World Development 113 (2019) 186–203

Contents lists available at ScienceDirect

World Development

journal homepage: www.elsevier.com/locate/worlddev

Moving to despair? Migration and well-being in Pakistan

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ARTICLE INFO

Article history:
Accepted 3 September 2018

Keywords:
Internal migration
Income
Wealth
Well-being
Pakistan

ABSTRACT

Internal migration has the potential to substantially increase incomes, especially for the poor in developing countries, and yet migration rates remain low. We evaluate the impact of internal migration on both objective and subjective measures of well-being using a unique longitudinal study in rural Pakistan spanning 1991–2013. We account for selection using covariate matching. Migrants have roughly 35–40 percent higher consumption, yet are less likely to report being happy, calm and/or in excellent health, and more likely to report having been sick recently. Our results suggest that deteriorating physical health coupled with feelings of stress and relative deprivation underlie the disparity between objective and subjective well-being. Thus, despite substantial monetary gains from migration, people may be happier and less mentally distressed by remaining at home. If traditional market mechanisms cannot reduce psychic costs, it may be more constructive to address regional inequality by shifting production – rather than workers – across space.

1. Introduction

Low migration rates are often cited as a potential explanation for the lack of convergence in income around the world. Internal migration in particular, which is not constrained by the policies of other nations, has the potential to substantially increase incomes—especially for the poor in developing countries. Several studies have found substantial productivity gaps between urban and rural sectors within countries (see, for example, Gollin, Lagakos, & Waugh, 2014; McMillan, Rodrik, & Verduzco-Gallo, 2014), indicative of labor misallocation. Munshi and Rosenzweig (2016) note a rural-urban wage gap in India of over 25 percent (adjusted for cost of living), and yet urbanization is 15 percent lower than in comparable countries. Bryan, Chowdhury, and Mobarak (2014) document a similar situation in Bangladesh. However, whether low internal migration rates are inefficient depends on both labor market returns as well as costs. Indeed, both Munshi and Rosenzweig (2016) and Bryan et al. (2014) argue that risk considerations inhibit migration, and there are likely to be other implicit costs as well.

In this paper, we shed light on the role subjective well-being may play in deterring otherwise lucrative migration. Data are drawn from a unique panel survey of households in rural Pakistan we conducted, spanning the 22 years from 1991 to 2013–14. In this setting, nearly all migration is internal, and 92 percent of it is to other rural areas. Further, nearly all female migration is for motives other than employment—and mainly for marriage (Aftab, 2014). Accordingly, we focus on migration within the country by men of prime working age (22–60). These sample restrictions allow us to consider a more homogeneous set of motives for migration and provide a clearer picture of the channels through which migration affects well-being. The data allow us to estimate how well internal migration predicts objective and subjective well-being for a broad range of migrants. We observe consumption and asset growth in addition to data on mental distress, physical health, and aspirations for the future, providing us with a comprehensive view of the likely mechanisms explaining apprehensions to migrate. Despite having tracked and surveyed individuals over time, the standard selection problem remains. Unobserved sources of heterogeneity that drive distinct populations to stay or leave rural communities may also affect changes in well-being over time. Use of a long panel assuages concerns about identification by allowing us to control for a wide range of characteristics prior to migration,

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https://doi.org/10.1016/j.worlddev.2018.09.007
0305-750X/

as well as time invariant characteristics at the household and village level. Of course, we cannot rule out the possibility that we omit important time-varying factors at the individual, household, or village level that influence both migration and the outcomes of interest from the empirical model. This motivates our identification strategy: a covariate matching approach.

Our covariate matching approach addresses selection into migration (Abadie & Imbens, 2008; Abadie, Drukker, & Imbens, 2004; Busso, DiNardo, & McCrary, 2014). It allows us to compare migrants to similar non-migrants (based on observable characteristics) and thus construct a counterfactual for what the change in outcomes would have been for migrants, had they stayed. McKenzie, Stillman, and Gibson (2010) deem these estimators to perform well relative to the gold standard of randomization, especially when using lagged wealth as a matching variable and implementing a bias adjustment. While the matching approach cannot perfectly circumvent selection on unobserved characteristics, it provides important evidence on how well migration predicts migrants' objective and subjective well-being. Given the sheer magnitude of internal migration – encompassing roughly 12 percent of the global population (Lucas, 2015) – and the importance of migration in mitigating the inefficient allocation of resources within countries, it seems impractical to limit research on the topic to a very limited number of natural experiments and/or randomized controlled trials. At a minimum, our findings provide additional context for the findings of natural experiments (e.g., Stillman, Gibson, McKenzie, & Rohorua, 2015; Fu & VanLandingham, 2012) to better establish external validity and generalizability. Taken at face value, our analysis provides the first estimates of the impact of internal migration on subjective well-being for a developing country.

Our results suggest that the psychic costs associated with internal migration may be quite high, providing another potential explanation for low spatial mobility within countries. We find that migrants have roughly 35–40 percent higher consumption growth than they would have had they stayed, yet they are 12–14 percentage points less likely to report feeling either happy or calm. Looking at potential mechanisms, what emerges seems to be a story of relative deprivation. Migration makes individuals less likely to report that they are in excellent health, and more likely to report being sick in the last four weeks—and these effects are especially large for longer-distance (out-of-district) migration. Since these are self-reported outcomes, this may reflect both real and/or perceived changes in health; but, in either case, it is clear that there is an adverse impact on subjective well-being. We also show that individuals who migrate aspire to achieve, on average, between 18 and 23 percent more asset wealth, and yet—for out-of-district migrants—their asset wealth actually grows more slowly as a result of migration (the growth rate of asset wealth for in-district migrants is unaffected). This suggests that another channel through which migration may lead to deteriorated subjective well-being is by widening the gap between what individuals wish to achieve in the area of assets and what they actually have—what Ray (2006) calls the "aspirations gap". Indeed, the topic of aspirations has recently received substantial attention in both the economics and political science literatures (Genicot & Ray 2017; Healy, Kosec, & Mo, 2017). We further explore whether migrating with other household members, or having migrated a long time ago (and thus potentially having had time to assimilate to a new culture and situation) may partially mitigate the adverse effects of internal migration on subjective well-being. Instead, we find that migration's effects are similar for those who travel with vs. without family members, and for those who have been away for a relatively short time vs. a longer time.

2. Background

2.1. Conceptual framework

We conceptualize subjective well-being V as a function of objective well-being u, such that the individual derives "intrinsic" value from consumption c, as well as some "milestone utility" w that is dependent on the level of consumption relative to the individual's aspiration a, similar to the model of Genicot and Ray (2017).

$$V = u(c) + w_l(c - a_l)$$

For simplicity, we consider a case where there is a single composite consumption good, but the model could clearly be extended to allow for multiple goods (e.g., health, assets) with differing aspirations and differing intrinsic and milestone utility functions. We do not constrain the function $w(\cdot)$ to be weakly positive; therefore, if consumption falls short of aspirations, this may directly reduce well-being. Aspirations are assumed to develop through a combination of personal and social circumstances such that a shift in the individual's reference point can affect his/her aspirations even absent any material change in personal circumstances or characteristics. Given our focus on migration, we further assume that both aspirations and the milestone utility function are tied to the individual's current location l.

Migration, then, can be understood to have a direct effect on subjective well-being through the level of consumption which, in turn, affects both intrinsic and milestone utility, as well as an indirect effect on well-being through a change in either aspirations (a) or perceptions (w). The milestone utility function may also reflect shifts in perceptions of well-being due to changes in mental health such as stress or anxiety. Then, a clear implication of the model is that, despite improvements in material consumption and objective well-being, migration may still cause a net reduction in subjective well-being. Moreover, we can allow some uncertainty related to migration, both in the realization of consumption and in the formation of aspirations at the destination. In that case, the individual cannot fully anticipate changes in well-being associated with a change in location and, in equilibrium, we may observe some subset of migrants having lower well-being overall.

2.2. Literature review

There is already a broad empirical literature on the subjective well-being of international migrants, though the bulk of this work does not distinguish between changes in material well-being and changes in aspirations. Immigrants are generally found to have lower life satisfaction than do natives living in the same location (Safi, 2010; Amit & Litwin, 2010; Bartram, 2011), though this tells us little about the change in migrants' own conditions. Other studies address this concern by comparing immigrants to non-migrants from the same origin country. Erlinghagen (2011) finds that German emigrants in Europe have better assessments of their own income as well as the local political situation than do non-emigrants. Bartram (2013, 2015), looking at a more diverse set of immigrants in Europe, find that immigrants are generally happier than non-migrants at the origin based on OLS regressions. Findings from two-stage treatment effects models, however, suggest that this result is largely driven by selection of happier people into migration.

Studies using longitudinal data provide more robust evidence on well-being effects of international migration by including controls for pre-migration characteristics and/or individual fixed effects. Melzer (2011) finds a positive effect on subjective well-being for migrants from East to West Germany, and Lönnqvist,

Leikas, Mähönen, and Jasinskaja-Lahti (2015) find a positive effect on life satisfaction for Ingrian–Finnish migrants from Russia to Finland. Stillman et al. (2015) provide perhaps the most rigorous evidence on the subject, utilizing longitudinal data for a natural experiment in Tonga. Comparing winners and losers of a lottery for immigration to New Zealand, they find significant improvements in earnings, income, and expenditure, even after accounting for self-selection—though they find mixed effects on subjective well-being. In particular, happiness declines with international migration, and this effect is increasing over time. This is despite improvements in overall mental health, as measured by the Mental Health Inventory 5 (MHI-5) of Veit and Ware (1983), which includes self-reported scores on calmness, being down-hearted, cheerfulness, and nervousness.

With regard to internal migration, Knight and Gunatilaka (2010a, 2010b) and Akay, Bargain, and Zimmermann (2012) find that urban migrants in China also report lower levels of happiness than do their rural counterparts. Additional studies use longitudinal data to better account for self-selection into internal migration and provide more robust causal estimates of the effect on subjective well-being. Nakazato, Schimmack, and Oishi (2011) find no increase in average life satisfaction for internal migrants in Germany. In contrast, Nowok, van Ham, Findlay, and Gayle (2013) employ individual fixed effects and find positive effects on life satisfaction using the British Household Panel Survey. However, these two papers do not compare migrants to non-migrants, instead relying on either variation in the timing of migration or a latent growth curve modeling approach. Therefore, despite the inclusion of individual fixed effects, these estimates conflate changes caused by migration with secular trends and/or shocks that affected well-being more broadly. Switek (2016) utilizes a more conventional first difference approach to control for individual fixed effects and finds an improvement in life satisfaction for internal migrants in Sweden, relative to non-migrants.

Several potential mechanisms have emerged in the literature to explain changes in subjective well-being induced by migration. Existing research unequivocally finds positive effects of migration on earnings. This could explain improvements in subjective well-being with migration (e.g., Melzer, 2011; Switek, 2016), but the relationship between income and subjective well-being is not clear (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006). There is evidence that, although absolute income increases, migrants often experience a reduction in relative income which, in turn, diminishes happiness (Bartram, 2011). Rising and/or unmet expectations and aspirations may also drive changes in well-being (Mähönen, Leinonen, & Jasinskaja-Lahti, 2013; Knight & Gunatilaka, 2010b), and self-esteem has been found to decrease for migrants (Stillman et al., 2015; Lönnqvist et al., 2015). However, perceptions of subjective well-being can vary widely across different life dimensions such as perceptions of the local political situation (Erlinghagen, 2011), housing conditions (Findlay & Nowok, 2012), and physical health (Iglesias, Robertson, Johansson, Engfeldt, & Sundquist, 2003), and the mechanisms affecting migrants' subjective well-being may also change over time (Lönnqvist et al., 2015).

We utilize longitudinal data from rural Pakistan to estimate the effects of internal migration on earnings, assets, and subjective well-being. In this setting, nearly all migration is internal, and 92 percent of it is to other rural areas. We focus on *changes* in outcomes before and after migration, to the extent possible. However, rather than estimating a fixed effects or first-differenced specification (as in Nowok et al., 2013; Switek, 2016), we utilize a matching technique to control for a wide variety of characteristics observed prior to migration. We prefer this approach for three main reasons. First, changes in many covariates are, themselves, functions of the migration decision – e.g., migration as a substitute for formal education (de Brauw and Giles, forthcoming) – and thus controlling for the pre-migration characteristics is less problematic. Second, with a long panel (22 years in our case) and migration occurring throughout the period, a first difference approach is implausible and would confound causal effects with cohort, period, and/or aging effects. For example, the change in well-being caused by migration is likely to be quite different for a 25-year old than for a 45-year old. However, because we only observe migration episodes for the same respondent group in the same time period, we cannot differentiate this age effect from the effects of birth year and/or aggregate time trends. Finally, Nowok et al. (2013) report a deterioration in subjective well-being for migrants in the year preceding migration, which raises significant concerns about the validity of a fixed effects approach. In particular, it suggests that the unobserved factor driving both migration and well-being is time-varying rather than fixed. That is, individuals experiencing some adverse shock to subjective well-being may migrate specifically as a means to cope with that shock. Having a longer panel alleviates this concern, as we are less likely to survey individuals in the immediate periods around migration and more likely to observe the longer-term, more stable changes in well-being associated with migration. Moreover, our matching estimator does not impose the "parallel trends" assumption (i.e., changes in well-being would have been the same in the absence of migration) but rather identifies an appropriate comparison group who, based on observed characteristics, would have been at similar "risk" for migration.

That we consider a developing rather than a developed country context is important. Because regional inequality within countries tends to first increase and then decrease with income (Williamson, 1965), findings for wealthy countries do not generalize well to developing countries—even more so given the often stark differences in markets, institutions, and cultural conventions. One important cultural convention related to migration in developing countries is the fact that migration is more likely to be the result of *household* rather than individual optimization processes (Stark & Bloom, 1985). That is, an individual may engage in migration that is beneficial to the household as a whole, even though he/she personally must endure a decline in subjective well-being. This finding is bolstered by qualitative work from the same study sites from which we collected our panel data (Aftab, 2014). This study revealed that migration is typically motivated by push rather than pull factors—primarily too few jobs and rising costs at origin.

For example, one employed male in a focus group said, "the main occupation is agriculture, but every household includes at least one male with a job or who works as a laborer. Without this, it is difficult to survive."[3] The study further notes that "increases in the costs of living and the competition for limited employment opportunities has ensured that more than one son in a household may look for work outside the village." Another push factor is a lack of space in the home after older brothers have married and their wives have moved in. Being a migrant also comes with the expectation of being the primary person responsible for upkeep of the household back home—especially if the migrant does not live with their wife and children. One migrant interviewed as part of the study noted, "what I earn, I give mostly to my parents because I have not only to support my children but my parents too."[4] At the same time, migrants lose communal ties, thus weakening them socially. In a society where kinship networks are critical and determine choice of occupation, marriage, and personal security, migration can thus be extremely disruptive.

[3] This was a respondent from a focus group discussion with employed males in Hattar.

[4] This was a respondent who was an out-migrant from Shah Alam Baba and is now in Mardan.

We examine four potential mechanisms driving changes in well-being for migrants. Doing so can help shed light on why individuals might experience increases in consumption alongside decreases in subjective well-being. First, we examine migrants' perceptions of their own physical well-being. Poor physical health may contribute to poor mental health and vice versa; they influence one another through both neuroendocrine and immune functioning as well as through behaviors and actions taken by individuals (WHO, 2001). Studying perceptions of physical health also makes it important to separately consider short- (within-district) and long- (out-of-district) distance moves. Migrants relocating within close proximity to the origin household may maintain similar ties as when all members were living in the same household. These ties may foster health and well-being—for example, through the provision of daily meals and other forms of support by empathetic family members.

Second, we consider whether migrants have poor subjective well-being because their aspirations grow more quickly than do improvements in their life circumstances, generating discontent (Healy et al., 2017). We thus examine how migration impacts aspirations—defined as the levels that individuals would like to achieve—in four domains: personal income, household income, assets, and social status.

Third, migrants might have poor subjective well-being because they are alone. We assess this by examining whether negative impacts on subjective well-being are reduced when a migrant remains within-district *or* leaves with another member of the origin household as opposed to alone. Nowok et al. (2013) find that individuals moving longer distances are at least as happy as those remaining closer to the origin. However, distance of migration represents both social distance between origin and destination communities (with regard to customs, labor market conditions, etc.) as well as emotional distance to the origin household. We consider the important dimension of emotional distance, which may be especially relevant in a developing country context in which kinship and clan ties are critical.

Finally, as in other studies, we explore differences in subjective well-being related to the length of time the migrant has been away (specifically, within the last 11 years, or 11–22 years ago). Changes in migrants' well-being may arise over time as their relationships with the origin household change. Obviously, ties to the origin household may simply weaken over time, as migrants invest more in the new households they have established. In a developing country context, it is more common to find that household members have provided the migrant with loans to cover initial moving costs. Migrants may then experience an improvement in subjective well-being after these loans have been repaid and disposable income increases. This further suggests that migration may affect asset wealth differently than consumption—a hypothesis we test directly. Indeed, Switek (2016) finds that improvements in life satisfaction persist only for migrants who report moving for work purposes, and this seems to be driven by differences in satisfaction with income and assets (housing).

3. Data

We use data collected in Pakistan during September 2013–July 2014, which tracked individuals last surveyed in 1991 as part of the International Food Policy Research Institute's (IFPRI's) Pakistan Panel Survey (PPS) (1986–1991).[5] We also use this dataset in Chen, Kosec, and Mueller (2016) for an analysis of the drivers of migration. This 22-year follow-up survey is called the Pakistan Panel Tracking Survey (PPTS); the survey team visited each of the 726 households surveyed in 1991—which we refer to as PPS households. If the full household was gone, contact information was obtained wherever possible, to track at least one member. The original households are located in five districts: Attock, Faisalabad, and Toba Tek Singh (in Punjab province), Badin (in Sindh province) and Lower Dir (in Khyber Pakhtunkhwa, or KPK, province). The survey team first visited the original households and completed a tracking roster listing all original members' current locations. Any original PPS household member who was alive and in Pakistan at the time of the PPTS was eligible to be tracked. The survey team next constructed a current household roster for each PPS household. All original 726 PPS households were then administered a full household questionnaire. The split-off households were tracked in the second phase of the study and given the same questionnaire.

3.1. Migration

An original household member from 1991 is defined as a migrant if they were tracked in 2013–4 (hereafter 2013) and yet are no longer considered a household member. In Pakistan, movement within villages is common, particularly around certain milestones, such as marriage or family formation. Since such moves are less likely motivated by employment, only members who moved out of the original mauza, an administrative unit analogous to a village in rural Pakistan, are considered migrants. In our study setting, nearly all migration is internal, and 92 percent of it is to other rural areas. We limit attention only to permanent migration, as we do not have complete histories for temporary migration. Moreover, it is less clear how or whether transitory moves would have sustained discernible effects on well-being.

We focus on permanent moves between 1991 and 2013 of *male* original PPS household members aged 22–60 (inclusive) at the time of the PPTS. These individuals were alive but under age 38 in 1991, permitting us to study the migration of working-age men. We cannot study the impacts of female migration as customary norms in rural Pakistan made it difficult to interview women, resulting in a substantial portion of missing values for subjective well-being outcomes of migrant and non-migrant women in our sample. Overall, we have a sample of 1366 men. The sample does not include individuals who joined the PPS household after 1991 or members of split-off households. The 2013 PPTS survey had a household attrition rate of 4 percent—comparable to those of other large panel surveys (Thomas, Frankenberg, & Smith, 2001)—and an individual attrition rate of just under 12 percent, as detailed in Chen et al. (2016).

By our definition of permanent migration, 204 of the sample of 1,366 men—i.e. 15 percent—permanently migrated over the 22-year period (Table 1). Seven percent of the sample moved within-district, while 8 percent moved out-of-district. The timing of the move is also equally split among migrants; 7 percent of the sample moved no more than 11 years ago and 8 percent moved over 11 years ago (Table 1). Interestingly, a greater share moved with at least one other member of the 1991 household (11 percent) than moved alone (4 percent).

Table 2 summarizes the data on these 204 migrants. The average migrant was 28 years old at the time of the move, and migrates 178 km to reach the destination. Among migrants, 84 percent moved only once since leaving the origin village in 1991, suggesting that migrants are not continually searching for new employment opportunities. The most common primary motivator for the first move is for employment (42 percent of migrants); 23 percent state the primary reason for the move as following a family member, and 20 percent say it is for marriage or to form a new household, and 11 percent say it was for education. The most common occupation preceding a move was being unemployed (22 percent),

[5] The PPS was carried out in fourteen rounds over a period of five years (IFPRI, 2000).

Table 1
Summary statistics.

	Mean	SD	Min.	Max.	N
EXPLANATORY VARIABLES					
Migrant	0.15	0.36	0.00	1.00	1,366
Moved within origin-district	0.07	0.26	0.00	1.00	1,366
Moved out of origin-district	0.08	0.27	0.00	1.00	1,366
Moved less than or equal to 11 years ago	0.07	0.26	0.00	1.00	1,366
Moved over 11 years ago	0.08	0.27	0.00	1.00	1,366
Moved without members from 1991 household	0.04	0.19	0.00	1.00	1,366
Moved with members from 1991 household	0.11	0.31	0.00	1.00	1,366
Age 25–34 (2013)	0.29	0.45	0.00	1.00	1,366
Age 35–44 (2013)	0.29	0.46	0.00	1.00	1,366
Age 45–54 (2013)	0.23	0.42	0.00	1.00	1,366
Age 55–60 (2013)	0.06	0.23	0.00	1.00	1,366
Completed primary education (2013)	0.29	0.45	0.00	1.00	1,366
Completed secondary education (2013)	0.17	0.38	0.00	1.00	1,366
Completed tertiary education (2013)	0.22	0.41	0.00	1.00	1,366
Digit span z score (2013)	0.00	0.98	-3.04	2.08	1,366
Married (2013)	0.79	0.41	0.00	1.00	1,366
Change in household size	-4.44	7.11	-36.00	26.00	1,366
Change in the total owned land (hectares)	-5.89	20.20	-368.88	102.00	1,366
Head's Age 15–24 (1991)	0.02	0.12	0.00	1.00	1,366
Head's Age 25–34 (1991)	0.12	0.33	0.00	1.00	1,366
Head's Age 35–44 (1991)	0.21	0.40	0.00	1.00	1,366
Head's Age 45–54 (1991)	0.29	0.45	0.00	1.00	1,366
Head's Age 55–64 (1991)	0.21	0.41	0.00	1.00	1,366
Head was government employee (1991)	0.10	0.29	0.00	1.00	1,366
Head was private sector employee (1991)	0.02	0.13	0.00	1.00	1,366
Head was self-employed (1991)	0.14	0.35	0.00	1.00	1,366
Head was engaged in contract labor (1991)	0.12	0.33	0.00	1.00	1,366
Head (1991)	0.05	0.22	0.00	1.00	1,366
Head's brother/sister (1991)	0.04	0.20	0.00	1.00	1,366
Head's nephew/niece (1991)	0.04	0.20	0.00	1.00	1,366
Head's grandchild (1991)	0.16	0.36	0.00	1.00	1,366
Head's in-law (1991)	0.01	0.07	0.00	1.00	1,366
Head's other relative (1991)	0.01	0.09	0.00	1.00	1,366
Total land owned by origin household (1991, acres)	9.86	23.04	0.00	370.00	1,366
Total durable assets (1991, rupees)	94,548.48	197,880.74	0.00	1,617,050.00	1,366
Household size (1991)	12.63	6.23	2.00	42.00	1,366
KPK province (1991)	0.26	0.44	0.00	1.00	1,366
Sindh province (1991)	0.26	0.44	0.00	1.00	1,366
OUTCOMES					
Change in log total durable assets per adult equivalent (2010 rupees)	1.47	1.76	-4.39	7.43	1,345
Change in log total consumption per adult equivalent (2010 rupees)	0.74	0.72	-2.24	5.20	1,301
Change in log food consumption per adult equivalent (2010 rupees)	0.87	0.82	-2.53	6.15	1,301
Change in log nonfood consumption per adult equivalent (2010 rupees)	0.51	0.87	-3.20	4.38	1,301
During the past month, person was happy all of the time (2013)	0.33	0.47	0.00	1.00	1,366
During the past month, person was calm all of the time (2013)	0.32	0.47	0.00	1.00	1,366
During the past month, person was nervous none of the time (2013)	0.46	0.50	0.00	1.00	1,366
During the past month, person was down none of the time (2013)	0.43	0.49	0.00	1.00	1,366
During the past month, person never felt down in the dumps (2013)	0.48	0.50	0.00	1.00	1,366
Self-reported health is excellent (2013)	0.25	0.44	0.00	1.00	1,366.
Was sick in the last four weeks (2013)	0.12	0.33	0.00	1.00	1,366
Aspired personal income (10,000 2010 rupees, 2013)	0.37	0.37	0.00	1.51	1,225
Aspired household income (10,000 2010 rupees, 2013)	0.76	0.90	0.08	3.78	1,225
Aspired asset level (10,000 2010 rupees, 2013)	1.70	2.20	0.02	7.56	1,226
Aspired status (2013)	7.65	2.07	1.00	10.00	1,226

suggesting that many migrants are pushed by a lack of job opportunities at the origin. The next most common is being a student (20 percent), indicating that migrants are often those just completing, or hoping to further, their education. Agriculture (17 percent) and construction (10 percent) are the next most common occupations before the first move.

In Chen et al. (2016), we compare the 1991 characteristics of tracked and untracked respondents to assess the severity of any problems posed by individual attrition. We find that untracked respondents come from slightly wealthier and better educated households, but otherwise find few significant differences across groups (for more detail, see Appendix Table A.1 and the related discussion). In contrast, individuals attriting with their full household differ greatly from tracked respondents, and are worse off overall (they come from larger, younger, less educated, and less wealthy households). In short, these individuals appear to migrate mostly due to distress rather than as part of a forward-looking optimization strategy, distinguishing them from other types of migrants. Consequently, we omit these individuals from the analysis, adding the caveat that results accordingly cannot be generalized to the case of full household migration.

3.2. Objective well-being

We focus on changes in total household expenditures (consumption) as one of our measures of changes in objective well-being. Consumption is typically preferred to income as a measure of well-being. Consumption measures include goods acquired outside formal markets, such as those produced by household members or received as gifts, transfers, or in-kind payments. The

Table 2
Migration history.

	Proportion (Mean)	N
Age of move according to tracking roster	28.03	204
Moved permanently only once since leaving the origin village in 1991	0.84	204
First move was for employment	0.42	199
First move was for education	0.11	199
First move was for marriage or to form a new household	0.20	199
First move was to follow a family member	0.23	199
Occupation before first move was in...		
Agriculture	0.17	199
Mining	0.01	199
Construction	0.10	199
Manufacturing	0.03	199
Transport and storage	0.02	199
Elementary work	0.02	199
Plant and machine operation or assembly	0.01	199
Craft and related trades	0.04	199
Services and sales	0.05	199
Clerical support	0.02	199
Technician or associate professional	0.02	199
Professional	0.04	199
Manager	0.01	199
Armed forces	0.03	199
Unemployed before first move	0.22	199
Student	0.20	199
Was not looking for work	0.06	199
Distance travelled from village when moved first (km)	177.86	196

mental accounting required to measure returns to businesses and the cultural sensitivity surrounding disclosure of income also pose concerns for its accurate measurement (Deaton, 2000). Data on food and nonfood consumption in the last year were collected for each household in both 1991 and 2013. To create an individual measure that accounts for differences in household composition, we scale total consumption by the number of adult equivalents. We converted nominal values to 2010 Pakistani rupees (Rs.) using the consumer price indices in the World Development Indicators Database (World Bank, 2017).[6] We focus on the change between 1991 and 2013 in the natural logarithm of consumption per adult equivalent (food, nonfood, and total) predicted by migration.

The second measure of changes in objective well-being, changes in wealth, is computed using the value of durable assets in 1991 and in 2013. In each survey round, we collected information on household ownership of the following items to compute wealth: television/VCR; audio equipment; motorized and unmotorized vehicles; sewing machines; washing machines; refrigerators; jewelry; cameras; guns; homes or buildings; inventory for shops/crafts; and other durable asset items. As for consumption, for each year we divide total wealth by the household adult equivalency and then convert the total into 2010 Rs. Our final wealth variable is the change between 1991 and 2013 in the natural logarithm of wealth per adult equivalent.

3.3. Subjective well-being

In the 2013 survey, we administered to all tracked migrants and non-migrants a subset of questions from the longer 36-question short-form survey for physical and mental health (SF-36) (Ware, 1994). Following Stillman, McKenzie, and Gibson (2009), we focus on five questions that measure mental health: 1) During the past month, how much of the time were you a happy person? 2) How much of the time, during the past month, have you felt calm and peaceful? 3) How much of the time, during the past month, have you been a very nervous person? 4) How much of the time, during the past month, have you felt down-hearted and blue? and 5) How much of the time, during the past month, did you feel so down in the dumps that nothing could cheer you up? There were five possible answers ranging from "All of the time/ Always" to "Never/ None of the time". We coded five favorable binary mental health outcomes—Happy, Calm, Not Nervous, Not down, Not in the dumps—assigning values of one when the respondent answered "All of the time/ Always" to questions 1 and 2 and "Never/ None of the time" to questions 3 through 5.

Additionally, we utilize two self-reported variables on physical health. The first is taken from a sixth question on the SF-36, which asks the respondent to rate his/her health on a range of 1, Excellent, to 5, Poor. We transform the responses to a binary variable, Healthy, which takes on a value of one for those that report having excellent health. Note, however, that this question has been found to measure both physical and mental health when validated against traditional psychometric and clinical tests (McHorney, Ware, & Raczek, 1993). Thus, this should be viewed as an additional indicator of overall well-being, rather than a "pure" measure of physical health. However, to the extent that expectations for what constitutes excellent health are increasing in consumption, then our results may underestimate negative impacts on physical health. The second variable, Sick, is created from a standard question asking whether the individual was sick sometime during the last four weeks; it takes on a value of one for those that reported being sick in the last four weeks. Again, because this is a self-reported measure which may be influenced by perceptions, wealth, medical care, etc., we view it not as a "pure" measure of physical health but rather a measure of overall well-being that is more strongly related to physical than mental health.

Finally, we use four variables from the 2013 survey to measure the aspirations of individuals in our sample, similar to those used by Bernard, Dercon, Orkin, and Taffesse (2014, 2015), Kosec and Mo (2017), and Healy et al. (2017)—the former two in Ethiopia, and the latter two in Pakistan. Each person is asked to report the level of personal income (Rs. per year), household income (Rs. per year), assets (Rs.), and social status (on a scale ranging from 1 to 10) that they would *like* to achieve. To ensure that our results are not driven by outliers, we apply a 95 percent winsorization to the responses of the first three items, assigning 97.5 percentile values to extremely optimistic responses and 2.5th percentile values to low responses.

3.4. Explanatory variables

We rely on variables that are likely determined before a person migrates to explain consumption and wealth growth as well as subjective well-being. First, age categorical variables are taken from the 2013 household survey. The respondent's continuous age is transformed into a set of four categorical variables: whether the person is 25–34, 35–44, 45–54, and 55–60 years old (22–24 category omitted). Standardized measures of ability (z-scores) are produced from the number of correct answers to 16 Forward/Backward Digit Span questions. As part of the Digit Span exam, enumerators state numbers and ask the respondents to repeat them in the same or reverse order. Each question increases in difficulty, by augmenting the number of digits to remember. The test is ultimately used to examine a person's capacity to memorize and reprocess information.

[6] Food consumption includes the following purchases: wheat grain, flour, rice, other grains, pulses, lentils, cooking oil, ghee, milk, yogurt, milk powder, baby formula, sugar, mutton, beef, chicken, eggs, fish, onion, potatoes, tomatoes, other vegetables, fruit, bottle, canned, and soft drinks, biscuits, cakes, spices, and tea. The following expenses were included in our measure of non-food consumption: electricity fees, travel, cigarettes and tobacco, gas and other fuel, clothing, soap, laundry, hygiene and cosmetic products, education, books, newspapers, entertainment, and medical care.

Second, we use information from the 1991 and 2013 surveys to capture the effects of demographics and wealth on well-being. We use the change in the individual's household size to control for demographic dynamics. For migrants, this depends on the composition of their origin household in 1991 and destination household in 2013. We similarly construct a variable for the change in land owned by the household using information from the 1991 and 2013 surveys.

Lastly, we add a suite of variables from the 1991 survey to serve as proxies for exogenous social norms regarding who migrates and the human capital endowment of the household. These include dummies for relationship to the 1991 household head (head, brother, nephew, grandson, father-in-law, or other male relative—with son as the omitted category), categorical variables for the 1991 head's age (15–24, 25–34, 35–44, 45–54, 55–64—with over 64 as the omitted category), and 1991 head occupation dummies (government employee, private sector employee, self-employed, engaged in contract labor, and occupied at home—with in a joint household activity as the omitted category).

4. Methodology

Descriptive statistics characterizing the traits and wealth distribution of three groups—non-migrants, within-district migrants, and out-of-district migrants—highlight the importance of distinguishing effects by the type of migration. First, the comparisons of the average individual traits across groups, in Table 3, suggest that the earning potential between the two types of migrants is markedly different. For example, out-of-district migrants were 18 percentage points more likely to have completed tertiary education than were within-district migrants, though there is no statistically significant difference in the proportions of tertiary educated within-district migrants and non-migrants. Another striking feature of out-of-district migrants is their uniquely high cognitive ability as measured by a digit span z-score, scoring on average 0.50 standard deviations above the mean compared to within-district migrants who, on average, scored 0.16 standard deviations below the mean. Again, we cannot reject that the average values of the ability scores statistically differ across the short-distance movers and stayers. Also, changes in consumption and wealth vary markedly across the two migrant groups. The changes in log total wealth per adult equivalent were on the order of 1.68 for within-district movers compared to 1.14 for out-of-district movers. However, consumption growth trajectories for out-of-district movers exceeded those for within-district movers, especially when focusing on nonfood consumption patterns (1.17 compared to 0.71).

4.1. Econometric specification

We utilize ordinary least squares regressions to quantify the impacts of moving within and outside of one's origin-district on consumption, wealth, and subjective well-being in rural Pakistan. We observe consumption and wealth outcomes both before and after migration for every individual i from origin village v, and thus employ the following difference-in-differences specification:

$$\Delta Y_{iv} = \beta_I I_i + \beta_O O_i + \beta_L \Delta L_i + \beta_H \Delta H_i + \beta_X X_i + \beta_v + \Delta \varepsilon_{iv} \quad (1)$$

When we consider objective well-being outcomes, ΔY represents either the change in total household consumption per adult equivalent or the change in total wealth per adult equivalent between 1991 and 2013. Our subjective well-being outcomes are only measured in 2013, and thus we replace ΔY with Y in (1) when we consider mental health, physical health, or aspirations as dependent variables. *I and O* indicate whether the household member permanently migrated between 1991 and 2013 to a location within the district of origin and to a location outside the district of origin, respectively. ΔL and ΔH signify the change in household inherited land and size, respectively, between 1991 and 2013. X is a vector of pre-migration characteristics that influence the wealth trajectory of the individual's household including the individual's age (dummy variables for 25–34, 35–44, 45–54, and 55–60 years old in 2013; omitted category 22–24), cognitive ability (digit span z score), relationship with the 1991 household head (head, brother, nephew, grandson, in-law, other relative; omitted category son), and the 1991 household head's age (age categorical variables as above) and occupation (government, private sector, self-employed, contract labor; omitted category occupied at home).β_v is a village fixed effect. All standard errors are clustered at the village level to allow for arbitrary correlation among outcomes within the village. Additionally, to explore other subgroup effects, we try replacing I and O with indicators for: i) migrating less than or equal to vs. more than 11 years ago, and ii) migrants currently residing with vs. without members of the 1991 household. Doing so allows us to determine if the impacts of migration vary by how long the migrant has been away and by the degree to which migrants were able to preserve close family connections.

The parameters of interest in the main specification are β_I and β_O, the well-being effects from the within-district and out-of-district migration of individuals from the communities in our survey between 1991 and 2013. We identify three potential sources of omitted variable bias that we aim to circumvent. The first source comes from individual characteristics that influence both migration and one's earning potential and, consequentially, well-being level or trajectory. In both the panel and cross-sectional versions of (1), we accordingly control for exogenous variables including age (indicative of job experience) and innate cognitive ability[7] (as a proxy for employment prospects).[8] The second and third sources of bias come from unobserved factors at the household and village levels that are likely to influence both migration and our outcomes. In the panel analysis, we employ a difference-in-difference strategy to control for all time invariant household-level variables, reducing the potential for bias from omitted unobserved variables that influence consumption and wealth at the household level. We also add village fixed effects to mitigate bias generated from the omission of factors (e.g., number of development projects or roads) that affect communal well-being levels and trends.[9]

[7] In practice, our ability measure relies on cognitive exams that were taken by the respondents in 2013–4. Although the cognitive tests are designed to reflect innate ability rather than knowledge acquired at school, we cannot rule out that one's ability may somehow have responded to factors unobservable to the researchers between baseline and endline. Ideally, we would have used scores collected before the period of migration. However, many individuals would have been too young to complete the Raven's exams conducted in earlier rounds of the survey. We did consider the Raven's exam score of the 1991 household head in (1), but the variable added little explanatory power to the variation in outcomes.

[8] Given the time frame under study and the age distribution of the sample, we focus on measures of ability rather than completed education in the regression as education is likely endogenous to the migration decision.

[9] Although the same household survey instrument was administered to origin households at baseline and endline and the new households of migrants at endline, our per capita consumption and asset measures may still lead to underestimates of the economic value of migration. This is because the items included in the consumption and asset modules in 2013 were restricted to things commonly ingested and purchased in 1991 at the origin locations. Thus, we may fail to capture the diversity of food and durable goods available to migrants at new destinations. This measurement error is likely more pronounced for the out-of-district (rather than in-district) migrants. Nevertheless, the potential measurement error inherent in objective outcomes highlights the importance of supplementing the analysis of pure economic outcomes with that of subjective well-being. Subjective well-being outcomes are less susceptible to the aforementioned measurement error since the modules are administered to individuals.

Table 3
Descriptive statistics by migration status.

	(1) Non-migrant	N	(2) Moves in-district	N	(3) Moves out-of-district	N	(1)-(2) Diff. (p-value)	(1)-(3) Diff. (p-value)
EXPLANATORY VARIABLES								
Age 25–34 (2013)	0.29	1,162	0.30	97	0.29	107	0.78	0.93
Age 35–44 (2013)	0.29	1,162	0.25	97	0.34	107	0.33	0.36
Age 45–54 (2013)	0.23	1,162	0.27	97	0.24	107	0.36	0.71
Age 55–64 (2013)	0.05	1,162	0.10	97	0.07	107	0.03	0.31
Completed primary education (2013)	0.29	1,162	0.35	97	0.23	107	0.22	0.21
Completed secondary education (2013)	0.17	1,162	0.14	97	0.21	107	0.45	0.42
Completed tertiary education (2013)	0.21	1,162	0.18	97	0.36	107	0.41	0.00
Digit span z score (2013)	-0.03	1,162	-0.16	97	0.50	107	0.23	0.00
Married (2013)	0.78	1,162	0.84	97	0.79	107	0.21	0.74
Change in household size	-4.19	1,162	-6.04	97	-5.77	107	0.01	0.03
Change in the total owned land (hectares)	-6.00	1,162	-4.77	97	-5.64	107	0.58	0.86
Head's Age 15–24 (1991)	0.01	1,162	0.02	97	0.02	107	0.64	0.74
Head's Age 25–34 (1991)	0.12	1,162	0.10	97	0.12	107	0.58	0.98
Head's Age 35–44 (1991)	0.20	1,162	0.24	97	0.21	107	0.44	0.97
Head's Age 45–54 (1991)	0.29	1,162	0.31	97	0.29	107	0.65	0.96
Head's Age 55–64 (1991)	0.21	1,162	0.18	97	0.22	107	0.37	0.81
Head was government employee (1991)	0.09	1,162	0.06	97	0.19	107	0.35	0.00
Head was private sector employee (1991)	0.02	1,162	0.00	97	0.02	107	0.17	0.99
Head was self-employed (1991)	0.13	1,162	0.26	97	0.12	107	0.00	0.77
Head was engaged in contract labor (1991)	0.13	1,162	0.12	97	0.10	107	0.96	0.49
Head (1991)	0.05	1,162	0.05	97	0.03	107	0.97	0.30
Head's brother/sister (1991)	0.04	1,162	0.06	97	0.03	107	0.36	0.48
Head's nephew/niece (1991)	0.04	1,162	0.09	97	0.03	107	0.02	0.53
Head's grandchild (1991)	0.16	1,162	0.13	97	0.14	107	0.49	0.58
Head's in-law (1991)	0.01	1,162	0.01	97	0.00	107	0.51	0.46
Head's other relative (1991)	0.01	1,162	0.00	97	0.01	107	0.36	0.94
OUTCOMES								
Change in log total durable assets per adult equivalent (2010 rupees)	1.48	1,143	1.68	97	1.14	105	0.28	0.06
Change in log total consumption per adult equivalent (2010 rupees)	0.67	1,117	0.96	86	1.30	98	0.00	0.00
Change in log food consumption per adult equivalent (2010 rupees)	0.81	1,117	1.09	86	1.39	98	0.00	0.00
Change in long nonfood consumption per adult equivalent (2010 rupees)	0.43	1,117	0.71	86	1.17	98	0.00	0.00
During the past month, person was happy all of the time (2013)	0.36	1,162	0.26	97	0.17	107	0.05	0.00
During the past month, person was calm all of the time (2013)	0.35	1,162	0.25	97	0.12	107	0.05	0.00
During the past month, person was nervous none of the time (2013)	0.48	1,162	0.40	97	0.30	107	0.13	0.00
During the past month, person was down none of the time (2013)	0.44	1,162	0.32	97	0.32	107	0.02	0.01
During the past month, person never felt down in the dumps (2013)	0.50	1,162	0.39	97	0.42	107	0.05	0.14
Self-reported health is excellent (2013)	0.27	1,162	0.23	97	0.10	107	0.36	0.00
Was sick in the last four weeks (2013)	0.12	1,162	0.13	97	0.21	107	0.58	0.00
Aspired personal income (10,000 2010 rupees, 2013)	0.37	1,144	0.35	73	0.43	8	0.71	0.66
Aspired household income (10,000 2010 rupees, 2013)	0.77	1,144	0.55	73	0.56	8	0.05	0.52
Aspired asset level (10,000 2010 rupees, 2013)	1.71	1,145	1.45	73	1.39	8	0.33	0.68
Aspired status (2013)	7.67	1,145	7.42	73	6.13	8	0.32	0.04

4.2. Identification

Although our (cross-sectional) first differences analysis allows for a variety of controls, our estimates of β_I and β_O in (1) are still subject to bias due to the correlation between migration and unobserved time-varying factors that influence the (levels of) changes in well-being. We are particularly concerned that our survey overlooks key path-dependent idiosyncratic events that shape one's productivity and mental stress that are also likely to underlie migration decisions and well-being adjustments, such as the pervasiveness of illness and death across aging family members over time or exposure to repeated shocks.

Recent work addresses the selection on unobserved characteristics by using an instrumental variables approach (McKenzie et al., 2010; Beegle, Dercon, & de Weerdt, 2011, Bryan et al., 2014). It is exceptionally difficult to identify valid instrumental variables in this context, particularly for two endogenous variables. "Pull" factors at potential destinations (e.g., wages) tend to exhibit serial and spatial correlation, thereby directly affecting current migrant outcomes. Moreover, conditions at the destination will affect the initial performance of migrants, which may then directly affect changes in subjective well-being via norming and framing effects (Kahneman, 1992). For example, if migrants who arrive during an economic boom update their beliefs and expect consistently higher earnings in the future, they will be disappointed when labor market conditions return to normal. "Push" factors encouraging migration out of the origin area may be far removed from the migrant's current activities, but nonetheless affect him/her via the well-being of the origin household.

Thus, in addition to the OLS regression estimates, we provide estimates using covariate matching (Abadie & Imbens, 2008; Abadie et al., 2004; Busso et al., 2014). Since covariate matching

Table 4
Determinants of migration, multinomial logit regression.

	Moves in-district	Moves out-of-district
Age 25–34 (2013)	1.777*	3.032**
	(0.572)	(1.379)
Age 35–44 (2013)	1.440	3.432***
	(0.491)	(1.427)
Age 45–54 (2013)	2.146*	3.642***
	(0.901)	(1.687)
Age 55–60 (2013)	3.762***	5.795***
	(1.383)	(3.276)
Digit span z score (2013)	1.298	2.730**
	(0.277)	(1.209)
Total owned land by origin household (1991)	0.989**	0.993
	(0.006)	(0.007)
Total durable assets (1991)	1.000	1.000
	(8.140e-7)	(7.210e-7)
Household size (1991)	1.028	0.982
	(0.029)	(0.040)
KPK province	0.143***	0.174*
	(0.080)	(0.161)
Sindh province	0.577	0.311**
	(0.318)	(0.182)
Log pseudo-likelihood	−659.392	
Pseudo R-squared	0.080	
N	1,366	

Odds ratios reported. Standard errors clustered by origin village. ***p < 0.01, **p < 0.05, *p < 0.1.

can only be performed in the context of one treatment, we conduct two separate analyses, first using the sample of non-migrants and within-district migrants, and then using the sample of non-migrants and out-of-district migrants.[10] The purpose of the matching procedure is to build a valid comparison group to capture what the change in (or level of) welfare would have been for within-district (and out-of-district) migrants, had they stayed.

The technique, in practice, uses a subset of observed individual, household, and location variables to create a distance-based metric to conduct the matching exercise. The matching procedure assigns a migrant to two (or four) of the most similar non-migrants in terms of congruence of observed characteristics. We show results with both two matches and four matches to ensure that they are robust to different choices of bias-variance trade-offs; the results with two matches have higher variance but lower bias, whereas the results with four matches have lower variance but higher bias. The matching estimate simply takes the value of the migrant's outcome and compares it to a weighted value of the outcomes realized by the matched non-migrants. Following the recommendation of McKenzie et al. (2010), we correct the matching estimate for any remaining bias that arises from covariate imbalances between the sample of migrants and matched controls using a regression. Robust-standard errors are reported.

For this application, we use the individual's age category, cognitive ability, the amount of owned land of his household in 1991, the amount of total durable assets of his household in 1991, the size of his household in 1991, and indicators for whether the person's 1991 location was in the Kyber Pakhtunkhwa and in Sindh province (Punjab province is the omitted group) to create the distance-based metric. In Table 4, we provide estimates of the odds ratios and standard errors from a multinomial logit regression which correlates the matching variables with the migration outcomes. Application of these variables in the matching exercise is validated by the statistical significance of the coefficients as well as the empirical findings in the migration literature.

[10] Out-of-district migrants are not included in the analysis for within-district migration, and vice versa.

As highlighted in the literature, our results show migrant selection corresponds with age, skill transferability, and household wealth. We find mobility increases with age, which is consistent with marital arrangements and employment as primary motivations for relocation in the region (Munshi & Rosenzweig 2016). Human capital endowment, proxied by one's cognitive score, continues to serve as a key factor affecting one's likelihood of migration (Beegle et al., 2011; de Brauw, Mueller, & Woldehanna, 2018). However, the odds ratio is only statistically significant in the out-of-district migration equation, perhaps due to the competition one faces in securing a job at (or the type of occupations available in) out-of-district destinations. Finally, land appears to be negatively correlated with in-district moves, which suggests the perceived gains from profiting in agricultural self-employment may exceed those from migrating to nearby locations when land is abundant (Abramitzky, Boustan, & Eriksson, 2013; Kosec, Ghebru, Holtenmeir, Mueller, & Schmidt, 2018).

Despite their lack of statistical significance in the regression, we continue to utilize household size and durable assets as matching variables in our analysis. The former recognizes that the opportunity cost of an absent family member may be relatively higher among households facing shortages in family labor (Taylor, Rozelle, & de Brauw, 1999). The inclusion of the latter is in result of the resounding evidence that liquidity constraints pose barriers to migration (Bryan et al., 2014; Angelucci, 2015; Bazzi, 2017).[11]

5. Results

5.1. Mental health

We first consider the impacts of migration on mental health, considering both moves within and outside the 1991 district. Table 5 presents ordinary least squares (OLS) results in Panel A and matching results in panel B, both with two matches and with four matches. We see that across the range of outcomes, migration is associated with a deterioration in mental health: migrants are significantly less likely to report being happy, calm, not nervous, not down, and not in the dumps, compared to non-migrants, with few exceptions.

Moving out-of-district generally has a greater (larger in magnitude) negative effect on mental health than does moving within-district. This is especially the case for the outcomes of feeling happy, feeling calm, and not feeling nervous; for all three, the magnitude of the coefficient on out-of-district migration is larger than the magnitude of the coefficient on in-district migration across all three estimation strategies (OLS, matching with 2 matches, and matching with 4 matches). Further, this difference is statistically significant at conventional levels in the OLS results (though not in the matching results, where p-values for the difference range from 0.13 for happiness to 0.82 for not being nervous). The OLS results suggest modest negative correlations between in-district migration and being happy, calm, and not nervous that are statistically insignificant at conventional levels, while out-of-district migration predicts a larger, 21.2 percentage points lower likelihood of being happy, a 25.1 percentage points lower likelihood of being calm, and a 15.5 percentage points lower likelihood of not being nervous.

These are similar to results using matching. For our outcome of feeling happy, using two matches leads to a 7.5 percentage point decline for in-district migrants (p-value = 0.19) and a 19.6 percentage point decline for out-of-district migrants (p-value < 0.001);

[11] The small migrant sample size may inhibit our ability to infer a precise wealth-migration relationship. The regression estimates indicate the effect of durable assets on out-of-district migration is weakly significant (p-value=0.12), albeit the magnitude of the estimated odds ratio is only slightly greater than one.

Table 5
OLS and matching estimates of effects of migration on mental health.

	Happy		Calm		Not nervous		Not down		Not in the dumps	
	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district
Panel A: OLS										
Estimate	−0.049	−0.212	−0.064	−0.251	−0.025	−0.155	−0.062	−0.111	0.002	−0.007
SE	(0.054)	(0.035)	(0.050)	(0.039)	(0.045)	(0.047)	(0.043)	(0.063)	(0.062)	(0.067)
p-value	0.376	0.000	0.206	0.000	0.573	0.002	0.154	0.085	0.980	0.919
F test: Equality of coefficients (p-value)	0.002		0.000		0.079		0.578		0.932	
R-squared	0.098		0.118		0.081		0.074		0.054	
N	1,366		1,366		1,366		1,366		1,366	
Panel B: NNM										
Estimate, 2 matches	−0.075	−0.196	−0.092	−0.180	−0.063	−0.084	−0.149	−0.050	−0.055	0.046
SE	(0.057)	(0.056)	(0.057)	(0.053)	(0.057)	(0.069)	(0.058)	(0.069)	(0.056)	(0.066)
p-value	0.189	0.000	0.106	0.001	0.270	0.224	0.010	0.467	0.325	0.487
T test: Equality of matching estimates (p-value)	0.132		0.256		0.816		0.272		0.243	
Estimate, 4 matches	−0.064	−0.174	−0.071	−0.161	−0.035	−0.075	−0.111	−0.063	−0.051	0.023
SE	(0.052)	(0.050)	(0.050)	(0.046)	(0.052)	(0.062)	(0.052)	(0.063)	(0.051)	(0.062)
p-value	0.212	0.001	0.153	0.000	0.503	0.229	0.034	0.321	0.319	0.715
T test: Equality of matching estimates (p-value)	0.129		0.184		0.618		0.560		0.359	
N	1,259	1,269	1,259	1,269	1,259	1,269	1,259	1,269	1,259	1,269

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported.
Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

Table 6
OLS and matching estimates of effects of migration on physical health.

	Healthy		Sick	
	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district
Panel A: OLS				
Estimate	0.016	−0.201	0.006	0.104
SE	(0.055)	(0.038)	(0.040)	(0.046)
p-value	0.769	0.000	0.874	0.028
F test: Equality of coefficients (p-value)	0.001		0.094	
R-squared	0.115		0.066	
N	1,366		1,366	
Panel B: NNM				
Estimate, 2 matches	-0.039	-0.075	0.023	0.120
SE	(0.054)	(0.043)	(0.041)	(0.048)
p-value	0.475	0.081	0.578	0.013
T test: Equality of matching estimates (p-value)	0.601		0.127	
Estimate, 4 matches	−0.031	−0.092	0.022	0.077
SE	(0.048)	(0.042)	(0.040)	(0.047)
p-value	0.519	0.029	0.575	0.104
T test: Equality of matching estimates (p-value)	0.340		0.381	
N	1,259	1,269	1,259	1,269

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

using four matches leads to a similar, 6.4 percentage point decline for in-district migrants (p-value = 0.21) and a 17.4 percentage point decline for out-of-district migrants (p-value = 0.001). For our outcome of feeling calm, using two matches leads to a 9.2 percentage point decline for in-district migrants (p-value = 0.11) and a 18.0 percentage point decline for out-of-district migrants (p-value = 0.001); using four matches leads to a similar 7.1 percentage point decline for in-district migrants (p-value = 0.15) and a 16.1 percentage point decline for out-of-district migrants (p-value < 0.001). While a similar pattern of results is present for our outcome of not feeling nervous, with larger coefficients for longer-distance moves, the results are not significant at conventional levels for either in-district or out-of-district moves. Overall, migration appears to reduce feelings of happiness and calmness, though long-distance migration appears to be the stronger predictor.

While it is helpful to observe the impacts of migration by distance (in-district or out-of-district), we also consider a single measure of migration in Appendix Table A.1. We see that migration on average reduces feelings of happiness (by 12–14 percentage points in our matching results) and calmness (by 12–14 percentage points in our matching results), and makes individuals more likely to be down (by 8–10 percentage points). We find statistically significant effects on all three of these outcomes across all three estimators (OLS and our two matching estimators).

Results for the outcomes of feeling down and feeling down in the dumps are more mixed. In the OLS results, moving out of the district is more strongly associated with being down than is moving in the district (larger coefficients and smaller p-values)—though we cannot reject that the coefficients are the same. We see a similar pattern in the OLS results for the outcome of being down in the dumps, but none of the point estimates is statistically significant, and we cannot reject that the estimates are identical. The matching results are statistically insignificant in all cases except for the finding that moving in-district makes one more likely to be down (p-value = 0.01 with two matches and p-value = 0.03 with four matches). Overall, migration seems to erode happiness and spur anxiety more than actually generating depression.

5.2. Physical health

In addition to considering the impacts of migration on mental well-being, we also considered impacts on physical health (Table 6). In particular, we examine whether the individual considers their health to be excellent and whether they were sick in the last four weeks. Poor physical health might contribute to or be indicative of lower mental health of migrants, making it an important outcome for the study of subjective well-being. We find strong evidence that out-of-district migration is associated with worsened perceptions of health by the migrant. Across OLS and our two matching estimators, within-district migration has no significant impacts on health—though the direction of the estimates nearly always indicates that migration is associated with poorer health outcomes. However, for all three estimators and for both health-related outcomes, out-of-district migration is associated with poorer health—a finding that is statistically significant at conventional levels in nearly all specifications (in only one specification is it insignificant, though the p-value is 0.104). Considering our matching results, which address endogeneity, moving out-of-district makes an individual between 7.5 and 9.2 percentage points less likely to report having excellent health, and makes them between 7.7 and 12.0 percentage points more likely to report having been sick in the last four weeks. Long-distance migration appears to deteriorate not only mental well-being, but also (perceptions of) physical well-being.

Once again, it is also helpful to observe the average impacts of migration, not separating effects by distance of move. In Appendix Table A.1, we see that migration overall reduces the belief that one is in excellent health (by about 6 percentage points in our matching results) and increases reports of being sick within the last four weeks (by between 5 and 7 percentage points in our matching results).[12] We take this as evidence of a physical toll of internal migration on migrants' health on average—though the physical toll is greatest for those migrating longer distances.

[12] While p-values are above 0.10 for two of our four estimates, they are always below 0.15.

Table 7
OLS and matching estimates of effects of migration on consumption and assets.

	Total C		Food C		Nonfood C		Assets	
	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district
Panel A: OLS								
Estimate	0.056	0.399	−0.017	0.277	0.147	0.620	0.165	−0.443
SE	(0.078)	(0.078)	(0.083)	(0.083)	(0.130)	(0.126)	(0.198)	(0.203)
p-value	0.475	0.000	0.838	0.002	0.265	0.000	0.411	0.034
F test: Equality of coefficients (p-value)	0.001		0.007		0.010		0.041	
R-squared	0.165		0.139		0.118		0.059	
N	1,301		1,301		1,301		1,345	
Panel B: NNM								
Estimate, 2 matches	0.169	0.479	0.134	0.391	0.170	0.621	0.287	−0.316
SE	(0.083)	(0.092)	(0.094)	(0.101)	(0.108)	(0.124)	(0.174)	(0.212)
p-value	0.042	0.000	0.152	0.000	0.118	0.000	0.100	0.137
T test: Equality of matching estimates (p-value)	0.012		0.062		0.006		0.028	
Estimate, 4 matches	0.139	0.470	0.086	0.383	0.163	0.617	0.215	−0.357
SE	(0.078)	(0.091)	(0.087)	(0.095)	(0.099)	(0.120)	(0.167)	(0.211)
p-value	0.073	0.000	0.325	0.000	0.101	0.000	0.197	0.091
T test: Equality of matching estimates (p-value)	0.006		0.022		0.004		0.034	
N	1,203	1,215	1,203	1,215	1,203	1,215	1,240	1,248

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations. All measures calculated as the change in log value per adult equivalent in 2010 rupees.

Table 8
OLS and matching estimates of effects of migration on aspiration levels.

	Income	HH income	Assets	Status
Panel A: OLS				
Estimate	0.044	−0.045	0.135	−0.181
SE	(0.039)	(0.081)	(0.205)	(0.237)
p-value	0.262	0.578	0.514	0.514
R-squared	0.083	0.059	0.058	0.067
N	1,225	1,225	1,226	1,226
Panel B: NNM				
Estimate, 2 matches	0.042	−0.125	0.385	−0.160
SE	(0.039)	(0.089)	(0.149)	(0.268)
p-value	0.290	0.161	0.010	0.551
Estimate, 4 matches	0.019	−0.144	0.303	−0.112
SE	(0.036)	(0.078)	(0.142)	(0.245)
p-value	0.591	0.065	0.033	0.646
N	1,225	1,225	1,226	1,226

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

5.3. Consumption and assets

If migrants (and decision-makers in their household—who may not be the migrant himself) are rational, they should choose to migrate (send a migrant) when the benefits of increased consumption outweigh the associated costs of migration, such as up-front payments to finance the move and decreased mental and physical well-being due to migration. At the same time, migration may deplete the assets at an individual's disposal for two reasons: first, because migration requires payment of up-front costs, and second, because migration may reduce the power of the migrant's claim to a share of the origin household's assets. This reduction in assets may be especially acute for longer-distance migrants, whose moves are relatively more costly and whose physical and financial ties to the origin are weaker. In Table 7, we thus consider the effects of both in-district and out-of-district migration on two main outcomes: total household consumption (as well as total food and non-food consumption, individually) and total household asset wealth.

We find that migration generally increases household consumption, though increases in consumption are statistically significantly larger for out-of-district migrants than for in-district migrants. In our matching results that account for the endogeneity of migration, in-district migration leads to between a 15 and 18 percent increase in total consumption growth.[13] In contrast, out-of-district migration leads to a significantly larger, between 60 and 61 percent increase in total consumption growth. As Appendix Table A.2 reveals, the effect of migration of any type (in-district or out-of-district) is between a 35 and 40 percent increase in total

[13] This comes from the fact that $e^{0.139} = 1.15$, and $e^{0.169} = 1.18$.

Table 9
Heterogeneous effects on mental and physical health by whether moved with family members.

	Moves alone	Moves with others	Moves alone	Moves with others	Moves alone	Moves with others	Moves alone	Moves with others	Moves alone	Moves with others
	Happy		Calm		Not nervous		Not down		Not in dumps	
Panel A: Mental Health, OLS										
Estimate	−0.141	−0.132	−0.117	−0.180	−0.157	−0.070	−0.082	−0.090	−0.021	0.004
SE	(0.058)	(0.051)	(0.059)	(0.052)	(0.056)	(0.034)	(0.056)	(0.036)	(0.069)	(0.048)
p-value	0.019	0.012	0.053	0.001	0.007	0.044	0.154	0.016	0.765	0.938
F test: Equality of coefficients (p-value)	0.897		0.383		0.177		0.892		0.756	
R-squared	0.094		0.113		0.080		0.074		0.054	
N	1,366		1,366		1,366		1,366		1,366	
Panel B: Mental Health, NNM										
Estimate, 2 matches	−0.205	−0.119	−0.150	−0.138	−0.185	−0.024	−0.163	−0.064	−0.113	0.039
SE	(0.066)	(0.048)	(0.076)	(0.043)	(0.074)	(0.054)	(0.068)	(0.055)	(0.073)	(0.052)
p-value	0.002	0.012	0.050	0.001	0.012	0.654	0.017	0.245	0.124	0.459
T test: Equality of matching estimates (p-value)	0.290		0.895		0.077		0.261		0.093	
N	1,216	1,312	1,216	1,312	1,216	1,312	1,216	1,312	1,216	1,312
	Healthy		Sick							
Panel C: Physical Health, OLS										
Estimate	−0.077	−0.106	−0.004	0.081						
SE	(0.059)	(0.047)	(0.040)	(0.037)						
p-value	0.200	0.031	0.930	0.036						
F test: Equality of coefficients (p-value)	0.685		0.093							
R-squared	0.106		0.064							
N	1,366		1,366							
Panel D: Physical Health, NNM										
Estimate, 2 matches	−0.149	−0.029	0.030	0.088						
SE	(0.067)	(0.037)	(0.052)	(0.039)						
p-value	0.026	0.444	0.570	0.026						
T test: Equality of matching estimates (p-value)	0.116		0.375							
N	1,216	1,312	1,216	1,312						

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

consumption. This is largely driven by increases in non-food consumption. We observe statistically significant increases in food consumption as well—though those are driven predominately by out-of-district migrants.

Impacts of migration on asset wealth exhibit a distinct pattern: in-district migrants have similar asset wealth to non-migrants, with no statistically significant differences between the two. However, out-of-district migrants have significantly lower asset wealth than do non-migrants, and we can further reject that the impacts of migration on out-of-district and in-district migrants are the same. Overall, as Appendix Table A.2 reveals, migration has null impacts on asset wealth—highlighting the importance of taking into account heterogeneous moves by distance, as we do in Table 7. There we see, in the matching results, that moving out-of-district leads to between 37 and 43 percent slower growth in asset wealth. This is a sizeable decrease and provides initial insight into why migration may lead to deteriorated subjective well-being. Of course, if migration simultaneously makes citizens less ambitious in terms of how much wealth they wish to accumulate, then individuals' subjective well-being may not suffer in response to a reduction in asset value. Next, we thus explored impacts of migration on aspirations for the future.

5.4. Aspirations

We consider aspirations in four main domains—personal income, household income, household asset wealth, and the individual's social status—analyzing whether or not migration leads individuals to set higher goals for themselves in any of these four areas. In our matching results that address the endogeneity of migration, we find little evidence that migration affects aspirations, with one notable exception (Table 8): migrants have significantly higher asset aspirations. Migrating leads individuals to aspire to attain an asset wealth that is between 3000 and 3900 Rs. higher than those of non-migrants. As the mean of this variable is 17,100 Rs. for non-migrants, this represents between an 18 and a 23 percent increase in the level of assets that one aspires, or sets a goal, to achieve. Coupled with our findings that asset wealth does not change (for in-district migrants) or actually grows more slowly (for out-of-district migrants), this suggests that another channel through which migration may lead to deteriorated mental health is by widening the gap between what individuals wish to have in the area of assets and what they actually have—Ray's (2006) notion of an "aspirations gap".

5.5. Heterogeneity

Thus far, our results suggest that migration—particularly long-distance migration outside of the origin district—significantly worsens subjective well-being. We also find evidence of two channels through which this occurs: by worsening physical health and by raising aspirations in the area of asset wealth without increasing asset wealth. We next consider whether migrating with other household members, or having migrated a long time ago (and thus

Table 10
Heterogeneous effects on mental and physical health by time of move.

	Moves in 1991 to 2002	Moves in 2003 to 2013	Moves in 1991 to 2002	Moves in 2003 to 2013	Moves in 1991 to 2002	Moves in 2003 to 2013	Moves in 1991 to 2002	Moves in 2003 to 2013	Moves in 1991 to 2002	Moves in 2003 to 2013
	Happy		Calm		Not nervous		Not down		Not in dumps	
Panel A: Mental Health, OLS										
Estimate	−0.112	−0.156	−0.127	−0.197	−0.058	−0.128	−0.076	−0.099	−0.025	0.018
SE	(0.058)	(0.049)	(0.059)	(0.046)	(0.039)	(0.043)	(0.041)	(0.048)	(0.050)	(0.058)
p-value	0.057	0.003	0.036	0.000	0.143	0.005	0.069	0.044	0.617	0.753
F test: Equality of coefficients (p-value)	0.510		0.252		0.236		0.716		0.523	
R-squared	0.094		0.113		0.080		0.074		0.054	
N	1,366		1,366		1,366		1,366		1,366	
Panel B: Mental Health, NNM										
Estimate, 2 matches	−0.057	−0.213	−0.080	−0.189	−0.089	−0.061	−0.112	−0.080	−0.021	0.017
SE	(0.057)	(0.053)	(0.055)	(0.052)	(0.059)	(0.064)	(0.060)	(0.065)	(0.057)	(0.064)
p-value	0.325	0.000	0.146	0.000	0.133	0.345	0.062	0.225	0.716	0.795
T test: Equality of matching estimates (p-value)	0.046		0.148		0.742		0.718		0.662	
N	1,262	1,266	1,262	1,266	1,262	1,266	1,262	1,266	1,262	1,266
	Healthy		Sick							
Panel C: Physical Health, OLS										
Estimate	−0.073	−0.122	0.066	0.050						
SE	(0.052)	(0.045)	(0.037)	(0.039)						
p-value	0.171	0.010	0.081	0.210						
F test: Equality of coefficients (p-value)	0.404		0.717							
R-squared	0.106		0.063							
N	1,366		1,366							
Panel D: Physical Health, NNM										
Estimate, 2 matches	−0.022	−0.092	0.083	0.059						
SE	(0.045)	(0.048)	(0.048)	(0.042)						
p-value	0.620	0.057	0.086	0.161						
T test: Equality of matching estimates (p-value)	0.288		0.705							
N	1,262	1,266	1,262	1,266						

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

potentially having had time to assimilate to a new culture and situation) may partially mitigate the adverse effects of internal migration on mental health. These are considered in Tables 9 and 10, respectively. Instead, we find that migration similarly impacts those who travel with vs. without family members, and it also similarly impacts those who have been away for a relatively short time vs. a longer time.

We also consider how the presence of heterogeneous groups in the non-migrant sample affects estimates of migration's impacts. In particular, the inclusion of return migrants in the non-migrant sample may lead to an underestimate of the true effects of permanent migration on subjective well-being. For example, if migrants returned to the household due to poor subjective well-being outcomes and failed to regain what was lost, then our estimates of migration's effects on subjective well-being may be biased downward. To examine the potential consequences of including return migrants in our analysis, we refer to a migration history module included in the household survey which asks individuals to report details regarding at most two moves (their most recent move and the first time they left the origin village since 1991). We define a return migrant as anyone in the non-migrant sample who reported having left their origin village at least once since 1991. According to this definition, approximately 38 percent of the non-migrant sample qualifies as a return migrant (Table A.3). It is important to note that our definition suffers from the inability to discriminate by the duration of each episode and thus the rather large number likely reflects our inclusion of people who might have only migrated on a temporary basis.

Descriptive statistics of the individual attributes and subjective well-being outcomes of each of the four samples (non-migrants who never moved, non-migrants who have moved, in-district migrants, and out-of-district migrants) are displayed in Table A.3. In general, return migrants tend to have poorer subjective well-being outcomes than do those who have never moved. However, while they still tend to be more happy and calm than out-of-district migrants, the t-statistics suggest that they are experiencing similar feelings of nervousness, being down, and being in the dumps. These similarities could explain our inability to detect meaningful differences in these outcomes between the out-of-district and non-migrant samples.

To provide an upper bound estimate of the effects of out-of-district migration on the well-being outcomes, we re-estimate

the OLS and matching models omitting return migrants in Table A.4. When using 4 matches in the application, the matching estimates suggest out-of-district migrants are more likely to feel nervous by 13 percentage points (p-value = 0.03). The magnitude of these effects are larger (as anticipated) than those reported in Table 5 (8 percentage points) and more precisely estimated. In addition, out-of-district migrants are more likely to feel down by 12 percentage points (p-value = 0.07). Given the lack of robustness across matching specifications, this suggests, however, that the potential presence of return migrants in our non-migrant sample has negligible consequences for our overall conclusions regarding migration's impacts on subjective well-being.

6. Conclusion

Migration is posited as a potential exit strategy for rural landless workers or the family members of agricultural households who remain at subsistence. Advances in tracking methods and experimentation in migration policies have provided new insights into the financial returns to migrants. International migrants from Tonga witness substantial gains of 263 percent in income over the short term (McKenzie et al., 2010). When consumption is measured and the focus directed to internal migrants, the gains remain positive and more moderate in the long-term: a 36 percentage point increase in consumption growth in Tanzania (Beegle et al., 2011) and a 35–40 percent increase in Pakistan (here). The magnitude of consumption growth depends on the destination, where rural out-migrants can achieve greater returns if they move further away. In Tanzania, Beegle et al. (2011) project a 12 percentage point increase in consumption growth for each kilometer increase in distance from the original community. We similarly find a greater increase in consumption growth for out-of-district moves compared to within-district moves (60 percentage points) in Pakistan.

Yet, a puzzle remains of why internal migration patterns remain extremely low in certain contexts (de Brauw, Mueller, & Lee, 2014). In some places, job prospects may be insufficient to attract labor out of the rural agricultural sector (Bigsten & Soderbom, 2006; Kingdon, Sandefur, & Teal, 2006), and constraints on enterprise development may limit self-employment (Nagler & Naude, 2017). For households that are close to subsistence, the potential costs of failure may be too catastrophic for the household to warrant the risk (Bryan et al., 2014). Still, there appears to be a substantial number of households that have both access to profitable migration opportunities and sufficient resources to mitigate risk. In these cases, the emotional consequences from moving long-distance seem to play a significant role in explaining why people are hesitant to migrate despite income gains. Our study confirms this hypothesis in Pakistan, where we find that out-of-district migrants experience declines in feelings of happiness (17–20 percentage points) and being calm (16–18 percentage points), while those moving within-district are unaffected. In Pakistan, declines in subjective well-being coincide with not only a loss in wealth accumulation for those moving long distances, but also aspirations not being realized with respect to accumulated wealth. Differences in cultural norms may explain why migrants may have fared worse emotionally in our setting. Migration in Pakistan is tied to major life decisions, such as marriage and starting a new household. Oftentimes, these decisions are made by other members of the family. Assets are hard to acquire without inheritance or support from local informal networks and, with distance, access to those assets may be relinquished and informal networks weakened.

One of the main limitations of the ability to design interventions to promote occupational mobility is our lack of knowledge regarding the broader benefits of resettlement. Our findings suggest that psychic costs will influence how migration propensities change over time and with continued economic growth. If traditional market mechanisms cannot reduce these costs, it may be constructive to look at reducing regional inequality by shifting not only workers, but also production across space.

Acknowledgements

The authors thank Hak Lim Lee, Xiaoya Dou, and Jie Song for earlier research support, and Innovative Development Strategies Limited, Arshad Khurshid, Hina Nazli, and Sohail Malik for their assistance in the data collection. This research has also benefited from the insights of Harold Alderman, Sara Curran, Andrew Foster, Steve Davies, Rachel Heath, and participants in the Center for Studies in Demography and Ecology seminar at the University of Washington. This research was part-funded by the CGIAR research program on Policies, Institutions, and Markets led by IFPRI.

Appendix A

Appendix Tables A.1–A.4

Table A.1
OLS and matching estimates of effects of migration on mental and physical health for the full sample.

	Happy	Calm	Not nervous	Not Down	Not Dumps	Healthy	Sick
Panel A: OLS							
Estimate	−0.134	−0.163	−0.093	−0.088	−0.003	−0.098	0.058
SE	(0.043)	(0.043)	(0.029)	(0.033)	(0.042)	(0.040)	(0.031)
p-value	0.003	0.000	0.003	0.010	0.946	0.018	0.071
R-squared	0.094	0.112	0.079	0.074	0.054	0.106	0.062
Panel B: NNM							
Estimate, 2 matches	−0.141	−0.139	−0.073	−0.098	−0.004	−0.056	0.069
SE	(0.042)	(0.040)	(0.046)	(0.047)	(0.045)	(0.035)	(0.033)
p-value	0.001	0.001	0.115	0.036	0.937	0.109	0.036
Estimate, 4 matches	−0.120	−0.118	−0.056	−0.083	−0.009	−0.059	0.047
SE	(0.038)	(0.035)	(0.042)	(0.043)	(0.042)	(0.033)	(0.032)
p-value	0.001	0.001	0.191	0.055	0.839	0.075	0.147
N	1,366	1,366	1,366	1,366	1,366	1,366	1,366

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

Table A.2
OLS and matching estimates of the effects of migration on consumption and assets for the full sample.

	Total C	Food C	Nonfood C	Assets
Panel A: OLS				
Estimate	0.240	0.141	0.401	−0.153
SE	(0.067)	(0.070)	(0.100)	(0.139)
p-value	0.001	0.049	0.000	0.277
R-squared	0.156	0.134	0.107	0.054
Panel B: NNM				
Estimate, 2 matches	0.336	0.268	0.429	0.014
SE	(0.064)	(0.071)	(0.087)	(0.144)
p-value	0.000	0.000	0.000	0.924
Estimate, 4 matches	0.297	0.227	0.390	−0.073
SE	(0.062)	(0.067)	(0.082)	(0.142)
p-value	0.000	0.001	0.000	0.607
N	1,301	1,301	1,301	1,345

OLS regressions include age categorical variables for the individual and his household's head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported. Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

Table A.3
Descriptive statistics of individual attributes and subjective well-being, differentiating non-migrants by history of migration.

	(1) Non-migrant, Never moved	(2) Non-migrant, Moved	(3) In-district Migrant	(4) Out-of-district Migrant	(1)-(3) T test, p-value	(1)-(4) T test, p-value	(2)-(3) T test, p-value	(2)-(4) T test, p-value
Age 25–34 (2013)	0.31	0.24	0.30	0.29	0.76	0.61	0.21	0.27
Age 35–44 (2013)	0.28	0.31	0.25	0.34	0.47	0.25	0.20	0.66
Age 45–54 (2013)	0.20	0.27	0.27	0.24	0.12	0.30	0.92	0.53
Age 55–60 (2013)	0.06	0.04	0.10	0.07	0.09	0.49	0.01	0.15
Completed primary education (2013)	0.29	0.29	0.35	0.23	0.24	0.21	0.23	0.25
Completed secondary education (2013)	0.16	0.19	0.14	0.21	0.62	0.28	0.27	0.76
Completed tertiary education (2013)	0.21	0.20	0.18	0.36	0.37	0.00	0.52	0.00
Digit span z score (2013)	−0.11	0.10	−0.16	0.50	0.68	0.00	0.02	0.00
Married (2013)	0.74	0.84	0.84	0.79	0.05	0.26	0.87	0.24
Head in 1991	0.08	0.01	0.05	0.03	0.37	0.06	0.00	0.06
Head's brother/sister in 1991	0.04	0.05	0.06	0.03	0.32	0.55	0.51	0.41
Head's nephew/niece in 1991	0.03	0.06	0.09	0.03	0.00	0.98	0.27	0.17
Head's grandchild in 1991	0.14	0.20	0.13	0.14	0.92	0.95	0.14	0.16
Head's in-law in 1991	0.00	0.01	0.01	0.00	0.41	0.51	0.72	0.39
Head's other relative in 1991	0.01	0.01	0.00	0.01	0.37	0.91	0.34	0.99
Happy	0.38	0.32	0.26	0.17	0.02	0.00	0.22	0.00
Calm	0.38	0.29	0.25	0.12	0.01	0.00	0.41	0.00
Not nervous	0.56	0.36	0.40	0.30	0.00	0.00	0.41	0.25
Not down	0.51	0.33	0.32	0.32	0.00	0.00	0.77	0.74
Not in the dumps	0.56	0.39	0.39	0.42	0.00	0.01	0.96	0.62
Healthy	0.29	0.24	0.23	0.10	0.21	0.00	0.81	0.00
Sick	0.10	0.14	0.13	0.21	0.27	0.00	0.79	0.07
Observations	726	436	97	107				

Table A.4
OLS and matching estimates of migration effects on mental health, omitting return migrants.

	Happy		Calm		Not nervous		Not down		Not in the dumps	
	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district
Panel A: OLS										
Estimate	−0.055	−0.226	−0.089	−0.278	−0.030	−0.203	−0.075	−0.153	0.004	−0.043
SE	(0.054)	(0.039)	(0.054)	(0.044)	(0.045)	(0.050)	(0.046)	(0.063)	(0.063)	(0.073)
p-value	0.312	0.000	0.105	0.000	0.504	0.000	0.113	0.019	0.953	0.561
F test: Equality of coefficients (p-value)	0.001		0.001		0.016		0.391		0.648	
R-squared	0.107		0.126		0.073		0.068		0.049	
N	930		930		930		930		930	
Panel B: NNM										
Estimate, 2 matches	−0.062	−0.172	−0.106	−0.159	−0.118	−0.065	−0.213	−0.045	−0.117	0.016
SE	(0.058)	(0.059)	(0.056)	(0.055)	(0.055)	(0.069)	(0.055)	(0.069)	(0.057)	(0.068)

(*continued on next page*)

Table A.4 (*continued*)

	Happy		Calm		Not nervous		Not down		Not in the dumps	
	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district	Moves in-district	Moves out-of-district
p-value	0.280	0.003	0.060	0.004	0.032	0.351	0.000	0.513	0.039	0.816
T test: Equality of matching estimates (p-value)	0.181		0.507		0.548		0.057		0.135	
Estimate, 4 matches	−0.039	−0.197	−0.081	−0.212	−0.096	−0.134	−0.143	−0.118	−0.064	−0.035
SE	(0.051)	(0.051)	(0.050)	(0.046)	(0.052)	(0.061)	(0.051)	(0.065)	(0.053)	(0.065)
p-value	0.442	0.000	0.105	0.000	0.065	0.030	0.005	0.070	0.222	0.591
T test: Equality of matching estimates (p-value)	0.029		0.054		0.642		0.762		0.728	
N	823	833	823	833	823	833	823	833	823	833

OLS regressions include age categorical variables for the individual and his head in 1991, cognitive score, change in household size and owned land, head occupational status indicators, indicators for the individual's relationship to the 1991 head, and village fixed effects. Origin village-clustered standard errors reported.
Nearest neighbor matching (NNM) models use individual age categorical variables, cognitive score, the amount of land the origin household owned in 1991, the value of durable assets owned in 1991, household size in 1991, and province indicators as covariates. Both models perform bias-adjustment. Robust standard errors are reported using two treated observations.

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.worlddev.2018.09.007.

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