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Livelihood Alternatives to Labor Migration

A Choice Experiment in Tajikistan

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ABSTRACT

Labor migration is often driven by a need for income, and can also be motivated by a desire for higher earnings. A naïve assumption is therefore that an increase in local livelihood alternatives might reduce outmigration, something which has been found to hold true in some settings, but not in others. This study employs a discrete choice experiment (DCE) with 408 rural respondents in Tajikistan—a country heavily reliant on remittances from abroad—to assess whether specific local income-generating opportunities, such as those offered through cash-for-work programs or through the provision of additional farmland, might affect stated preferences regarding migration. The study explores trade-offs between local income generating opportunities (wage employment, access to farmland, and irrigation infrastructure) and migration restrictions, i.e., hypothetical constraints on household members migrating abroad for a given duration. We rely on stated rather than revealed preferences to examine these trade-offs. Our findings lend some support to the idea that households are willing to accept outmigration restrictions in return for improved local income-generation opportunities, either through wage employment or own-farming. Yet, findings are heterogeneous and depend on the households' current and anticipated reliance on labor migration.

Keywords: choice experiment, migration, Central Asia, land, rural livelihoods, public work programs

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1. Introduction

A large share of the workforce migrates to earn income. Roughly one in every thirty people around the globe are international migrants (McAuliffe and Oucho 2024), and about two thirds of working-age migrants are classified as international labor migrants (ILO 2024). In addition, a large number of workers migrate domestically, moving predominantly from rural to urban areas for work. China, for example, was estimated to have around 376 million domestic migrant workers (Chan 2021). Labor migrants do not only aspire to earn more income for themselves, but often also send remittances to improve food security and living standards of those staying behind.

Yet, migration is not without challenges. Migrants leave behind relatives and friends, undertake risky journeys to reach their destination, and risk discrimination and exploitation in their host communities and at work (Lenard and Straehle 2010, Nakajima 2019, McMahon and Sigona 2020, Ewers et al. 2023). When migration flows are sizeable, sending communities may face undesirable socio-demographic shifts. For example, large-scale outmigration of men or young adults can cause a feminization or ageing of rural populations, leaving rural households to scramble for sufficient farm workers or struggling to provide adequate care for the elderly and left-behind children (Pattnaik et al. 2018, Giles and Mu 2024). Furthermore, a large and chronic reliance on remittances makes sending households and communities vulnerable to shocks affecting employment in the migration destination or international mobility (Gang et al. 2018, Mack et al. 2021, Akçay & Karabulutoğlu 2025).

When migration is motivated by limited income-generating opportunities at home, an assumption might be that improving and diversifying local economic opportunities would reduce the need to migrate (Clemens and Postel 2020)—some evidence supports this assumption. Seasonal migrants in India prefer foregoing migration to the city to participate in a local public work program, despite wages being roughly 25 percent lower in the latter (Imbert and Papp 2020). In Ethiopia, rural youth who expect to inherit larger plots of land have a lower likelihood to migrate (Kosec et al. 2018). Using evidence from seven randomized experiments from a range of low- and middle-income countries, Giambra and McKenzie (2021) find that

programs increasing self-employment (through business training, grants, or microenterprise support) reduces migration, albeit to a modest extent.

However, when the benefits of migration are relatively large, additional income-generating opportunities may do little to stem migration. Local economic development can even encourage migration (Clemens and Postel 2018). As household incomes rise, the resources needed to finance migration become more accessible (Clemens and Postel 2018; Gazeaud et al. 2023), and access to credit can also enable households to fund migration as shown in China, where internal migration increased with access to microcredit (Cai 2020). Cash-based programs can also have similar effects: in China, internal migration increased in the presence of public work schemes (Chau et al. 2014), and in Comoros, cash-for-work transfers relaxed the liquidity and risk constraints that previously deterred poor households from undertaking costly or risky migration journeys (Gazeaud et al. 2023).

In this study, we employ a discrete, hypothetical choice experiment to understand if and which local income-generating opportunities are associated with reduced stated preferences to migrate among rural households in Tajikistan. Discrete choice experiments (DCE) build on hypothetical scenarios and are well known in social science research but have not commonly been applied to understand migration preferences (Tjaden et al. 2025). Some exceptions include studies that aim to understand the relationship between migration and climate change (e.g. Cuong et al. 2024, Trinh and Munro 2024, Gest et al. 2025), and push and pull factors for migration (e.g. Ferwerda and Gest 2021, Hager 2021). Relying on stated preferences allows us to elicit insights unlikely to be achieved through studying revealed preferences (i.e. actual migration decisions), such as the trade-offs among a broad set of attributes and varying levels of support.

Our study includes 408 respondents in rural Tajikistan and assesses households' stated willingness to forego migration when offered additional income-earning opportunities, such as those offered by development and social assistance programs, including cash-for-work. Tajikistan, a post-Soviet State in Central Asia, is extremely remittance dependent (World Bank 2025a). Roughly one-third to one-half of Tajik households are estimated to have at least one member working as a migrant abroad (World Bank 2023). Remittances are an indispensable source of income for many Tajik households and are often the only strategy for fund

marriage and family life for young people (Borisova 2024). Unlike other studies from contexts where international migration is relatively rare (e.g. Giambra and McKenzie 2021; Gazeaud et al. 2023), the prominence of migration among young adults in Tajikistan renders this a relevant setting to explore the linkages between migration preferences and income-earning opportunities.

2. Study background

Tajikistan is a mountainous landlocked country of about 10.6 million people in Central Asia (World Bank 2025a), bordering Afghanistan, Uzbekistan, Kyrgyzstan, and China. It seceded from the Soviet Union in 1991 but experienced a Civil War from 1992 to 1997 (Atkin 1997). Subsequently, the country was in a state of absolute poverty by the end of the 1990s, followed by a period of rapid poverty reduction driven by renewed economic growth, rising remittances from labor migration, and an agricultural rebound that began in 1999 (Lerman and Sedik 2018; Akramov et al. 2025). By 2015 the country transitioned from being classified as a low-income country to a lower middle-income country. Nevertheless, it remains the poorest of all five countries in Central Asia (World Bank 2025a) and faces significant unemployment challenges: only 28 percent of women and 45 percent of men aged 15 years and older were employed in-country in 2024 (ibid). The agricultural sector is the largest employer, accounting for 60 percent of employed women and 31 percent of employed men (ibid).

Under the Soviet Union, all farmland was allocated to collective and state farms. Upon independence the country initiated a series of land reforms. Most rural households obtained a small household plot (Lerman and Sedik 2018), which in subsequent years proved key for their resilience to food insecurity (Hofman and Visser 2021). Moreover, collective and state farms were gradually divided into individual family farms, called dehkan farms (peasant farms). This reform was mostly implemented before the end of the 1990s.[1] Not all households obtained dehkan farmland (Lerman and Sedik 2018, Hofman and Visser 2021). In 2023 in Southern Tajikistan, for example, approximately 10 percent of rural households have a dehkan farm (Lambrecht et al. 2023). Finally, additional small plots of land were distributed to households with high

[1] Note that these reforms were incomplete and prone to elite capture, and a share of dehkan farmland is still organized as collective – rather than individual- dehkan farms (Lerman and Sedik 2018; Hofman and Visser 2021).

levels of food insecurity under two Presidential Decrees in 1995 and 1997, known as "Presidential Plots" (Hofman and Visser 2021).

All farmland is State property, but farmers obtained inheritable and transferable use rights to the respective farmland (Klumper et al. 2018). Selling of land use rights, however, is not allowed (Klumper et al. 2018). Moreover, freedom of crop choice is often constrained, given that farmers are pressured by local authorities to grow specific crops, particularly on dehkan farms. Local authorities are responsible for achieving government-dictated production quota for strategic crops (e.g. cotton and wheat) at regional and sub-regional levels (Hofman and Visser 2021).

Despite agriculture's importance to the rural and national economy, agricultural productivity is low and strongly dependent on irrigation (FAO 2023). About two thirds of total arable land in the country was irrigated in 2021 (FAO 2023). Yet, most irrigation systems were built during the period of the former Soviet Union and have deteriorated over time (Klumper et al. 2018; FAO 2023, World Bank 2024), leading to excessive water losses and low irrigation efficiency (World Bank 2024). Moreover, irrigation water availability is often seasonal and insecure (Klumper et al. 2017), and is further threatened by the impacts of climate change (Chen et al. 2026).

The low and variable agricultural productivity and the scarcity of other income-earning opportunities has forced many to seek employment abroad. Ever since the country's independence, remittances have been key to poverty reduction (Gang et al. 2018; World Bank 2025b). Remittances are associated with improved food security and larger household expenditures (Ghimire et al. 2023; Takeshima et al. 2025; Yamada et al. 2022). The value of personal remittances has been more than 25 percent of the country's GDP since 2006, and amounted to an estimated 48 percent in 2024 (World Bank, 2025a).

Labor migrants are predominantly young to middle-aged men from rural areas (Ghimire et al. 2023). While relatives stay behind, they migrate for relatively long periods of time – often several years- and may do so repeatedly across multiple migration episodes (Ghimire et al. 2023, IOM 2024). Russia is the main destination for Tajik migrants, since the two countries share a joint history as part of the Soviet Union, the relatively easy migration process, its geographic proximity, and the availability of unskilled jobs for

significantly higher wages (Shimizutani & Yamada 2023). Yet, migrants often regret being separated from their families and relatives, sometimes endure harsh and physically demanding employment conditions, face xenophobia, as well as restrictive and ever-changing migration laws and regulations (Nikiforova and Brednikova 2018, Zotova and Cohen 2020).

Although there are no large, sustained government-supported cash-for-work programs that take place in the study region, cash-for-work programs are occasionally organized with support of international development assistance programs and in collaboration with local and regional government authorities. These programs aim to boost food security and resilience of vulnerable households and communities. Cash-for-work and asset transfer programs gained particular attention as a means of social protection in the wake of recent major global crises, particularly the COVID-19 pandemic and the invasion of Ukraine – which were feared to strongly reduce remittance flows and thereby initiate a food insecurity crisis.

Cash-for-work programs generally offer short-term employment (3-4 months) for half-days and pay approximately 500 to 1,000 Tajik Somoni (Tjs) per month to either a male or a female adult living in food insecure households.[2] The programs aim to establish or renovate community infrastructure, based on the needs of the community. This includes cleaning and renovating irrigation canals, renovating drinking water supply systems, improving canals for flood prevention, or similar interventions. Program participants are generally interested in supplementing household incomes and are motivated by the prospect of improving critical infrastructure for their communities. Alternatively, some programs support vulnerable households with productive assets – such as greenhouses, solar driers, solar pumps, etc. - and provide associated training. Where feasible, beneficiary households are asked to contribute labor to the construction of the asset. Moreover, to maximize the productive use of these assets, programs prioritize beneficiaries who report no intention to migrate, despite being unable to impose explicit constraints or penalties should beneficiaries subsequently choose to migrate.

[2] The minimum wage at the time of the survey was 800 Tjs per month. However, cash for work programs require working for only half-day.
Note, on October 15, 2024, the exchange rate was 93.62 USD per 1,000 Tjs.

3. Data and methods

3.1. Choice card attributes and levels

DCEs were initially developed by Louviere & Hensher (1982) and Louviere & Woodworth (1983) to model consumer preferences for different products or services. In a DCE, respondents choose between a set of hypothetical scenarios with varying attributes. By repeating the choice process across different scenarios with varying levels of the attributes, the relative importance of the different attributes and attribute levels can be assessed.

We rely on a DCE setup to analyze respondent's tradeoffs between an increase in local income- and asset-generating activities and a restriction on migration. These local income- and asset-generating activities are presented in the form of participation in a cash-for-work program, which in our design offers not only wages in exchange for labor performed but also, depending on the scenario, improvements to irrigation infrastructure or additional farmland. More specifically, each scenario in the choice experiment was a hypothetical cash-for-work program comprised of six attributes (Table 1). Three attributes focus on the employment aspects of cash-for-work programs: (i) employment duration, ranging from 1 to 24 months, (ii) monthly wage for this employment, ranging from 0 to 7,000 TJS, and (iii) seasonality of this employment. Every scenario includes at least one month of employment, which requires that a household member contribute a minimum level of work effort for the household to access program benefits if they choose to opt-in.

The next two attributes relate to the additional benefits the program may deliver by way of agricultural improvements, and capture households' interest in farming as a livelihood strategy (as opposed to non-farm employment or migration): (iv) the creation or renovation of irrigation infrastructure at the community level, and (v) land use rights to additional farmland at the household level, ranging from 0 to 1.5 ha.

The sixth attribute consists of a migration restriction for all household members for 0 up to 24 months. This attribute aims to offer insights in the trade-offs between additional local livelihood opportunities offered through cash-for-work or asset transfer programs and migration. This was deemed impractical, however, as it would require detailing multiple employment-related conditions during migration (such as job

guarantees, duration, sector, wage level, and permit status). Moreover, since migrant employment is typically viewed positively, its inclusion would likely require inducing a counterbalancing negative attribute.

Table 1: Attributes and attribute levels

Attribute	Description	Levels
Employment duration	Duration of employment for one member of the household. This person is expected to work half days, five days a week, for the entire duration of the cash-for-work program. The work entails physical labour for which no prerequisite knowledge is required and is adapted to the physical capacity of male and female adults in reasonable health.	1 – 3 – 6 – 12 – 24 months
Monthly wage	A zero wage implies voluntary work. The remaining levels range between the general rates for cash-for-work (500-1,000 Tjs), the average monthly wages in the country (~ 2,000 Tjs); and wage levels of labor migrants in Russia [3].	0 – 500 – 1000 – 3000 – 5000 – 7000 TJS
Seasonality	The program starts either in-season (from spring onwards, during the main agricultural season) or off-season (at the end of fall, when there is no/limited agricultural production).	In season – off season
Irrigation system	Newly built or renovated irrigation system. The system will provide a continuous and reliable flow of irrigation water to all agricultural plots in the community.	No support – irrigation system
Land use rights	Land use rights over additional dehkan farmland for 5 years.	0 – 0.5 – 1 – 1.5 hectares
Migration restriction	Migration restriction applying to all members of the participant's household. The migration restriction period starts when employment starts.	0 – 6 – 12 – 24 months

Note that the highest levels of the employment duration and monthly wages were respectively longer and higher than what was offered in former and upcoming cash-for-work programs. Cash-for-work programs implemented during a relatively short period and offering low wages might not suffice to change migration behavior nor are they generally expected to enable productive investments (Gehrke and Hartwig 2018). Similarly, for most farm households' average sizes of landholdings did not offer sufficient livelihood opportunities to hinder labor migration in our study area. We therefore decided to include and surpass these common levels of these respective attributes to seek an acceptable trade-off with migration restrictions.

The attributes and levels presented on the choice cards were informed by earlier qualitative research on migration (Lambrecht et al., 2025) and discussions with implementing partners and beneficiaries of former

[3] Migrant wages vary, with sources citing lower average monthly salaries of about 5,900 Tjs among Central Asian migrant workers in Moscow in the fall of 2023 (Daryo 2024), to a much higher 15,000 Tjs among industrial factory workers in June 2024 (Rickleton and RFE/RL 2024).

and planned cash-for-work initiatives in the study area. Prior to the implementation of the survey, two gender-segregated focus group discussions were implemented to confirm that respondents perceived the predetermined attributes and their levels as realistic. Moreover, the questionnaire (including choice cards) was pretested with 10 respondents.

Given the impracticality of a full factorial design, a fractional factorial design was used, implemented in Ngene using a D-efficient design for mixed logit models and priors derived from the pilot test. Thirty-two choice sets, organized in four blocks of eight choice cards, were developed with each choice set consisting of two alternative scenarios and an opt out (Figure 1). Restrictions were added to avoid the inferior scenario of working in a program without receiving any benefits (i.e. either a wage, irrigation infrastructure or land).

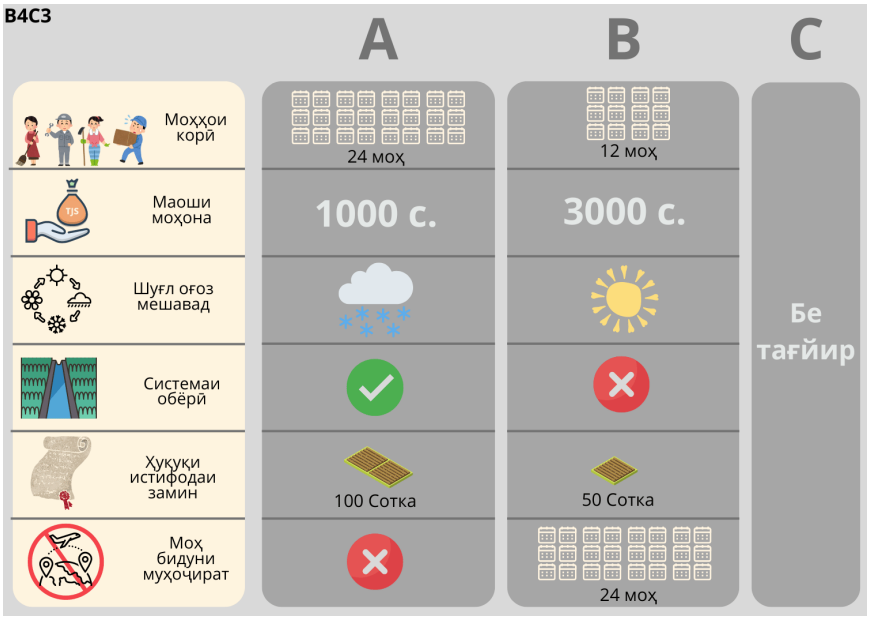

Figure 1: Example of a choice card

3.2. Study sample and survey administration

Interviews were conducted in October 2024 in four districts with different livelihood and migration profiles in Khatlon Province, Tajikistan. In each district, 2 or 3 jamoats (sub-district administrative units, each comprising multiple villages) were randomly selected – with 3 jamoats in the larger districts. In each of these jamoats, 3 to 4 villages were randomly selected – depending on the population size in these jamoats. Six men and six women were interviewed per village. Respondents had to be of working age (18-65 years)

and have some input into the day-to-day decisions within their households. In total, 408 respondents were interviewed in 34 villages.

The questionnaire included the DCE module as well as questions on relevant socio-economic household characteristics. Interviews were conducted by qualified staff of the Tajik Academy of Agricultural Sciences (TAAS) in Tajik or Uzbek. To reduce hypothetical bias, a short cheap talk script was included as part of the choice experiment's explanation (Cummings and Taylor 1999, List 2001). Opt-out reminders were also included: after each opt-out, the respondent was asked why he / she opted out. Answers were collected using tablets programmed to automatically assign one of the four blocks of choice cards to each respondent and assure each block was used three times per village. The order of the choice cards was randomized within each block.

The final sample consists of 395 respondents. Thirteen respondents completed the interview but were subsequently dropped from the analysis because they opted out of every choice card, citing reasons such as no eligible household member being able to participate or not understanding the choice task, the latter despite enumerators' efforts to re-explain as needed.

3.3. Empirical analysis

3.3.1 Random utility framework

The theoretical background of the DCE goes back to the consumer theory of Lancaster (1966) and the random utility theory of McFadden (1974), whereby one can assume that an individual (n) derives a certain utility (U) from alternative (j) in the choice task (t). The alternative (j) is described by a deterministic component V and a random component ε. In a DCE, the deterministic component depends on the attributes. For our study, this can be expressed as follows:

$$U_{njt} = V_{njt} + \varepsilon_{njt} \quad \text{(eq. 1)}$$

$$U_{\text{njt}} = Empl_{\text{njt}} + Wage_{\text{njt}} + Land_{\text{njt}} + Irrig_{\text{njt}} + Land_{\text{njt}}\ x\ Irrig_{\text{njt}} + Season_{\text{njt}} + Migr_{\text{njt}} + ASC_{nt} + \varepsilon_{\text{njt}} \quad \text{(eq. 2)}$$

Whereby the attributes are represented as *Empl* (employment duration), *Wage* (monthly wage), *Land* (land use rights), *Irrig* (irrigation infrastructure), *Season* (start season of program), and *Migr* (duration of migration restriction). The main specification also includes an interaction effect between land access and

irrigation (*Land x Irrig*), and an alternative-specific constant (*ASC*) for program participation. The analyses rely on a rescaled measure of the duration variables (employment duration and duration of the migration restriction), expressed in years rather than months.

Equations (1) and (2) define the utility functions underlying the empirical models that estimate the stated preference parameters from the respondents' choices. As they are derived from choices in hypothetical scenarios, the estimated parameters should be interpreted as stated preference parameters reflecting how respondents value the attributes in the experiment. They do not represent observations of actual migration behavior.

3.3.2 Mixed logit model specification

We estimate mixed logit models (MXL), which relax the restrictive assumptions of the commonly used Conditional Logit Model, notably the independence of irrelevant alternatives (McFadden 1974; Lancsar et al. 2017). The MXL allows coefficients to vary randomly across individuals, thereby accommodating unobserved heterogeneity in tastes (Train 2003). Our main analysis relies on uncorrelated MXL specifications, which assume independent random coefficients except for the migration restriction, which is kept fixed to allow us to estimate tradeoffs in terms of willingness to forego migration. These models are estimated using 500 Halton draws and robust standard errors, with all random parameters specified as normally distributed.

Following Hess and Train (2017), we also estimated a correlated MXL model that recovered a full covariance matrix, thereby accounting for relationships between parameters as well as their variances. The results from the correlated specification were similar to those from the uncorrelated models in terms of the estimated means and standard deviations of the random parameters, and the substantive interpretation of the results did not differ much. We therefore focus on the uncorrelated specifications in the main text.

In addition, we seek to quantify the trade-offs between various livelihood alternatives and restrictions on migration. We therefore look at the duration of the migration restriction (expressed in years) that respondents are willing to accept ($mWTA_{mig}$) in return for additional livelihood support. The $mWTA_{mig}$ are

calculated as the ratios of attribute coefficients to the coefficient on migration restrictions, using the uncorrelated MXL model that includes the land x irrigation interaction. When land use rights and irrigation are jointly provided, the numerator combines the coefficients on land, irrigation, and the land x irrigation interaction, reflecting the full utility gain from receiving both attributes together.

Note that we do not account for attribute non-attendance (ANA) (Hensher et al. 2005) in our main analyses. Both stated and inferred ANA are low in our sample. Few respondents stated that they did not consider a specific attribute.[4] Similarly, inferred ANA is low, and model results do not meaningfully change when inferred ANA is accounted for (results not shown here). This may be due to the high education level and motivation of the enumerators, and their efforts to ensure respondents understood all choice tasks.

3.3.3 Observed and unobserved preference heterogeneity

We explore observed preference heterogeneity by estimating additional specifications in which interaction terms between attributes and key socio-economic characteristics are introduced into the main uncorrelated MXL model one at a time, yielding eleven distinct interaction models. As respondent-level characteristics do not vary within a choice set, they enter the model through interactions with attributes rather than as standalone controls. Estimating interactions separately, rather than jointly, allows us to preserve model stability and interpretability given the already rich attribute set and the limited number of choice tasks per respondent. Although the migration restriction is kept fixed in these models, heterogeneity in preferences toward migration is explored through interactions between the migration restriction and socio-economic characteristics.

The specific socioeconomic characteristics were selected based on their anticipated direct link to respondents' preferences for certain attributes. Expected migration plans in the next two years, contact with migrants, and permanent employment options likely affect preferences towards the migration restriction

[4] One respondent never considered irrigation, and seven respondents indicated they did not consider employment duration.

and employment duration. Moreover, household water insecurity[5] and experienced irrigation disruptions likely affect preferences towards water infrastructure. Finally, we also included variables that might offer insights when targeting vulnerable households (i.e. experiencing shocks, using coping strategies and wealth status), as well as the respondents' gender.

To complement this interaction-based approach, we also examine unobserved heterogeneity using latent class (LC) models. The LC framework allows us to examine whether preference heterogeneity is better captured through discrete latent classes rather than continuous random variation (Greene and Hensher, 2003). Accordingly, in the LC we allow all attributes—including the migration restriction—to vary across classes, reflecting the focus on heterogeneity rather than trade-off estimation. We tested specifications with 2–4 latent classes, both with the migration restriction held fixed (consistent with the mixed logit for comparability) and with all attributes specified as random. Model selection was based on statistical fit (log-likelihood, AIC, BIC) and interpretability of class profiles. Next, we assigned respondents to their most likely class based on posterior probabilities, and pairwise t-tests were then used to compare mean values of socioeconomic characteristics across classes.

4 Results

4.1 Descriptive results

The sample consists of an equal amount of male and female respondents (Table 2). Respondents are on average 47 years old, and 34 percent attained post-secondary education. They commonly live in an extended family setting, with on average two male and two female adults, about 94 minutes away from the nearest urban center. About 74 percent of sampled households have at least one wage worker, and 45 percent have at least one member with a permanent job. Households have relatively little land, on average only 0.62 ha, but 42 percent have plots other than a household plot, including dehkan farms or presidential plots. Nearly

[5] We measure household water insecurity using the HWISE (Household Water Insecurity Experience) Scale, a validated, 12-item scale that quantifies experiences across multiple components of household water insecurity spanning both drinking water and water used for other purposes. The HWISE score is calculated by summing scores, based on frequency, across the 12 items, yielding a range of 0-36, where higher scores indicate greater household water insecurity. Households with scores of 12 or more are classified as water insecure (Young et al. 2019)

one in four households, 23 percent, report facing water scarcity on at least one of their agricultural plots. Average household water insecurity, measured using the HWISE scale, is negligible at 2.47 on a 0-36 scale. Household wealth is summarized using an asset index constructed from a polychoric principal components analysis of housing characteristics, consumer durables, land holdings, and livestock ownership, and divided into quintiles.

Table 2: Characteristics of study sample

	Average (std. deviation)
Respondent is male	0.50
Age of respondent (years)	47.05 (13.25)
Respondent has post-secondary education	0.34
# adult male household members	2.26 (1.25)
# adult female household members	2.10 (1.14)
Highest education in household (in years)	13.01 (1.75)
Nearest urban center (in minutes)	94.28 (63.06)
Household has at least one wage worker	0.74
Household has at least one member with permanent job	0.45
Total agricultural land area (ha)	0.62 (1.39)
Household has hh plot and other plot(s)	0.42
Household faces water scarcity on any plot	0.23
At least one member ever migrated internationally	0.79
At least one member migrated internationally in past 12 months	0.53
At least one member intends to live abroad in next 2 years	0.41
Contact with migrants: at least annually	0.77
Total value of all remittances in past 12 months (in 1,000 tjs)	17.9 (19.1)
Household received any remittances in past 12 months	0.52
Max coping level 1: HH not adopting coping strategies	0.48
Max coping level 2: Stress coping strategies (i.e. drawing down savings, borrowing money, or selling household assets)	0.34
Max coping level 3: Crisis coping strategies (i.e. reducing education expenses, selling productive assets, or reducing expenditures on essential health issues)	0.16
Max coping level 4: Emergency coping strategies (i.e. withdrawing children from school, engaging in socially degrading, high-risk income generating activities, begging, or mortgaging or selling the households' main residence or land)	0.02
Household experienced a shock in the last 2 years	0.56
Asset index quintile (polychoric PCA)	2.99 (1.41)
HWISE Scale Score	2.47 (3.65)
# observations	395

Note: Author's estimates. HWISE = Household Water Insecurity Experience (Young et al. 2019). Only one household in the final sample reported having no agricultural plots.

Migration is common among households in the sample (Table 2). The majority of households (79 percent) have had a member who migrated internationally, and 53 percent had members migrate in the past 12 months. Moreover, 41 percent of households reported that at least one member intended to live abroad in the following two years. Consistent with these patterns, ongoing links to migrant networks are common: 77 percent of respondents report contact with migrants at least annually. Fifty-two percent of sample households received remittances in the year prior to the survey, and the average value of remittances received in that year was 17,900 Tajik Somoni (equivalent to about 1,675 USD at the time of the survey). As a reference, at the time of the survey this was 22 times the monthly minimum wage (800 Tjs), and nearly seven times the average monthly salary across all activities in the country (2592 Tjs).

Coping behavior is measured using the World Food Program's standard livelihood coping strategies classification indicators, which categorize households based on the most severe coping strategy they reported adopting in the last month: none, stress, crisis, or emergency (Table 2).[6] In our sample, 48 percent of households did not employ any coping strategies in the last month, while 34 percent relied on stress-level strategies, 16 percent resorted to crisis-level strategies, and 2 percent employed emergency-level coping strategies. In addition, 56 percent of respondents reported experiencing at least one shock in the past two years.

4.2 Mixed logit model results

Table 3 reports results from two uncorrelated MXL specifications: a baseline model without the land x irrigation interaction, and a second model that includes this interaction term. In both specifications, respondents demonstrate significant negative preferences toward the migration restriction. Similarly, preferences for higher monthly wages are positive and similar in magnitude across both models, pointing to a consistent valuation of wage gains. Employment duration has a similar positive effect in both

[6] Stress coping strategies include drawing down savings, borrowing money or selling household assets due to a lack of resources to access essential needs. Crisis coping strategies include reducing education expenses, selling productive assets or reducing expenditures on essential health issues. Emergency coping strategies include withdrawing children from school, engaging in socially degrading, high-risk income generating activities, begging or mortgaging or selling the households' main residence or land.

specifications, although the coefficient becomes only marginally significant once the interaction term is added. The timing of the program (in-season versus off-season) is not statistically significant. By contrast, the alternative-specific constant (ASC) for opting into a program is large and highly significant. This reflects substantial baseline utility from program participation beyond the observed attributes, suggesting that respondents generally evaluate the proposed programs favorably.

Table 3: Estimated effects of choice attributes based on the mixed logit model

	No interaction		With interaction	
	Coefficient	**Std. error**	**Coefficient**	**Std. error**
Means				
Migration restriction	-0.314***	0.073	-0.300***	0.071
Monthly wage	0.397***	0.036	0.400***	0.036
Employment duration	0.179**	0.060	0.130*	0.057
Land use rights	0.732***	0.086	0.134	0.123
Irrigation infrastructure	1.299***	0.127	0.486**	0.174
Land X irrigation	-	-	1.098***	0.184
In-season	0.104	0.062	0.018	0.063
ASC for opting in	5.478***	0.731	7.612***	1.218
Standard deviations				
Monthly wage	0.362***	0.042	0.346***	0.045
Employment duration	0.319*	0.155	0.345*	0.135
Land use rights	0.890***	0.119	0.845***	0.126
Irrigation infrastructure	1.349***	0.138	1.235***	0.157
Land X irrigation	-	-	0.746***	0.220
In-season	0.428**	0.157	0.444***	0.123
ASC for opting in	3.925***	0.683	-5.504***	0.763
Model fit statistics				
Number of observations	9,480		9,480	
Number of parameters	13		15	
Log likelihood	-1,995		-1,970	
AIC	4,015		3,971	
BIC	4,108		4,078	

Note: Authors' estimates. Reported estimates include mean coefficients, mean standard deviations, and standard errors. Significance levels are shown at *p<0.05, **p< 0.01, ***p< 0.001.

Both models point to substantial unobserved heterogeneity across respondents, which is reflected in the large and statistically significant standard deviations for all random parameters. Notably, such heterogeneity appears even for attributes with insignificant mean coefficients, such as land use rights, indicating that the lack of a mean effect reflects substantial variation across respondents rather than uniformly weak preferences. The first model shows positive preferences for irrigation, irrespective of land rights, and positive preferences for land rights, irrespective of irrigation. The second model shows that preferences for one increase with the other. The estimated coefficient on the interaction term itself is large

and highly significant, indicating substantial value placed on receiving land use rights in combination with improved irrigation infrastructure.

Table 4 summarizes the marginal willingness to accept migration restrictions ($mWTA_{mig}$) or the number of years of migration restriction that respondents would accept in exchange for an improvement in another attribute. These estimates are derived from the preferred MXL specification that includes the land use rights x irrigation interaction. The largest trade-off is observed for the joint provision of land use rights and improved irrigation: respondents would accept roughly 5.7 years of migration restriction for every ha of additional farmland with irrigation access, far exceeding the trade-offs associated with any individual attribute. This aligns with the earlier finding that land use rights and irrigation access mutually reinforce preferences for participating and accepting migration restrictions. An additional 1,000 TJS in monthly wages corresponds to an $mWTA_{mig}$ of about 1.3 years, while one additional year of employment corresponds to roughly 0.4 years. Improved irrigation infrastructure alone is associated with an $mWTA_{mig}$ of approximately 1.6 years, indicating that respondents are also willing to accept migration constraints in exchange for more reliable irrigation water access.

Table 4: $mWTA_{mig}$ (in years of foregone migration) estimates for the MXL model with interactions

	Point estimate	95% confidence interval	Standard error
Monthly wage (1,000 tjs)	1.331***	[0.735, 1.928]	0.304
Employment duration (1 year)	0.431*	[0.056, 0.807]	0.192
Irrigation infrastructure	1.618**	[0.414, 2.822]	0.614
Land (1 hectare)	0.447	[-0.329, 1.223]	0.396
Land (1 hectare) with irrigation	5.720***	[3.171, 8.269]	1.300
Season	0.060	[-0.349, 0.468]	0.208
# observations	*9,480*		

Note: Authors' estimates based on survey data from Khatlon province. Results reflect mWTA in preference space, based on results from Table 3. Significance levels are shown at *p<0.05, **p<0.01, ***p<0.001.

4.3 Observed preference heterogeneity

We next examine observed sources of preference heterogeneity by introducing interaction terms between the choice attributes and a selected set of respondent and household characteristics (Table 5). The aversion to the migration restriction lessens among households where at least one member has a permanent job, indicating greater tolerance for migration constraints when income security is higher. It increases, however,

Table 5: Mean coefficients for socioeconomic covariate interactions estimated in uncorrelated MXL models

	Base model	HH member w permanent job	HH member intends to migrate (2y)	Migrant contact (≥ annual)	Irrigation water scarcity	HWISE Score	No coping	Emergency coping	Shock (past 2y)	Asset index	Male respondent
Migration restriction	-0.300***	-0.436***	-0.326***	-0.024	-0.311***	-0.221*	-0.413***	-0.291***	-0.129	-0.253	-0.233*
	(0.072)	(0.099)	(0.089)	(0.130)	(0.079)	(0.087)	(0.090)	(0.071)	(0.109)	(0.166)	(0.102)
Monthly wage	0.400***	0.372***	0.378***	0.300***	0.421***	0.350***	0.458***	0.393***	0.475***	0.403***	0.392***
	(0.036)	(0.039)	(0.047)	(0.051)	(0.040)	(0.034)	(0.044)	(0.035)	(0.050)	(0.067)	(0.046)
Employment duration	0.130*	0.030	0.143	0.258	0.162*	0.165*	0.114	0.113	0.178*	0.127	0.028
	(0.057)	(0.073)	(0.080)	(0.133)	(0.070)	(0.068)	(0.081)	(.)	(0.089)	(0.139)	(0.088)
Land use rights	0.134	0.030	0.327*	0.272	0.130	0.031	0.201	0.120	0.188	0.221	0.008
	(0.123)	(0.164)	(0.165)	(0.262)	(0.142)	(0.143)	(0.163)	(0.122)	(0.185)	(0.284)	(0.174)
Irrigation Infra	0.486**	0.361	0.606**	0.349	0.270	0.225	0.486*	0.500**	0.420	0.677	0.834**
	(0.174)	(0.234)	(0.221)	(0.323)	(0.200)	(0.201)	(0.218)	(0.173)	(0.253)	(0.392)	(0.277)
Land x irrigation	1.098***	1.056***	0.950***	1.100**	1.098***	1.247***	0.938***	1.105***	1.190***	0.402	1.161***
	(0.184)	(0.249)	(0.240)	(0.364)	(0.217)	(0.223)	(0.232)	(0.183)	(0.270)	(0.425)	(0.277)
In-season	0.018	0.040	-0.008	0.152	-0.040	-0.067	0.137	0.015	0.012	0.202	-0.037
	(0.063)	(0.087)	(0.083)	(0.123)	(0.075)	(0.075)	(0.081)	(0.063)	(0.101)	(0.143)	(0.086)
ASC	7.612***	8.317***	7.219***	11.15***	6.547***	7.796***	7.407***	7.620***	7.058***	6.031***	7.012***
	(1.218)	(1.817)	(1.400)	(2.077)	(1.263)	(1.256)	(0.979)	(1.217)	(1.316)	(1.129)	(1.332)
Migration restriction x Covariate		0.293*	0.053	-0.351*	0.006	-0.031	0.250	-1.051**	-0.292*	-0.018	-0.460
		(0.141)	(0.145)	(0.152)	(0.197)	(0.018)	(0.137)	(0.361)	(0.142)	(0.051)	(1.041)
Monthly wage x Covariate		0.050	0.064	0.129*	-0.115	0.020**	-0.142**	0.298	-0.135**	-0.003	0.031
		(0.052)	(0.053)	(0.061)	(0.064)	(0.007)	(0.051)	(0.334)	(0.051)	(0.019)	(0.053)
Employment duration x Covariate		0.249*	-0.015	-0.181	-0.002	-0.020	0.051	1.060	-0.088	0.006	0.223
		(0.116)	(0.114)	(0.146)	(0.136)	(0.016)	(0.111)	(0.591)	(0.114)	(0.041)	(0.114)
Land use rights x Covariate		0.235	-0.449	-0.180	0.067	0.046	-0.132	1.592*	-0.136	-0.032	0.277
		(0.238)	(0.240)	(0.291)	(0.293)	(0.039)	(0.238)	(0.684)	(0.240)	(0.087)	(0.243)
Irrigation infra x Covariate		0.275	-0.281	0.165	0.901*	0.104*	-0.026	-0.869	0.069	-0.065	-0.652
		(0.327)	(0.335)	(0.375)	(0.418)	(0.051)	(0.329)	(0.931)	(0.331)	(0.121)	(0.343)
Land x irrigation x Covariate		0.039	0.319	-0.033	0.180	-0.056	0.267	-2.045	-0.094	0.236	-0.070
		(0.366)	(0.367)	(0.424)	(0.466)	(0.053)	(0.357)	(1.303)	(0.356)	(0.129)	(0.367)
In-season x Covariate		-0.051	0.077	-0.174	0.229	0.037	-0.234	-0.095	0.006	-0.071	0.128
		(0.126)	(0.127)	(0.141)	(0.149)	(0.019)	(0.125)	(0.492)	(0.128)	(0.046)	(0.126)
ASC x Covariate		-0.256	-2.619*	-3.674***	0.780	0.315*	-0.169	25.15***	1.246	0.095	-0.460
		(1.225)	(1.059)	(1.044)	(0.701)	(0.155)	(0.883)	(2.059)	(0.885)	(0.191)	(1.041)

Note: Author's estimates. Estimates are from uncorrelated mixed logit models with attributes other than migration restriction modeled as random; the migration restriction and all interaction terms are specified as fixed. HWISE= Household Water Insecurity Experience (Young et al. 2019). Significance levels are shown at *p<0.05, **p<0.01, ***p<0.001, standard errors are shown in brackets.

among households in which respondents maintain regular contact with migrants, households who experienced shocks, and those that used emergency coping mechanisms. These results indicate that observed heterogeneity in preferences toward migration restrictions is associated with differences in households' migration exposure, employment security, and vulnerability.

Preferences for a higher monthly wage are stronger when respondents are in contact with migrants at least annually and among households with lower water insecurity, whereas they are weaker among households who did not use any coping strategies and households who experienced shocks (Table 5). Taken together, these interaction effects indicate that preferences for higher wages vary systematically with households' exposure to migration networks and across different dimensions of household security and stress, rather than along a single vulnerability gradient.

Preferences for employment duration exhibit limited observed heterogeneity (Table 5). They are stronger among households where a member already has a permanent job, while no other covariates yield statistically significant shifts.

Preferences for land use rights are stronger among households who used emergency coping strategies, whereas irrigation is significantly more important among households who faced irrigation water scarcity and water insecurity (Table 5). Variation in preferences for land and irrigation is thus narrow, emerging primarily for specific vulnerable subgroups. Importantly, while the main land use rights × irrigation interaction remains large and highly significant across nearly all specifications, none of the interaction terms between covariates and the land × irrigation bundle are statistically significant. This indicates that the strong complementarity between land access and irrigation improvements is broadly shared across households. A similar pattern emerges for program timing (Table 5). Neither the main effect of in-season employment nor any of its interactions with household characteristics are statistically significant across specifications, consistent with the baseline model.

The ASC exhibits meaningful heterogeneity across households (Table 5). It shows significant negative interactions with respondents who have contact with migrants or households expecting to have a migrant in the coming two years, and positive interactions with water insecurity and emergency coping strategies.

This pattern indicates that the baseline utility from program participation differs systematically across households. Households embedded in migration networks are less likely to opt in overall, while vulnerable households facing shocks or insecurity are more willing to engage regardless of other attributes.

Finally, we do not find significant differences in preferences between male and female respondents, nor across different wealth groups (based on the asset index) (Table 5).

4.4 Latent class model results

Among the estimated LC specifications, we focus on the model with three latent classes that allows all parameters to vary randomly (Table 6). This model consistently achieved a better fit than two-, three-, and four-class models with the migration restriction held fixed. While the four-class specification with all random parameters provided slightly lower AIC and log-likelihood than the final model, it yielded less interpretable class profiles. In contrast, the three-class model with all random parameters produced coherent and internally consistent preference patterns across classes. The class shares reported in Table 6 represent the estimated population shares for each latent class (i.e., the average predicted probability of class membership across respondents): 67 percent in Class 1, 26 percent in Class 2, and 7 percent in Class 3.

The three identified classes differ in their sensitivities to the various choice attributes. Surprisingly, the migration restriction is not significant for respondents in the largest latent class (Class 1, Table 6). Instead, they have strong preferences for attributes that support improvements in local livelihood opportunities – notably higher wages, irrigation infrastructure, and land rights jointly with irrigation access. The significant negative coefficient for in-season employment suggests reluctance to take on additional work during the agricultural season, possibly reflecting existing farming responsibilities. Moreover, they prefer irrigation improvements both on their own and in combination with land rights. Their positive and significant ASC further indicates a general openness to program participation, conditional on these features. This class therefore mainly reflects households who do not exhibit a large reliance on migration, but who strongly appreciate additional local income-earning opportunities.

Table 6: Regression results for latent class model with three classes (all random parameters)

	Class 1		Class 2		Class 3	
	Coefficient	**Std. error**	**Coefficient**	**Std. error**	**Coefficient**	**Std. error**
Attributes						
Migration restriction	-0.031	0.058	-0.301*	0.140	-1.901***	0.285
Monthly wage	0.137***	0.023	0.876***	0.206	0.172**	0.057
Employment duration	0.066	0.052	0.811*	0.385	0.226	0.189
Land use rights	0.177	0.109	-0.780	0.557	-0.219	0.373
Irrigation infrastructure	0.546***	0.153	-1.475*	0.748	-0.285	0.409
Land x irrigation	0.604***	0.175	2.252**	0.788	0.601	0.486
In-season	-0.128*	0.060	0.571**	0.217	-0.041	0.255
ASC for opting in	3.813***	0.401	3.822**	1.214	-0.402	0.398
Class assignment parameter						
Intercept (Class 3 reference)	2.259***	0.218	1.311***	0.288		
Model statistics						
Class shares	67%		26%		7%	
N	9,480					
Log-likelihood	-1,969.6					
AIC	3,991.1					
BIC	4,177.2					

Note: Author's estimates. ASC = Alternative-Specific Constant. AIC = Akaike Information Criterion. BIC = Bayesian Information Criterion. All parameters are random. Significance levels are shown at *p<0.05, **p<0.01, ***p<0.001

Respondents in Class 2 have a modest but statistically significant aversion to the migration restriction. They strongly value higher monthly wages and longer employment duration, as well as employment opportunities during the agricultural season (as indicated by the positive and significant coefficient for in-season work, suggesting they are available to take on additional work at that time). Their preferences for irrigation improvements are negative unless bundled with land rights, in which case they show a strong positive response (i.e. a large, significant land × irrigation interaction). Overall, this class appears to reflect labor-oriented households that prioritize wage-based opportunities and longer employment, while valuing agricultural productivity improvements primarily when access to both farmland and irrigation improve together.

Class 3 is the smallest segment and is defined primarily by a very strong aversion to migration restrictions and a preference toward higher monthly wages. Other attributes, including land rights, irrigation, and employment duration, are not significant, and the ASC is negative but also insignificant. This class thus

represents a small group for whom migration restrictions dominate decision-making, with wages remaining the only consistently valued program benefit.

We next examine how household and respondent characteristics differ across classes. For this profiling exercise, we assign each respondent to the class for which their posterior membership probability is highest, and then compare mean covariate values across the assigned classes using pairwise t-tests (Table 7). The classes do not significantly differ in terms of respondent gender, age, or overall wealth, nor do they differ systematically in total land area or recent exposure to shocks. However, they exhibit clear and meaningful differences along dimensions related to migration exposure, labor composition, water insecurity, and coping behavior.

Class 1, the largest group and the one least responsive to the migration restriction, is characterized by relatively high education levels and the largest share of households with at least one wage worker (Table 7). They are less reliant on migration: they receive lower remittances on average, are less likely to have past or intended migration, and report less frequent contact with migrants. These households are located at an intermediate distance from the nearest urban center and experience moderate water insecurity. Class 1 households are also more likely not to have adopted any coping strategies, consistent with relatively greater livelihood stability.

Class 2, the second largest group that was also sensitive to the migration restriction, displays a distinct vulnerability profile (Table 7). The respondents still have relatively high education levels, but their households less often have wage workers. They rely more on migration for their livelihoods compared to class 1, as reflected in higher remittance receipts, more experience with migration, and more frequent contact with migrants. Households in this class are located significantly closer to urban centers than the other two classes. This class has also relied on coping strategies more frequently, particularly stress-level coping strategies, and experiences higher levels of water insecurity, when compared with other classes.

Table 7: Characteristics of respondents in the three latent classes

	Class 1	Class 2	Class 3	C1 vs C2	C1 vs C3	C2 vs C3
Respondent is male	0.48	0.58	0.43			
Age of respondent (years)	47.4 (0.8)	46.3 (1.3)	46.3 (2.3)			
# adult male household members	2.2 (0.1)	2.2 (0.1)	2.6 (0.3)			
# adult female household members	2.2 (0.1)	1.9 (0.1)	2.3 (0.2)	*		
Respondent has post-secondary education	0.37	0.34	0.14		**	*
Highest level of education in household (years)	13.2 (0.1)	12.8 (0.2)	12.5 (0.3)		*	
Total remittances in past 12 months (in 1,000 tjs)	15.1 (4.2)	19.9 (4.7)	32.8 (1.7)		**	*
Nearest urban center (in minutes)	100 (4)	72 (7)	124 (13)	***		**
Asset index (polychoric PCA)	3.1 (0.1)	2.8 (0.1)	3.2 (0.2)			
HWISE Score	2.3 (0.2)	3.2 (0.4)	1.5 (0.4)			**
Agricultural land area (in hectare)	0.567 (0.08)	0.71 (0.16)	0.80 (0.25)			
Household has hh plot and other plot(s)	0.43	0.33	0.61			*
Household faces water scarcity on any plot	0.26	0.17	0.15			
Household has at least one wage worker	0.78	0.62	0.75	**		
Household has at least one member with permanent job	0.48	0.41	0.32			
At least one member ever migrated internationally	0.75	0.87	0.93	**	**	
At least one member migrated internationally in past 12 months	0.49	0.62	0.61	*		
At least one member intends to live abroad in next 2 years	0.36	0.46	0.71		**	*
Contact with migrants: at least annually	0.73	0.82	0.93		**	
Max coping level 1: HH not adopting coping strategies	0.53	0.33	0.50	***		
Max coping level 2: Stress coping strategies	0.29	0.50	0.25	***		*
Max coping level 3: Crisis coping strategies	0.17	0.12	0.25			
Max coping level 4: Emergency coping strategies	0.01	0.04	0.00			*
Household experienced a shock in the last 2 years	0.57	0.55	0.54			
# observations	*263*	*104*	*28*			

Note: Author's estimates. HWISE = Household Water Insecurity Experience (Young et al. 2019). Significance levels are shown at *p<0.05, **p<0.01, ***p< 0.001. Standard errors are shown in brackets.

Class 3, which is the smallest group and most sensitive to the migration restriction, is the most migration-oriented (Table 7). Nearly all households in this class have migration experience, receive the highest remittance amounts, and are most likely to report intentions to migrate in the near future. Respondents in this class have the lowest levels of post-secondary education. While overall landholdings do not differ significantly across classes, Class 3 households are more likely to hold both household and additional plots

and live farther from urban centers. They also face relatively lower levels of water insecurity, particularly when compared to Class 2 households.

Taken together, the class profiles indicate that preference heterogeneity reflects not only differences in migration exposure, but also systematic variation in labor market attachment, water-related stress, household composition, and coping capacity.

5 Discussion and conclusion

Labor migration can improve living conditions and wellbeing for migrants and their households through remittances, which may also reduce poverty at the national level. However, migration is not always a positive experience and can create challenges for migrants, their communities of origin, and host societies. In addition, countries that rely heavily on remittances, such as Tajikistan, remain vulnerable to external shocks due to this dependence. This study examines whether and under what conditions households might choose not to migrate, focusing on alternative local livelihood opportunities. Using a discrete choice experiment with 408 respondents in rural Tajikistan, the study evaluates preferences for development program attributes such as wages, employment duration, seasonality, irrigation infrastructure, land use rights, and migration restrictions.

On average, respondents have negative preferences towards restricting migration, stressing the importance of migration as a livelihood option for rural households in Tajikistan. At the same time, respondents show positive preferences toward higher wages, additional farmland, and improved irrigation infrastructure. Yet, there is significant preference heterogeneity among respondents. The reluctance to accept a migration restriction is much higher among households whose past and current livelihoods are more determined by labor migration. A large share of respondents do not have a significant aversion to the migration restriction. They belong to households who are relatively less reliant on migration for their livelihoods, and more often have access to wage income. A small share of respondents shows a strong aversion to the migration restriction and is not significantly responsive to any of the other attributes – except for higher wages.

Taken together, our findings confirm that some households might be willing to refrain from migration when additional local income-generating opportunities are offered, either off or on the farm – in line with Imbert and Papp's (2020) findings from a cash-for-work program implemented in India. This willingness to refrain from migration also aligns with findings from in-depth ethnographic studies; while migration is an opportunity for some, it is a necessity for others who are unable to secure adequate income in the context of structural un- and under-employment (Zotova and Cohen 2020; Shimizutani & Yamada 2023).

The quest remains on how to create a policy environment that can enable economic growth locally, the initial investments for which, perhaps, could be funded through remittances. In a context with limited non-farm employment, we find that respondents are not averse to nor necessarily steer away from farming as a livelihood, but higher farm incomes are needed for them to sustain their households, and irrigation is key to crop productivity. While increasing access to land is often not feasible, farm productivity in the study area remains low and could be enhanced through the cultivation of more profitable crops and by supporting farmers to use improved farming technologies.

Four limitations are worth highlighting here. First, while the DCE methodology allows us to obtain rich insights into livelihood tradeoffs, a main drawback is its hypothetical nature (e.g. Penn and Hu 2021). The findings, though plausible based on the authors' assessment of the situation, may therefore suffer from hypothetical bias. Moreover, the study's setup, specifically the inclusion of a migration restriction attribute as well as the inclusion of relatively high monthly wages in return for employment, do not allow us to realistically assess whether migration flows would reduce in the presence of livelihood interventions such as cash-for-work programs.

Second, the experiment covers a limited timespan and the results should therefore also be interpreted as such. We cannot distinguish between foregone and postponed migration, nor can we exclude the possibility of non-compliance with the migration restriction. Third, the order of attributes shown was not randomized, thus potentially leading to order bias in our findings. With the migration restriction shown last, it might have suffered from less attention among respondents, which could offer an alternative explanation why this attribute is of lower importance to a relatively large share of respondents. Fourth, the study sample is

unintentionally skewed toward respondents living in households with relatively high levels of education and with permanent employment. This sample is not representative of the population in the study area, nor is it representative of the subsample of this population that would have been eligible to participate in cash-for-work programs. It is therefore limited in terms of its ability to assess the share of the population that aligns, for example, with the choice preference of different latent classes.

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