distance to their place of work. Almost all knew how much they had paid to travel to their destinations, however. Therefore, missing values of distance were imputed using the relationship between transport costs and distance for the values we had collected.

is the most common urban destination for migrants in the sample. Ahmedabad and Baroda, also Gujarati cities, are the second and third most popular urban destinations. It would be misleading to say that trips are concentrated in these three cities, though. The "other–urban" category was assigned to 27% of trips in the last four seasons, and included 137 distinct urban locations.

The most common job for short-term migrants was construction work. Employment was informal: only about half worked for the same employer for the whole trip, and for the most part, the migrants in our sample traveled to an urban spot market, called a "naka," to find manual day labor. The two next most common ways of finding a job on a trip were through a friend or relative or through a labor contractor.[11]

Most migrants – 74 percent – were paid daily on their most recent trip. Computing equivalent daily wages for those who were not paid daily, the median daily wage was about 115 rupees.[12] Migrant workers were typically not provided additional goods or services by their employers. The mean amount of money brought back from a trip out of the village was 2750 rupees, and the median 2000 rupees. People rarely sent money back to the village, but they did save money while they are away; about 53% of earnings are brought back to the village. Taking a longer trip is correlated with earning a higher wage.[13]

[11]Our results about how migrants find work contrast with previous research on seasonal migration, undertaken in the 1990s. Mosse et al. (2002) and Breman (1996), both anthropologists whose studies of the population strongly influenced our survey design, find a strong presence of labor contractors in arranging jobs for migrants. Labor contractors act as go-betweens for migrants and employers. They may make loans on behalf of employers or take a cut of migrants' pay in exchange for the service of helping them find employment. Both authors describe migrant-labor contractor relationships as exploitative and impoverishing of migrants. While it is possible that different methods of study led to different results, the importance of labor contractors in arranging migrant work may have diminished in the last 15 years. If so, this would reflect improvements over time in the well-being of migrants.

[12]This was a little over US$2 at market exchange rates at the time, and about four times that at purchasing power parity. Equivalent daily wages were computed for weekly, bi-weekly and monthly payment schedules, and for payments received at the end of work. Since migrants also reported the number of days they worked in a week, we divided weekly, biweekly, monthly, or lump sum payments by the number of days that a migrant worked during the pay period.

[13]This correlation is consistent with the behavior of an optimizing migrant who faces convex costs of time away from the village.

4 Regression analysis: Economic motivation for migration

Which people in our data migrate? What do these patterns reveal about economic motivation for migration? Theories of migration have offered alternative explanations of why migrants move from rural areas to cities for work. In this section, we examine a regression model explaining migration in our dataset, in the context of theories of migration.

The Harris-Todaro model posits that individual decision makers will migrate when their expected return from migration, taking into account the possibility of not finding a job in urban areas and the costs of migration, exceeds the returns to staying in the rural areas (Harris and Todaro, 1970). One useful way to describe short-term migration in our study area is to reapply their framework, but with low fixed migration costs and a time-varying opportunity cost. That said, one of the original goals of the Harris-Todaro model was to explain high urban unemployment: in this explanation, migration costs are high, so when people gamble on urban employment but do not find a job, they are stuck in the city. This modeling assumption would not apply to the migrants we study, who move frequently between urban and rural areas.[14]

The New Economics of Labor Migration proposes a different theories of why people migrate in developing countries (Stark, 1978; Bloom and Stark, 1985). This framework recognizes that households, rather than individuals make migration decisions. It also stresses the importance of relative deprivation in the place of origin as a determinant of which households send migrants; the analysis that follows provides evidence that relative deprivation is important for the migrants that we study as well. In this framework, labor migration from rural areas is a way of mitigating the risks associated with agricultural livelihoods. Poor

[14] Another Harris-Todaro modeling assumption that probably does not apply in this case is that migration decisions are made by individuals, rather than households. Battacharaya (1985) explains that most decisions about internal migration from rural India are household decisions.

agricultural households may not have access to credit and insurance markets, or they may wish to bypass these markets due to the unfavorable terms on which they can obtain credit and insurance. Migration – by splitting the household and diversifying income streams – is a way for agricultural households to insure themselves against poor harvests, loss of livestock or other risks inherent in small scale agriculture. We will see that the households we study diversify their income streams, but mainly over seasons.

4.1 Empirical strategy

Table 5 presents adult-level OLS regressions of the linearized probability that an adult migrated in a season of the past year. Specifically, using data on individual adults i living in households h in state s, we estimate the equation:

$$migrate_{ihs} = \beta_1 D^i_{ihs} + \beta_2 Ec_{hs} + \beta_3 Ed_{ihs} + \beta_4 D^h_{ihs} + \alpha_s + \varepsilon_{ihs}, \quad (1)$$

where regression coefficients are grouped into sets:

- D^i: Individual demographic characteristics: an indicator for being male and age as a quadratic polynomial.
- D^h: Household demographic characteristics: number of adults, number of children, and indicators for being Hindu and for belonging to a Scheduled Tribe.
- Ec: Economic characteristics of households: an asset count, and an indicator for having irrigation. Over 99 per cent of households in our study have at least some small amount of agricultural land; therefore irrigation is an indicator for agricultural productivity during winter, and therefore of the opportunity cost of labor migration to a city.

- Ed: Education of the individual: indicators for primary, secondary, and tertiary education, with less than primary education as the omitted reference group.[15]

- α: State fixed effects: indicators for Madhya Pradesh and Rajasthan, with Gujarat as the reference group.

Clustered standard errors are computed, allowing for arbitrary correlation of the errors within each of the 70 villages, which therefore also allows for arbitrary correlation within households. Although we use a linear probability model for simplicity, results are very similar if logit is used instead.

This regression is estimated separately for each of the past three seasons of the agricultural year: the monsoon (when rain-fed agriculture is possible), winter (when agriculture requires irrigation), and summer (when essentially no profitable agricultural work can be done). Importantly, we have already seen in table 2 that migration is sharply seasonal. People in the villages we surveyed are most likely to migrate in the summer, when agriculture is unproductive. Estimating the regression separately for each season will allow us explore whether the effects of demographic or economic variables differ depending on the agricultural opportunity cost of migration.

To clarify, we do not believe that we have well-identified models of exogenous causal effects. Instead, we are using multiple regression in its descriptive sense: as an informative approximation to conditional expectation.

4.2 Demographic results

Unsurprisingly, the estimated parameters in table 5 indicate that men are more likely to migrate than women. Regression coefficients also show a hump-shaped effect of age, where migration is most likely between 20 and 35. Finally migration from Gujarat is more likely

[15] If we instead control for the highest level of adult education in the household, the results and interpretation do not change.

than from either Madhya Pradesh or Rajasthan, perhaps because Gujarat is closer to and shares a language with the nearest large cities offering very large casual labor markets. Although none of these coefficients are themselves surprising, including these controls helps verify that these demographic factors are not driving other results.

4.3 Seasonality results: Responsiveness to changing opportunity costs

For two key covariates in table 5, different results across seasons suggest that migration decisions respond to agricultural opportunity costs: the effect of the number of adults in the household, and the effect of irrigation. Seasonality is also evident in the pattern of regression constants across the three regressions.

The number of adults in the household is most predictive of migration during monsoon, is less predictive of migration during winter, and is not at all predictive of migration during summer. This is consistent with a seasonal profile of productive opportunities on the farm. For example, during the monsoon households may only be wiling to send a migrant if they have enough adults that enough workers can be left behind to ensure the family farm is productive. In summer, in contrast, because farming is extremely limited due to lack of water because and there is no economic reason to leave workers behind, the number of adults in a household does not predict migration.

Irrigation is important for migration in winter because households with irrigation could profitably farm their land, but households without irrigation have little hope of earning much agricultural profit that season. Households with irrigation (and therefore a higher agricultural opportunity cost) were notably less likely to send a migrant than households without irrigation during winter. In contrast, having irrigation made no difference during the monsoon, when irrigation is not a binding constraint on agriculture. This seasonal

difference in regression coefficients highlights that irrigation helps determine the relative benefits of migration. Irrigation is likely not a mere proxy for wealth since the regression controls for asset count.

Despite the fact that the Harris and Todaro (1970) model was motivated by long term migration, these results are consistent with the model's cost-benefit decision-making in that migrants appear to trade off the time-varying rural opportunity cost with the expected benefits of migration. In the Harris-Todaro model, migrants who move to the city cannot farm, and it is the benefit of farming that prevents rural people from deciding to migrate in the hopes of high urban wages. Similarly, the migrants we study are not farming their land when they are in the city; but at the times when migration is most common, farming is not an option.

The fact that short-term migration provides a diversified source of income is consistent with the Stark (1978) framework. However, in the Stark model, households split productive activity across people, so that different people are exposed to different risks. In this context, livelihoods are divided across seasons within a worker's year.

4.4 Socioeconomic status results: Migration is negatively selective

Many examples of labor migration studied in the literature are positively selective for higher socioeconomic status. For example Durand and Massey (1992), and more recently Chiquiar and Hanson (2005), review a literature which documents that the poorest Mexicans are unable to pay the costs of migration to the United States, and in which labor markets in receiving areas select for skilled workers. Our calculations from the National Sample Survey show that more educated Indians are more likely to migrate permanently.

In contrast to these migration patterns, the short-term, cyclical labor migration we study is negatively selective for socioeconomic status and human capital. The results in table 5 show that adults with less than primary education (including those who are illiterate) are

significantly more likely to migrate than those with higher levels of education. Further, the coefficient on asset count is negative in all three regressions and statistically significantly negative in two. Although almost everybody in our sample is poor by Indian and international standards, within our sample poorer respondents were more likely to have recently migrated. This makes sense given the low monetary costs of migration that we document: migration of this sort is discouragingly unpleasant, but it is not financially costly.

5 Discussion: Economic development in the context of short-term, circular migration

Recent empirical papers describe rural Indians as relatively unlikely to migrate for work, especially as compared to similarly developing societies. This reflects low rates of *permanent* migration found in existing data.[16] Our data suggest that short-term labor migration is an ongoing part of long-term economic strategies in this region of north-west India. Year after year, people migrate for work, typically in the summer, when agricultural work is unproductive. Among those who answered the adult survey and had ever migrated more than two days for work, 73% recalled migrating in at least two different years, and the median age at first migration was 17 years old.[17] Thus, labor migration offers a productive option that households and individuals regularly take, while maintaining otherwise seemingly permanent residence in agricultural villages.

Importantly, the high mobility of our survey's respondents suggests that – while there are costs of migration, and while quality of life while migrating is low – the costs of moving between rural and urban labor markets is not prohibitively high. This implies that dual-

[16]For example, Munshi and Rosenzweig (2009) develop a theory of caste networks to explain low levels of permanent out-migration of males from their home villages.

[17]Due to memory problems and survey fatigue, we believe this is probably an underestimate of repeat migration across years.

economy models in which high transportation costs mean that workers can get "stuck" in a rural or urban setting (for example, in urban unemployment after migrating to the city) will not describe these migrants' options.[18]

In the process of economic development, countries transition from agricultural to non-agricultural production. Our data contribute to a growing literature that documents the mechanisms and consequences of this transformation at a microeconomic level.

Implicitly or explicitly, agricultural and non-agricultural work have been analyzed as competing either/or alternatives. Thus, Foster and Rosenzweig (2008) present a theoretical model in which migrants give up claims on agricultural profits in the event that they leave (p. 3068). Having made this assumption, however, they admit that migrants may nevertheless sometimes be able to claim the proceeds from their agricultural land; they ultimately call for further investigation of when this might be the case.

Indeed, the migrants in our data better resemble those described by Lanjouw and Shariff (2004): rural households can have highly varied (and often multiple) sources of incomes. In our data, the same households combine agricultural and non-agricultural production. Because trips are typically short, migrants do not forfeit permanent village residence. Moreover, because this migration is sharply seasonal, when workers do leave they are often forgoing little potential agricultural profit.

Much has been written on whether Indian economic growth is reducing poverty, and in particular on the effects that urban development might have – or not have – on the rural poor. Recently, Datt and Ravallion (2009) have argued that, in India, the post-reform process of urban economic growth has brought significant gains to the rural poor as well as to the urban poor. Short-term migration may be one channel conveying some benefits of urban growth to rural villages, long before the villages may someday transition out of agriculture.[19]

[18] Of course, our paper is certainly not the first to point beyond dual models of developing economies (*c.f.* Ranis, 2004).

[19] Some prior research has attempted to explain heterogeneity in who finds non-agricultural work. For

More broadly, thick flows of temporary rural-urban labor migration could facilitate complex spillovers. For example, Badiani (2009) finds that where manufacturing growth increased demand for unskilled labor in rural India, it decreased the returns to education; nevertheless even in these cases investment in boys education increased, because the demand for unskilled labor increased the incomes of the poor. Therefore, with such spillovers, urban economic conditions and policies could matter even for households apparently living permanently in rural villages.

Similarly, short-term migration could change the incidence of ostensibly "local" economic policies. Anonymous (2012) studies NREGA, a large workfare program for rural Indians, timed to provide employment during periods of low agricultural productivity, when we find that migration is common. NREGA decreased out-migration from rural villages during the summer season.

Finally, as Deshingkar and Anderson (2004) and others warn, a vision of a static and separate agricultural economy can undermine the effectiveness of policy when services are attached to assumed "permanent" residences. In rural India, public services such as the Public Distribution System of food and primary education are typically organized around fixed rural residences. While short-term migrants in our sample may not be forfeiting agricultural profit while migrating, such policies mean that they likely are effectively forfeiting the benefits of programs only available in the "home" village.

example, Lanjouw and Murgai (2008), while studying rural non-agricultural employment generally, rather than migration in particular, document that participation is associated with education levels and social status that are rare among the poor. However, the migrants in our data are poor, and supply unskilled, casual labor. Moreover, Foster and Rosenzweig (2002) anticipate that a thick market for migrant labor could raise wages for poor village residents, even if they did not themselves migrate. Our data suggest that exactly such a large market exists in this society.

A Village Selection and Household Sampling

As shown in figure 1, 100 villages were selected, but due to time and budget constraints, 30 villages were dropped. The villages that were dropped were the 30 villages located furthest to the west, as this made surveying of the remaining villages logistically easier. Voting lists were used to randomly sample ten households in each village.

Voting lists are used by the state and local village governments for elections and are meant to include every adult aged 18 and older in the village. In practice, this may not be true as voting lists are updated irregularly. However, during piloting, complete household listings in three villages were completed to compare with the voting lists, one in each state. In all cases, each household enumerated in the full census had at least one adult member listed in the voting list. During the household listing, we defined a household as a group of persons living under the same roof for at least thirty days in the past year, sharing food from a common source when together, and contributing or sharing in a common resource pool. In some cases, the definition of household in the voter list did not correspond to our definition. In particular, the voter list definition was more expansive, often including for example three brothers who lived separately as one household. During surveying, in cases in which the voter list and our household definitions differed, only one economic household was chosen. We chose the household with the eldest head of household. For this reason, more established, older households are likely to be over-represented in the final sample.

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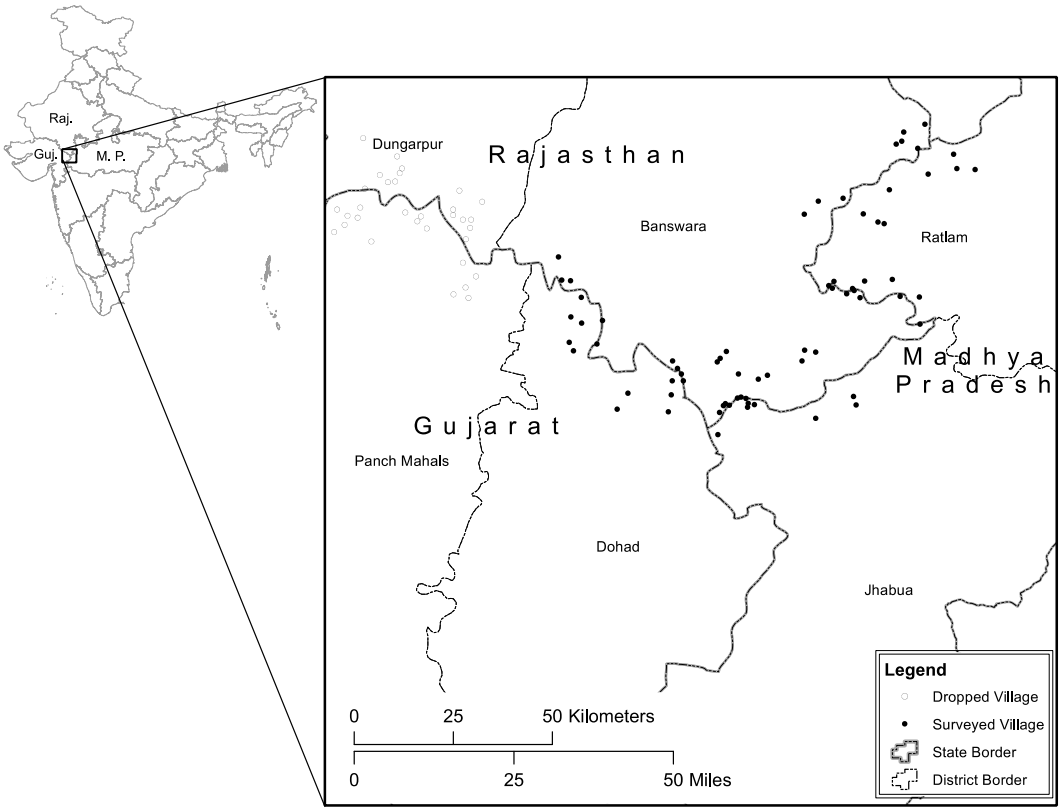

Figure 1: Map of the survey

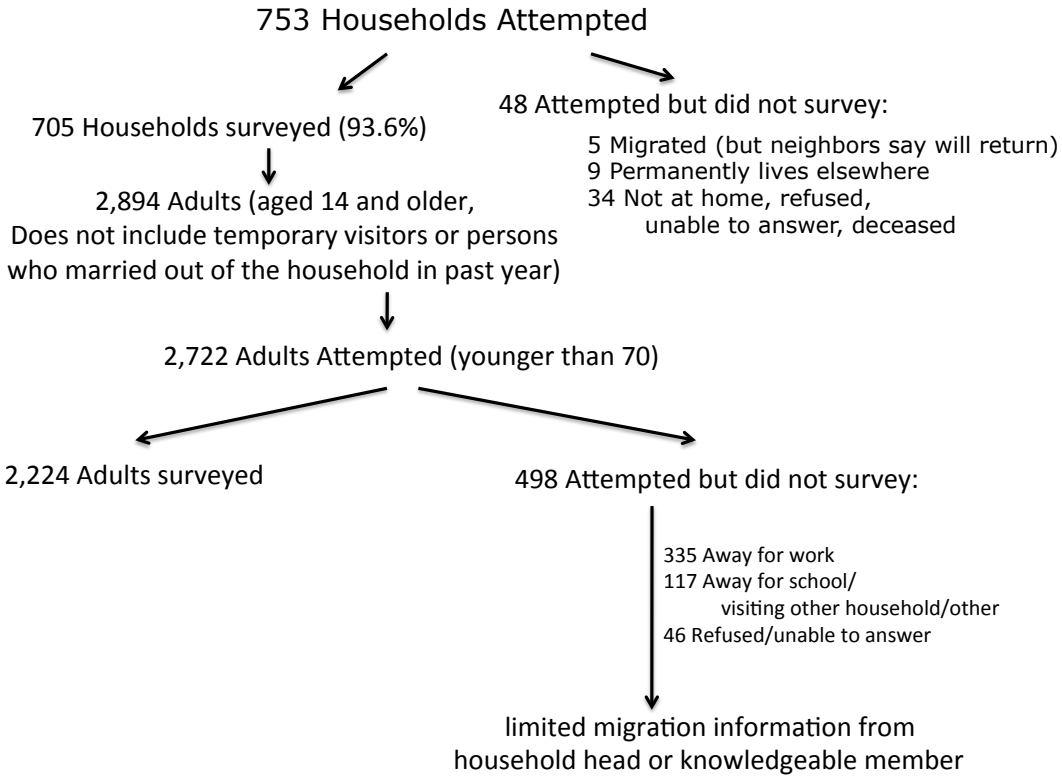

Figure 2: Response tree

Figure 3: Short-term migration by age and sex

Table 1: Household characteristics

household wealth	
dirt floor	0.930
electricity	0.287
television set	0.014
household demographics	
household size	7.2
number of adults (14 or older)	4.4
number of children (13 or younger)	2.8
scheduled tribe	0.626
agriculture	
owns cultivable land	0.994
acres of cultivable land	2.9
any irrigated land	0.555
maize cultivated	0.977
wheat cultivated	0.474
rice cultivated	0.591
lentils cultivated	0.389
produced any crop for sale	0.596
migration	
any migration in last year	0.817
permanent migration in five years before survey	0.091
permanent migration for reasons other than marriage	0.037
number of observations	705

Means computed from household level data.

Table 2: Agricultural seasonality and short-term migration

	adults who left village for work	adults who left the village for work among those spending one season in village	adults who cultivated own land for more than 2 weeks	days spent cultivating own land per adult	fraction of total rainfall
	(1)	(2)	(3)	(4)	(5)
season					
winter 2009-10	0.29	0.23	0.55	30.72	0.03
	(0.016)	(0.014)	(0.022)	(1.76)	
monsoon 2009	0.10	0.02	0.86	77.57	0.91
	(0.011)	(0.003)	(0.011)	(1.92)	
summer 2009	0.35	0.29	0.20	8.40	0.06
	(0.019)	(0.019)	(0.015)	(0.48)	
observations	2,224	2,064	2,224	2,224	

Standard errors computed assuming correlation of errors at the village level in parentheses. See text for definition of seasons. The first column presents the fraction of adults who left the village for work during each season. The second column restricts the sample to individuals that spent at least one full season during the 2009-10 agricultural year in the village. The third column presents the fraction of individuals who spent at least two weeks cultivating their own land in the village. The fourth column presents the average days spent cultivating land across all adults in the sample. The fifth column presents the fraction of total rainfall occurring during each season. Fractions are based on averages of readings taken from meteorological stations throughout each of the five study districts. Raw data is available from IMD website.

Table 3: Costs of short-term migration

transportation	
average distance (km)	304
median distance (km)	275
median transportation cost as fraction of wage	1.03
fraction taking bus or jeep	0.96
fraction taking train	0.139
fraction taking other transport	0.012
shelter	
no formal shelter	0.846
rented	0.02
employer provided	0.134
observations	1,116

The sample is restricted to adults aged 14 to 69 who completed the full adult survey and who stayed away from the village for work for two or more nights in the past year. Variables are computed based on the most recent trip for each adult. Missing values of distance are imputed using relationship between transportation costs and distance for non-missing values of distance.

Table 4: Employment characteristics of most recent trip

trip length	
median (days)	30
average (days)	48
location & industry	
urban destination	83.1%
construction	61.8%
agricultural labor	16.3%
factory work	3.5%
employer	
worked for employer from previous trip	49.0%
worked for same employer during entire trip	48.8%
found work at spot market	44.7%
arranged job before leaving	5.6%
arranged job through contractor from prior trip	8.5%
did not find work	0.1%
payment	
paid daily	74.3%
salaried work	0.6%
mean earnings per day worked	115.3
mean earnings per day out of the village	112.8
observations	1,116

The sample is restricted to adults aged 14 to 69 who completed the full adult survey and who stayed away from the village for work for two or more nights in the past year. Variables are computed based on the most recent trip for each adult.

Table 5: Linear probability of adult migration, by season

dependent variable is whether the individual migrated:	(1) last summer	(2) last winter	(3) last monsoon
individual demographic characteristics			
male	0.218***	0.148***	0.108***
	(0.0167)	(0.0155)	(0.0135)
age	-0.00284	0.00759**	-0.000904
	(0.00362)	(0.00284)	(0.00255)
age squared	-0.000147**	-0.000223***	-0.0000468
	(0.0000452)	(0.0000345)	(0.0000299)
economic characteristics of households			
has irrigation	-0.0973***	-0.0707**	-0.0352
	(0.0249)	(0.0233)	(0.0199)
asset count	-0.0183**	-0.0183***	-0.00817
	(0.00538)	(0.00450)	(0.00427)
education			
less than primary (reference)			
primary	-0.0693**	-0.0425	-0.00918
	(0.0229)	(0.0263)	(0.0245)
secondary	-0.182***	-0.188***	-0.0871**
	(0.0403)	(0.0363)	(0.0279)
tertiary	-0.357***	-0.319***	-0.124
	(0.0759)	(0.0686)	(0.0709)
household demographic characteristics			
number of adults	0.00590	0.0133**	0.0228***
	(0.00379)	(0.00412)	(0.00461)
number of children	0.0177**	0.0135*	0.00886
	(0.00536)	(0.00538)	(0.00486)
Hindu	-0.0232	-0.00196	0.00675
	(0.0240)	(0.0271)	(0.0259)
Scheduled Tribe	0.0295	-0.000114	-0.0117
	(0.0261)	(0.0272)	(0.0173)
state controls			
Gujarat (reference)			
Madhya Pradesh	-0.0699	-0.160***	-0.156***
	(0.0493)	(0.0373)	(0.0338)
Rajasthan	-0.146**	-0.169***	-0.156***
	(0.0462)	(0.0378)	(0.0353)
constant	0.840***	0.506***	0.256***
	(0.0891)	(0.0795)	(0.0739)
n (adults age 14-69)	2,673	2,673	2,673

Standard errors, clustered at the village level, are shown in parentheses.
Two sided p-values: * 0.05, ** 0.01, *** 0.001.