Disability, vocational training, and psychological externalities: Experimental evidence from Cambodia*

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Abstract

This paper reports a randomized control trial on vocational training for persons with disabilities (PWDs). The program seeks to promote skilled work in mechanics and service for persons with limb amputation or paralysis in heavily mined areas of rural Cambodia. The program is small scale but intensive, involving long stay at the training center, up to one year. Eligible PWDs were randomly recruited and only recruited PWDs could participate in the program, if they wished (one-sided noncompliance). I examine economic, psychological, and social impacts of the training. On one hand, the training greatly increased employment (salary employment, not family enterprise) and earnings. Moreover, this led to employment among nondisabled household members (i.e., positive economic intrahousehold spillover). On the other hand, the training rather increased people's discrimination against disabilities, which led to an increase in PWDs' stigma of disability (i.e., negative psychological intergroup spillover). This unintended consequence was not caused by PWDs' economic inclusion (e.g., envy), but by their negative interactions with nondisabled people who were not familiar with disabilities in the community. I address potential threats to identification of these psychological externalities: perception bias in discrimination experienced by PWDs and psychological intragroup spillover among PWDs.

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1. Introduction

Disability has received increasing attention as a development issue (Braithwaite and Mont, 2009; DFID, 2000; Groce et al., 2011; WHO and World Bank, 2011; Yeo and Moore, 2003).[1] Although persons with disabilities (PWDs) are often the poorest of the poor in societies, systematic empirical studies on disabilities in developing countries are very scarce (WHO and World Bank, 2011). Employment has been increasingly recognized as a key factor in the process of empowerment and inclusion into society (World Bank, 2013). Systematic studies on labor market programs for PWDs in developing countries are extremely limited, however.[2] Labor market programs for PWDs can potentially affect not only economic outcomes such as employment and earnings, but also psychological and social outcomes such as stigma and social inclusion. A common notion is that labor market programs can augment PWDs' employment and earnings, thus leading to their empowerment, stigma reduction, and better social integration (e.g., OECD, 2010). Positive externalities of employment on social cohesion and stability are commonly claimed as a rationale for recent active labor market programs especially for youths in developing countries (World Bank, 2013). This paper reports the first randomized controlled trial on vocational training for PWDs in developing countries.[3]

Although disability is a serious problem in post-conflict countries, it has received little attention in the conflict literature (Blattman and Miguel, 2010). Cambodia is often considered as the country with the highest prevalence of amputees in the world, mainly caused by conflict and landmine accidents (Roberts and Williams, 1995; Roberts, 2011; Walsh and Walsh, 2003). My quasi-experimental study in heavily mined areas of rural Cambodia shows that the onset of disability triggers a vicious circle of low labor productivity, low earnings, and low accumulation

[1] The global estimate of the prevalence of some form of disability among adults in 2004 is 15.6 to 19.4%, which corresponds to 785-975 million persons at age 15 or above in 2010; of these, around 110 (2.2%) to 190 (3.8%) million experienced significant disabilities (WHO and World Bank, 2011). The Sustainable Development Goals refer to disability as being related to education, growth and employment, inequality, accessibility of human settlements, and data collection and monitoring (United Nations, 2015).

[2] A recent systematic review of labor market programs for persons with physical and/or sensory disabilities in low- and middle-income countries identifies 14 studies, most of which are uncontrolled before-and-after studies (Tripney et al., 2015).

[3] Experimental studies on vocational training for PWDs are very scarce also in developed countries. In the U.S., Kornfeld and Rupp (2000) find the significant impacts of randomly assigned case and referral management services (Project NetWork) among PWDs (11% increase in their earnings). In Norway, Bratberg, Grasdal, and Risa (2002) evaluate a cognitive program randomly assigned among workers on sick leave due to musculoskeletal pain, finding no significant impacts on their return to work and earnings. Both experiments were conducted among volunteers to participate in the program (the participation rates were about 5% and 34%, respectively).

of productive assets as well as social capital, leading to poverty trap (Takasaki, 2019). To tackle this vicious circle, labor market programs promoting skilled work, for example, in mechanics and service not strongly constrained by amputation could be promising. This was done by the Cambodian War Amputees Rehabilitation Society (CWARS), a local nongovernmental organization (NGO), through its vocational training program for persons with limb amputation or paralysis. The program is small scale but intensive, involving long stay at the training center, up to one year. In my experiment, eligible PWDs were randomly recruited and only recruited PWDs could participate in the training program, if they wished. The randomization was done at an individual level, but not a community level. This experimental design randomizing the assignment of potential participation in the program, as done in Job Training Partnership Act (JTPA) in the U.S. (Bloom et al., 1997), enables me to estimate program impacts not only among volunteers to participate in the program, but also among eligible individuals as a whole. Since no individuals in the control group participated in the program (i.e., one-sided noncompliance), I can estimate the program impacts among trainees (Angrist and Pischke, 2009; Bloom, 1984).

Since a series of training courses covered in the study took time (about two and half years), I examine their overall impacts on economic, psychological, and social outcomes one through three years after the completion of the training course (26 months on average). About 30% of PWDs in the treatment group took the training; most trainees were a head of households or his/her child. The training increased skilled employment and earnings among PWDs by 0.21 in probability (twice the control mean) and by about 90%, respectively. Moreover, the training increased skilled employment among nondisabled household members (PWD's sibling, child, spouse, or parent) with a magnitude no smaller than that among PWDs. That is, the training generated positive economic *intrahousehold spillover*. The training did not increase total household income, however; households with a trainee shifted activities from farming to nonfarm activities without augmenting total income and asset. At the same time, the training gave rise to unintended negative consequences: It increased people's discrimination against disabilities – according to the self-report of PWDs – and the stigma of disability among PWDs. That is, the training generated negative psychological *intergroup spillover* between PWDs and persons without disabilities (PWODs).[4] The training did not affect PWDs' subjective well-being,

[4] In the psychology literature on social interactions, the term group represents a social category, with ingroup denoting a social category that can be used to categorize one's self and outgroup denoting other social categories.

empowerment, or social capital. As such, contrary to the common notion, the economic inclusion of PWDs promoted by the vocational training was associated with negative psychological externalities.

I examine potential mechanisms underlying these two distinct spillovers. I show that the positive economic intrahousehold spillover was caused by the economic inclusion of PWDs. This was not through family enterprise jointly run by PWD and other household member, but their increased salary employment. I speculate potential underlying mechanisms. In contrast, the negative psychological intergroup spillover was caused by neither PWDs' economic inclusion nor the positive economic intrahousehold spillover. Although discrimination could increase if people in the community felt unfair or envy about the benefits the trainee and his/her family received, the result does not corroborate such negative emotions. I conjecture that the training increased intergroup interactions between PWDs and PWODs who were not familiarity with disabilities in the community, resulting in an increase in intergroup bias – negative beliefs (e.g., stereotypes), feelings/evaluations (e.g., prejudice), and behaviors (e.g., discrimination). Using an independent measure of community-level stigma at the baseline, I show evidence for this negative intergroup contact. I also show that increased discrimination against PWDs caused an increase in their stigma of disability.

I address two potential threats to identification of these psychological externalities. First, following the stigma literature and clinical psychology (Lewis, Cogburn and Williams, 2015), I measured discrimination against disabilities experienced by PWDs using a survey-based approach, but not directly measuring people's discriminatory attitudes or behaviors.[5] Discrimination reported by PWDs may capture their perceptions about discrimination, not people's discriminatory behaviors (intergroup spillover), though their perceptions about discrimination do shape their stigma. If this perception 'bias' (Kaiser and Major, 2006) is significant, the estimated training impacts on reported discrimination overstate those on actual discrimination. To address this potential problem, using an independent measure of discrimination observed in the community, I show that the training impacts on discrimination are significant only in communities where discrimination was actually observed.

[5] Experimental methods to measure discriminatory attitudes and behaviors include audit studies, correspondence studies, implicit association test, and list experiment (Bertrand and Duflo, 2017; Neumark, 2018; Rich, 2014). Whether such methods can be effective to measure discrimination against disabilities is an empirical question.

Second, increased discrimination against disabilities might have expanded to PWDs in the control group within communities. This psychological *intragroup spillover* makes the estimated training impacts on discrimination and stigma biased toward 0. I compare communities with no intragroup spillover (with uniform treatment status, i.e., no common support) and with potential intragroup spillover (common support).[6] This approach is possible because PWDs are scattered across communities (70% of communities have only one or two eligible PWDs in my sample). I find evidence for the intragroup spillover of stigma, but not discrimination.

The paper contributes to the following four strands of the literature. First, the paper adds to a growing number of experimental studies on active labor market programs in developing countries. Contrary to common findings of nonsignificant or weak impacts of vocation training (see Blattman and Ralston, 2015; McKenzie, 2017; Tripney et al., 2013 for reviews), the vocational training for PWDs in Cambodia was quite effective in promoting their economic inclusion. For example, among 12 studies on vocational training programs (for nondisabled people) in eight developing countries reviewed by McKenzie (2017), only three and two out of nine studies find a significant impact on paid employment and earnings, respectively, and my corresponding estimates of average treatment effects on the treated are greater than those found in all studies covered in his review.[7] Moreover, the economic inclusion of PWDs led to that of nondisabled household members, which is a new finding in the literature. Nonsignificant impacts on total income and asset are distinct from previous works which find significant economic impacts of vocational training (e.g., Blattman et al., 2014).

Second, the paper adds to a growing number of experimental studies on spillover effects. As far as I know, the paper provides the first experimental evidence for psychological externalities of vocational training. The literature focus on general equilibrium effects in labor markets (see Rothstein and von Wachter, 2017 for a review). My finding that the negative intergroup spillover was not driven by PWDs' economic inclusion (e.g., envy) is important because otherwise the tradeoff between economic and psychological impacts would become a

[6] Without randomized treatment exposure across communities in my experiment, it is infeasible to identify intragroup spillover within communities by comparing controlled individuals between treated and controlled communities (Baird et al., 2018; Hudgens and Halloran, 2008).

[7] My corresponding estimates of intention-to-treat effects (about 0.06 in probability and near 80% of the control mean, respectively) are the same as the second highest estimate (found for low-income youths in Kenya, Honorati, 2015) and close to the highest estimate (96%) (found for low-income women in India, Maitra and Mani, 2017) in McKenzie's review (2017).

major challenge for policymakers. A small number of previous works on cash transfer programs in developing countries[8] find negative psychological spillover among nonbeneficiaries who were eligible for the program: increased psychological distress among adolescent girls in Malawi (Baird, De Hoop and Özler, 2013) and reduced life satisfaction among adults in Kenya (Haushofer, Reisinger and Shapiro, 2015). These works attribute negative psychological spillover to relative deprivation: An increase in income through cash transfers among beneficiaries decreases the utility of nonbeneficiaries.[9] In my study, relative deprivation is unlikely to be significant because the training did not increase total income. Rather, the intervention altered attitudes and behaviors of nondisabled people who were not eligible for the program and these changes (e.g., discrimination) had a negative feedback effect on beneficiaries. Also, distinct from the short-lived detrimental effects found in these two studies (several months at most after the program ended), the psychological intergroup spillover sustained for about two years (on average).

Third, the paper contributes to the literature on intergroup contact in social psychology. Numerous studies show that intergroup contact can reduce intergroup prejudice while increasing trust and cooperation between groups in conflict (Paluck and Green, 2009; Paluck, Green and Green, 2018; Pettigrew, 1998; Pettigrew and Tropp, 2006).[10] The vast majority of extant works have been conducted in a laboratory setting in developed countries; many studies in a field setting are correlational and rely on perceptions, not behavioral outcomes.[11] Some recent works show that brief intergroup interaction among strangers in an unfamiliar or artificial setting can rather generate anxiety, discomfort, and avoidance of further interactions, thereby exacerbating intergroup tension (Dovidio, Gaertner and Saguy, 2009; Shelton et al., 2009; Trawalter,

[8] The literature commonly study general equilibrium effects of cash transfer programs (e.g., Cunha, De Giorgi and Jayachandran, 2019; Filmer et al., 2018; Haushofer and Shapiro, 2016, 2018; McIntosh and Zeitlin, 2018).
[9] Although unfairness and envy can matter for people (Bolton and Ockenfels, 2000; Dur and Glazer, 2007; Fehr, Goette and Zehnder, 2009; Fehr and Schmidt, 1999), they have received limited attention in the literature of social protection. Baird, de Hoop, and Özler (2013) briefly mention potential concerns about unfairness felt by nonbeneficiaries. Stecklov, Weinreb, and Winters (2016) address this issue in survey non-response in Mexico's PROGRESA. Alpízar et al. (2017) explores this question in a laboratory experiment.
[10] The literature originates from Allport's (1954) proposal of four conditions for optimal intergroup contact: equal status between the groups in contact; common goals; intergroup cooperation; and the support of authority, law, custom or local atmosphere. In typical field settings, some or all of these conditions do not hold.
[11] Notable exceptions of field experiments on intergroup contact are vocational training for youths in religious groups in Nigeria (Scacco and Warren, 2018), relay race among wealthy and poor students in India (Rao, 2019), and cricket teams among men from different castes in India (Lowe, 2017). All these three studies find positive intergroup contact.

Richeson and Shelton, 2009; Ufkes et al., 2016). My study shows the first experimental evidence for negative intergroup contact between PWDs and PWODs in real-world settings. The recent meta-analysis by Paluck, Green, and Green (2018) shows that the positive impacts of intergroup contact are greater for prejudice against disabilities (in developed countries) than other types of prejudice (e.g., ethnicity, LGBT, religion). Although my study is not about intergroup contact interventions, the negative intergroup contact I found suggests a caution needed for such interventions to address prejudice against disabilities.

Fourth, the paper contributes to the psycho-medical literature on health-related stigma. Many studies have documented stigma associated with chronic health conditions (especially leprosy, HIV/AIDS, mental illness, epilepsy, tuberculosis, and disability) (Earnshaw and Chaudoir, 2009; Livingston and Boyd, 2010; Major and O'brien, 2005; Van Brakel, 2006).[12] Growing evidence also shows that stigma is a fundamental cause of health (Hatzenbuehler, Phelan and Link, 2013). Although a variety of interventions to reduce health-related stigma have been carried out, systematic evaluation of their effectiveness is limited (Dalky, 2012; Heijnders and Van Der Meij, 2006; Stangl et al., 2013; Yanos et al., 2015). Economists have paid very little attention to disability stigma.[13] My new finding that effective vocational training for PWDs could rather exacerbate their stigma of disability exemplifies the critical importance of integrated evaluation of policy interventions for disabilities.

The rest of the paper is organized as follows. Section 2 describes the field experiment. Section 3 discusses the empirical design and reports results. Section 4 discusses underlying mechanisms. Section 5 addresses perception bias and intragroup spillover. The last section concludes.

2. Field Experiment and Data

2.1. Vocational Training Program

The Cambodian conflict (1970-1998) generated thousands of amputees (Roberts and Williams, 1995; Roberts, 2011). Public social protection for amputees is limited and NGOs have

[12] A strong relationship is found between subjective well-being and physical/mental health; in particular, stigma is negatively related to life satisfaction (Link and Phelan, 2001).

[13] Haveman and Wolfe (2000) provide a broad review of the economics of disability and disability policy in developed countries. How policies to support PWDs (OECD, 2003, 2010) affect beneficiaries' behaviors and outcomes has been a focus of economic research (e.g., Acemoglu and Angrist, 2001; Autor and Duggan, 2003; Gruber, 2000; Hotchkiss, 2004; Von Wachter, Song and Manchester, 2011).

been playing a major role (Powell, Mercer and Harte, 2002). CWARS offers persons with limb amputation or paralysis intensive vocational training for skilled work for free. During the training period, most trainees stay at one of CWARS's training center. Provisions of tools, prosthesis, lodging, and food are all free. These de facto inkind transfers serve as the program's social protection component for poor PWDs and their family. A small startup fund is also available upon completion.[14] Although the program's focus is on economic inclusion, it also provides limited psychological support as well as basic literacy training and family planning. Through the cohabitation and training at the training center, trainees can interact with other PWDs (intragroup contact).[15]

The procedure for intake is as follows. With a very incomplete administrative record of disabilities, CWARS local staff visit communities to find eligible PWDs for upcoming courses (determined by the headquarter in Phnom Penn). Communities to be visited are logistically determined by local staff. In each community, all eligible adults are recruited and participation is voluntary.[16] Leakage is nonexistent because limb amputation and paralysis are easily verifiable. The process continues until all slots are filled. Local staff revisit communities to recruit trainees for other courses that have become available later. After all communities in the province are covered, it proceeds to the next province. In this way, all eligible PWDs are in principle given an opportunity to participate in the program.

In 2005 CWARS opened a new training center in the Banteay Meanchey Province. Sharing an international border with Thailand, it is one of the most heavily mined provinces in the country.[17] My study evaluates 15 courses offered in this training center from November 2007 through July 2010: three for appliance repair, four for motorcycle mechanics, three for barbering, one for lady hairdressing, three for sewing, and one for vegetable farming (Online Figure A1 and Table A1). All nonfarm courses are intensive ones: 12 months for appliance repair and 4-7 months for other nonfarm courses. Appliance repair, motorcycle mechanics, barbering, and

[14] Trainees can also apply for a small startup loan, though only a small proportion of applicants are accepted.
[15] It is infeasible to study intragroup contact among PWDs because the number of trainees in my sample is relatively small and my data have limited information about their interactions.
[16] Although the program is eligible for adults at age 18 or above, youths below age 18 are also recruited in practice. Upper age limit is not specified; based on the local staff's assessment, elderly can be recruited.
[17] According to the Cambodian DHS (National Institute of Statistics, Directorate General for Health and ICF Macro, 2011), 2.5% of individuals in Banteay Meanchey were physically impaired and over 26% of disabilities were caused by landmine or conflict.

sewing courses were organized by semester and the composition of these courses in each semester varied little. Vegetable farming is a short 10-days course.[18]

2.2. Experimental Design

During the evaluation period, the local procedure was altered as follows. First, in their first visit to communities, the local staff and my field team made a roster of eligible PWDs and the field team conducted a baseline survey. Second, I stratified eligible PWDs according to sex and the type of disability (amputation or not) and randomly assigned them to either the treatment group or the control group within each of the four strata, using a computerized random number generator. That is, the randomization was done at the individual, not community, level. Third, the local staff and/or the field team revisited PWDs in the treatment group to recruit them for upcoming courses and they decided whether they take one of the courses.[19] Taking more than one course was not allowed. Eligible PWDs in the control group were recruited after the evaluation period (they were not informed of this possibility during the evaluation period).

As the roster of eligible PWDs expanded over time, I randomly assigned the treatment status among newly added individuals within each stratum by batch. The local staff and the field team revisited PWDs who declined to take earlier courses for recruitment for later ones. To facilitate finding trainees in a timely manner and accommodate CWARS's administrative demand, I altered the treatment assignment ratio in each of the four strata from the original one twice through time. That is, in each of the four sex-amputation strata, three different treatment assignment ratios were used. In this stratified randomization design, the treatment assignments across individuals are random within 12 strata. Under this procedure, the timing of baseline surveys does not necessarily match the timing of courses.

One year after the end of the last training course, my field team revisited households in the sample to carry out an endline survey in July-October 2011 (Online Figure A1). Both baseline and endline household surveys were conducted with the PWD, the head of household (who is either the same as or different from the PWD), and other adult household members, if

[18] These training courses are similar to those offered before and after the evaluation period in Banteay Meanchey and other provinces.

[19] The order of community revisit was determined by local staff based on logistics, and in the community with more than one PWD in the treatment group, the order of recruiting them was determined by local staff or the field team at convenience. A baseline survey was conducted at that time if it was not done during the first visit.

any, depending on questions asked. In each community where PWDs reside, a community survey was carried out among community leaders.

Two caveats are noted. First, as in the normal procedure, recruited PWDs freely chose which courses they take among those available. I did not randomly assign them to any specific course. Second, with the distinct timing of the 15 courses offered (Online Figure A1), the intervals between the completion of training and the endline survey among trainees vary from 13 months through 39 months (mean: 25.6 months, median: 22 months). Thus, I can only obtain experimental estimates of the impacts of the mix of the 15 courses one through about three years after the completion of the courses. The mix of the courses includes vegetable farming course no trainees of which got employment (Online Table A1). My data do not capture any former employment between the baseline and endline surveys. Thus, the estimated impacts of the training below can be considered as conservative ones.

Another caveat is that, as in the normal procedure, the local staff determined the order of communities to be visited. Although their decision was mainly based on logistics, it might be possible that they targeted certain communities earlier according to other criteria. If so, the intervals between the completion of training and the endline survey among trainees can be correlated with their characteristics. Although this does not cause bias in the estimated impacts of the training below, it can affect interpretations of them as discussed below.

The experimental design is shown in Table 1. The baseline sample covered 681 PWDs eligible to the program who resided in 305 communities, situated in 65 communes of 8 districts in Banteay Meanchey Province. PWDs are scattered across communities (2.3 PWDs per community on average).[20] All households contain one eligible PWD. The sample is almost equally divided into the treatment and control groups (54% vs. 46%);[21] 125 out of 368 treated individuals took the training (34% uptake) and none of controlled individuals did so (one-sided noncompliance).[22]

The endline survey tracked 571 households in 282 communities, which corresponds to 84% of the baseline sample. In the case where PWD formed a new household or moved to

[20] About 42%, 28%, 11%, 8%, and 10% of communities in the baseline sample have one, two, three, four, and five or more (up to eight) eligible PWDs, respectively.
[21] The size of strata varies from 8 through 238 and the treatment assignment ratio varies from 0.40 through 0.86 across 12 strata.
[22] Trainees are scattered across 103 communities: 84 communities have one trainee, 16 have two, and the remaining 3 have three.

another household in the same community, the survey team tracked the current household. Household attrition was mainly due to migration, inaccessibility due to large floods which occurred in 2011, and unknown reasons. In this household endline sample, 49 PWDs were not available mostly due to mortality, migration, and temporary absence. The remaining 522 PWDs in 264 communities (63 communes) constitute the PWD endline sample. Attrition is not systematically related with the treatment status (Online Table A2).[23] At the same time, among the treated, attrition was more common among households with trainees and trainees than others. Below I assess how robust original estimates are to this systematic attrition. The endline sample is almost equally divided into the treatment and control groups (53% vs. 47%) with 84 trainees (30% uptake).[24] Out of 305 communities, 295 community surveys were completed at the baseline and 258 community endline surveys were completed.

Among the 84 trainees in the endline sample, enrollment was sharply divided between 62 males and 22 females: In almost all cases, males enrolled in appliance repair, motorcycle mechanics, barbering, and vegetable farming, and females enrolled in lady hairdressing and sewing (Online Table A1; the patterns among 125 trainees in the baseline sample are very similar). All trainees completed their training courses.

2.3.PWDs and PWODs

Table 2 shows the characteristics of PWDs in the endline sample (which are very similar to those in the baseline sample, Online Table A3). Among 522 individuals, 26% are females, 14% are hand amputees, 62% are leg amputees, and 26% have limb paralysis.[25] Whereas the sample includes much more male amputees than female amputees (323 vs. 63), gender difference is very limited among nonamputees (63 males vs. 73 females). As such, male amputees are a

[23] I first regress an indicator variable for household attrition on the treatment indicator variable, with strata fixed effects controlled for. While the estimated coefficient of the treatment indicator is considerable compared to the control mean (with no statistical significance) (Online Table A2 column 1), the estimate becomes small with baseline covariates (discussed below) controlled for (columns 2). Next, I regress an indicator variable for attrition from the PWD endline sample. The estimated coefficient of the treatment indicator is small with no statistical significance (column 3) and when baseline covariates are controlled for, the estimate becomes almost 0 (column 4). The attrition is significantly correlated with almost none of the baseline covariates; as exceptions, attrition was less common among married PWDs in small communities. Attrition varied across districts due to the 2011 floods.
[24] The endline sample includes four individuals with disabilities other than amputation or limb paralysis (like blindness). The endline sample includes 15 youths at age 17 or below and 7 elderly at age 65 or above.
[25] These types of disabilities are not mutually exclusive because multiple amputations and the combination of amputation and paralysis exist, though they are rare.

major stratum, counting for about 62% of the sample. Thus, heterogeneity analysis by gender and disability type (amputation or not) has low power.

These sharp differences in gender-amputation are unique to post-conflict settings. Conflict-related disabilities caused by landmine/unexploded ordnance (UXO) and war/armed conflict are much more common among amputees, especially males (81%), than nonamputees.[26] Whereas most conflict-related disabilities consist of male amputees, the distributions of gender and amputation are almost balanced among those with non-conflict-related disabilities caused by accident, disease, birth defects, and other reasons.

As mine clearance in the region progressed and security improved over time, conflict-related disabilities became less common. Although the onset of non-conflict-related disabilities largely corresponds to age distribution, that of conflict-related disabilities is concentrated in 1980s and 90s (Online Figure A2). Correspondingly, whereas male and female amputees were impaired at age 25 and 13, respectively, on average, most nonamputees were impaired at birth or age 0-3 (mostly polio). At the baseline, amputees, especially males, and males with conflict-related disabilities are older than nonamputees and those with non-conflict-related disabilities. Sixty percent of PWDs are a head of households;[27] 5% and 28% of PWDs, respectively, are a spouse and child of nondisabled head of household (Table 3 panel A column 1).

As such, male, amputation, conflict-related disabilities, ex-combatant, age at the time of the baseline, and household headship are strongly positively correlated with each other. The sample contains a much greater number of individuals with conflict related disabilities, especially amputees (the primary target of the program), than others.

I consider working-age adults (age 15-64) without disabilities in the household to which PWDs belong as PWODs within households. At the endline, 89% of households in both the household and PWD endline samples have at least one PWOD (Table 1). PWODs are younger than PWDs on average (31 vs. 38 years old at the baseline). The distribution of age is distinct between PWDs and PWODs: While the estimated density of age of PWDs and PWODs have two peaks, middle-aged adults around the peak at late 40s is denser than young adults around the peak at mid-20s among PWDs and youths around the peak at around age 20 is denser than

[26] Although almost 60% of male amputees were combatants when they were impaired, female ex-combatants were rare (8%).
[27] Male amputees are more likely to be a head of households than male nonamputees (86% vs. 32%); female heads are relatively uncommon (12%) (Table 2).

middle-age adults around the peak at late 40s among PWODs (Figure 1 panel A). Most PWODs are PWD's spouse (24%), child (39%), sibling (16%), or parent (14%) (Table 3 panel B column 1),[28] which correspond to four clusters of age combination between PWODs and PWDS in the northeast, southeast, southwest, and northwest, respectively (Figure 1 panel B).

2.4. Baseline Balance

The randomization has achieved covariate balance in the endline sample:[29] The equality of means between treated and controlled individuals is rejected at a 5% significance level for none of 35 variables and at a 10% significance level for three variables, as expected by chance, though the treatment-control difference in means of these three variables is small; the joint significance test is not significant at conventional levels (Table 4).[30] At the same time, the treatment-control difference in means of a few baseline economic outcomes (defined blow) is considerable with no statistical significance, which I address below. The baseline balance in the baseline sample reported in Online Table A4 indicates that the randomization performed well.[31]

2.5. Economic Outcomes

I consider the following two sets of employment and earnings as primary labor market outcomes. The first set is 1) an indicator for *any employment*, which takes 1 if the individual had any paid employment (in the past six months) or worked for nonfarm family enterprise (in the past 12 months), and 2) monthly *earnings* from any employment, which are the sum of average monthly earnings from any paid employment and average monthly net earnings from the family enterprise per worker. As earnings are 0 for individuals with no employment, this measure

[28] Among PWODs, 11% are a head of households, 31% are his/her spouse, and 56% are his/her child (Table 3 panel B column 1).

[29] Among PWDs in the endline sample, at the baseline, 55% were married, two thirds were literate, 20% had any secondary education; they belonged to households with 5 members and 2.5 nondisabled working-age adults (PWODs) on average, of which over one quarter included a child at age 5 or younger. About 85% of households conducted farming (especially rice cropping) and 30% conducted nonfarm activities. The mean gross income was about $413 per capita (1US$ = 4,046 Riel in 2011). An average community included about 12 PWDs and consisted of about 250 households; the distance to district capital was about 16 km on average.

[30] Table 4 checks the balance of 16 baseline covariates – 7 individual-level, 4 household-level, and 5 community-level – as well as 19 baseline outcomes – 15 individual-level and 4 household-level (defined below). I regress each variable on the treatment indicator variable, with strata fixed effects controlled for. In the joint significance test, I regress the treatment variable on the baseline covariates, baseline outcomes, and baseline covariates and outcomes combined, with strata fixed effects controlled for, to test the null hypothesis that the estimated coefficients of all variables are equal to zero.

[31] The equality of means between the treatment and control groups is rejected at a 5% (and also 10%) significance level for three out of 35 variables. The joint significance test is not significant at conventional levels.

captures the combination of employment and earnings among the employed. The second set is 1) an indicator for *skilled employment*, which takes 1 if the individual had any salary employment excluding unskilled day labor (in the past six months) or worked for family enterprise (in the past 12 months), and 2) monthly *earnings from skilled employment*, which are the sum of average monthly earnings (monthly or weekly salary) for the salary employee and average monthly net earnings from the family enterprise per worker.

Any paid employment and salary employment include farm employment, though it is not common in the latter; I do not distinguish farm and nonfarm employment to main the number of observations because missing values are common in employment activities. Mechanics and services are common in salary employment and family enterprise. Salary employment includes not only formal employment (e.g., government employees), which is commonly studied in the literature (McKenzie, 2017; Tripney et al., 2013), but also nonformal employment. Formal employment is not common in the sample. Any employment combines paid employment and self-employment, which are also commonly examined in the literature (I also analyze them separately).

I consider employment and earnings for PWDs. I also consider employment and earnings for PWODs within households.[32] If more than one PWOD is present in the household, employment is an indicator for employment of at least one PWOD and earnings are the mean among PWODs.

In the PWD endline sample, whereas skilled employment among PWODs significantly increased from 17.5% at the baseline to 31.7% at the endline, skilled employment among PWDs changed little from 12.1% to 12.9% (Online Table A6).[33] Skilled employment was not stable, however: Only 2% of PWDs had skilled employment at both the baseline and endline. At the endline, skilled employment among trainees was twice as common as that in the control group (20.5% vs. 10.1%). Since most skilled employment at the endline emerged after the baseline among PWDs, the estimated impacts of the training below mostly capture those on starting new employment.

[32] Below I show that whether PWD has at least one PWOD in the household is not significantly correlated with the treatment status. Baseline covariates and outcomes are balanced in the PWD endline sample with at least one PWOD (Online Table A5).

[33] While any employment among PWODs changed little from 42.9% to 40.1%, any employment among PWDs somewhat decreased from 25.4% to 18.6% (Online Table A6).

2.6. Psychological and Social Outcomes

Stigma is a social construct, but not an attribute of individuals. Following Goffman (1963), many researchers define stigma as a significantly discrediting attribute that lowers the status of an individual or group in the eyes of society. Link and Phelan (2001, p377) describe stigma as a dynamic process that "elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them."

The following three categories of stigma apply to physical disabilities (e.g., Ritsher, Otilingam and Grajales, 2003; USAID, 2005; Van Brakel, 2006): 1) *Perceived stigma*, consisting of negative feelings or attitudes about the stigmatized in the community and society; 2) *Enacted stigma*, consisting of actual experiences of discrimination that result from stigma and that reduce the life chances of the stigmatized; 3) *Internalized stigma* (or self-stigma), the phenomenon that the stigmatized accept that they deserve to be treated poorly and unequally. Internalized stigma can manifest through self-hatred, self-isolation, and shame (e.g., Lee, Kochman and Sikkema, 2002).

I adopted indicators developed by USAID (2005) with some modifications for disability (see Table A7 for the instruments).[34] Although indicators for internalized and perceived stigmas apply to PWDs and PWODs in general, respectively, those for enacted stigma can apply to both as it can be measured by discrimination experienced by the former and observed by the latter. In the household survey, I asked questions about internalized and enacted stigma of disability directly to PWDs. In the community survey, I collected perceived stigma as negative feelings/attitudes of people in the community about disabilities perceived by community leaders (who are not disabled), but not those of community leaders themselves, and enacted stigma as discrimination personally observed by community leaders, but not their own discriminatory behaviors. If people were asked about their own discriminatory behaviors, they might respond that they are nondiscriminatory because it is socially desirable. My design of the community survey to measure community-level stigma and discrimination can help reduce such bias.

These questions yield the following categories of indicators (Table A7):

[34] USAID (2005) conducted extensive field tests and validation of various HIV/AIDS-related indicators in Tanzania, making a set of suggested indicators for different types of stigma. At the time of designing the baseline survey, it was the latest major efforts in the stigma literature (Van Brakel, 2006).

- Internalized stigma: three binary indicators for shame, guilt, and self-blame the PWD felt because of his/her disability (in the past six months);
- Perceived stigma: The questionnaire asked community leaders how they think most people in the community would respond to the following three negative attitudinal statements related to shame (binary): "People with disability should be ashamed of themselves", "I would be ashamed if someone in my family had disability", and "I would feel ashamed if I were disabled";
- Enacted stigma (experienced/observed discrimination): I employed 12 binary indicators for discrimination experienced by PWDs/observed by community leaders within and outside the community (in the past six months). Experienced discrimination mostly captures discrimination experience outside of the household. Only two indicators for verbal stigma – teasing ("Teased, insulted, or sworn at") and gossip ("Gossiped about") – were commonly experienced by PWDs (over 10% either at the baseline or endline).[35]

Note that the community-level measures of discrimination and stigma are independent from the individual-level measures of discrimination and stigma. Stigma and discrimination were not stable. The individual values of the indicators considerably changed from the baseline to the endline in either direction (Online Table A8 panel B). For example, the transition of shame is equally divided into four possibilities (1 to 0, 0 to 0, 0 to 1, 1 to 1).

To lessen data-mining concerns, following Kling et al. (2007), I construct four additive standardized indices for internalized stigma, perceived stigma, experienced discrimination, and observed discrimination based on the corresponding original indicators (3 stigma indicators and 12 discrimination indicators).[36]

In addition, the household survey asked questions about subjective well-being, empowerment, and social capital to the head of households who is either disabled or nondisabled. For these measures, I analyze the PWD endline sample with disabled heads of

[35] The remaining 10 binary indicators capture three domains: isolation, loss of identity and role, and loss of access to resources and livelihoods (Online Table A7). Although some of these indicators capture discrimination within households, its incidence was almost none. According to the community survey, these 10 discriminations were uncommonly observed by community leaders.

[36] I define a summary index Y^* as the unweighted average of all standardized outcomes in each category: $Y_k^* = (Y_k - \mu_k)/\sigma_k$, where Y_k denotes the outcome variables, and μ_k and σ_k, respectively, are the mean and standard deviation of Y_k in the control group. Estimated effects on $Y^* = \sum_k Y_k^*/k$ allow me to test whether the training had an overall effect on the corresponding category of outcomes.

households.[37] Subjective well-being is measured by happiness and life satisfaction and empowerment is self-empowerment to take control over own life.[38] I construct an additive standardized index from five indicators which capture general social capital, but not community-specific one or explicitly disability-related one.[39] The index thus reflects both intergroup and intragroup social relationships within and across communities.

2.7. Correlations of Outcomes

The correspondence of individual-level and community-level measures of discrimination and stigma may not be strong. In particular, discrimination observed by community leaders may be different from discrimination reported by PWDs for the following reasons. First, the observability of discrimination might be low within and outside communities, especially the latter. Then, observed discrimination understates experienced discrimination. Second, both experienced discrimination reported by PWDs and observed discrimination reported by community leaders may not reflect people's discriminatory behaviors. This perception bias can either overstate or understate actual discrimination.

Table 5 shows the correlations of the four indices of discrimination and stigma at the baseline and endline in the PWD endline sample (for exposition the table reports only correlations at least at a 10% significance level). First, two individual-level indices (internalized stigma and experienced discrimination) are strongly positively correlated with each other at both the baseline and endline. This provides initial evidence that internalized stigma is shaped by experienced discrimination. Second, in contrast, two community-level indices (perceived stigma and observed discrimination) are not correlated with each other. This may be partly because of their difference in coverage: perceived stigma within communities vs. observed discrimination within and outside communities. Third, perceived and internalized stigma are correlated with each other at both the baseline and endline (especially the latter).[40] This suggests that

[37] Baseline covariates and outcomes are well balanced in the PWD endline sample with disabled head of households (Online Table A9).
[38] The five-scale index for happiness takes 1 (very unhappy) through 5 (very happy), that for life satisfaction takes 1 (very uncomfortable) through 5 (very comfortable), and that for empowerment takes 1 (totally unable to change life) through 5 (totally able to change life).
[39] The original five indicators are the number of close friends, the number of people who could offer help in the case of small/large shocks (4 categories: 0, 1 or 2, 3 or 4, 5 or more), the number of festivals or ceremonies attended in the past six months, and the number of gatherings for food or drinks in the past one month.
[40] According to the three original indicators, internalized stigma and perceived stigma are common at a relatively similar level (39-57% at both the baseline and endline) (Online Table A8 panel A).

community-level stigma perceived by community leaders reflect internalized stigma among individual PWDs. Fourth, observed discrimination is correlated with experienced discrimination at the endline, but not the baseline.[41] This suggests that the disparity between these two discrimination measures due to the incomplete observability and perception bias decreased at the endline. This is possible if the training increased actual discrimination among people in the community and as a result more discrimination was experienced by PWDs and observed by community leaders.[42]

3. Analysis and Results

3.1. Empirical Strategy

I estimate intention-to-treat (ITT) effects of being recruited for the training program using Ordinary Least Squares (OLS) regression specifications of the form

$$Y_{ics} = \alpha + \beta \cdot Treatment_i + \phi_s + \varepsilon_{ics}, \quad (1)$$

where Y_{ics} is the outcome measure of individual i in community c in randomization stratum s; $Treatment_i$ is an indicator variable for being assigned to the treatment group; ϕ_s is a vector of strata fixed effects; and ε_{ics} is an error term. The random assignment of recruitment across individuals within strata ensures that the estimate of β identifies the causal impact of being recruited.

Since not all individuals recruited actually took up the training, this ITT estimate understates the causal effect of taking the training. I employ two-stage least squares (2SLS) regression specifications of the form

$$Y_{ics} = \alpha + \gamma \cdot Training_i + \phi_s + \varepsilon_{ics}, \quad (2)$$

where $Training_i$ is an indicator variable for taking one of the 15 training courses which is instrumented with the randomly-assigned treatment indicator. The first-stage equation is equation (1) with Y redefined as *Training*. In my experiment, the treatment assignment increases the uptake of training for all individuals (i.e., monotonicity), because only individuals recruited

[41] Although observed gossip was less common than experienced gossip (11% vs. 26%) at the baseline, the disparity decreased (18% vs. 21%) at the endline (Online Table A8 panel A). Although about 19% of PWDs reported teasing at the baseline, it was almost nonexistent according to community leaders (less than 3%); the gap was still large at the endline. This difference may reflect that gossip is more observable than teasing.

[42] The correlations of the original 10 indicators (including teasing and gossip for enacted stigma) are shown in panels C and D of Online Table A8. Within-category correlations are stronger than across-categories correlations which are consistent with the correlations across indices (Table 5). As an exception, observed teasing and gossip are not correlated with each other at the baseline because the former was almost nonexistent.

could take the training. It is assumed that the treatment assignment affects the outcome only through the training. Given this exclusion restriction, the estimate of γ identifies the local average treatment effect (LATE) of the training program – average treatment effect on compliers who alter their decisions of taking up the training in response to the treatment status (Angrist and Imbens, 1995; Imbens and Angrist, 1994). With one-sided noncompliance in my experiment, the estimate of γ can be also interpreted as the average treatment effect of the training on the treated (trainees) (TOT) (Angrist and Pischke, 2009; Bloom, 1984). I use robust standard errors. When I use standard errors clustered at the community level (this is unneeded for the individual-level randomization, Abadie et al., 2017), the results are very similar (because PWDs are scattered across communities).

3.2. Employment and Earnings among PWDs

The estimation results of equations (1) and (2) for employment among PWDs are reported in panel A of Table 6.[43] Column (1) reports the first-stage effect of being recruited. The control group mean is zero because no individuals in the control group took up the training. The recruitment increases training uptake by 0.28 in probability (F-value for this excluded instrument is 95). Column (2) reports the estimated ITT effect on any employment, which is 0.064 (over 40% of the control mean). The TOT estimate is essentially the ITT estimate divided by the first-stage estimate. The TOT estimate is 0.23 (about 1.5 times the control mean). Thus, the training increased PWDs' employment by 0.23 in probability. The ITT and TOT estimates for skilled employment are very similar to those for any employment: 0.06 and 0.21, respectively (almost 60% of and over two times the control mean) (column 3). These results suggest that the training only increased skilled employment without affecting unskilled day labor (the difference between any and skilled employment).

The estimation results for monthly earnings are qualitatively the same as those for employment. The ITT estimates for earnings from any and skilled employment are about 4.6 USD (almost 80% and over 100% of the control mean, respectively) and the corresponding TOT estimates are 16.8 USD (near three times and over four times the control mean, respectively) (columns 4 and 5). I also consider the log of earnings as an alternative outcome (0 is assigned for

[43] The number of observations is a little smaller than 522 due to missing values in employment. The estimates without strata fixed effects are similar (Online Table A6).

the original value of 0). The ITT and TOT estimates for log earnings are about 0.25 and 0.90, respectively (Online Table A10 columns 1 and 2). When observations with top 2% are dropped, the results (both level and log) are similar. These results suggest that the estimates are robust to outliers. The training only increased earnings from skilled employment (by about 90%) without affecting unskilled day labor.

Figure 2 compares the cumulative distribution functions (CDFs) of the log of earnings from skilled employment among PWDs and the estimated probability density functions (PDFs) of the log of earnings among PWDs with skilled employment between the treatment and control groups. The control distribution is first order stochastically dominated by the treatment distribution (panel A1) and the treatment distribution of earnings among the employed shifts rightward from the control distribution (panel A2). These patterns indicate that the training affected both employment (extensive margin) and earnings among the employed (intensive margin).

The TOT estimates for skilled employment and earnings are two to almost four times the corresponding OLS estimates of equation (2) (Table 6 panel A). The strong downward bias in the OLS estimates suggest that individuals who are less likely to have skilled employment and earn less regardless of the training (i.e., weak work-readiness) are more likely to have become trainees (i.e., negative self-selection). This pattern is opposite to the common finding in developed countries that uptake is more common among those who can get employment and earn more anyway (e.g., Bloom et al., 1997). At the endline, skilled employment was obtained by 20.5% of trainees which is almost the same as the TOT estimate.

Who took up the training? Among PWDs, trainees are younger than nontrainees: in the age distribution, young adults are denser than middle-aged adults among trainees and the converse holds true for nontrainees (Figure 1 panel C). Consistently, household heads are less common and their children are more common among trainees than nontrainees (head: 41% vs. 64%; child: 51% vs. 24%) (Table 3 panel A columns 2 and 3). I regress the indicator for training uptake on baseline covariates reported in Table 4, age squared, and district fixed effects among treated individuals (Online Table A11 column 1).[44] The results show that young literate PWDs with low opportunity cost of labor were more likely to become trainees.

[44] I do not control for the timing of the baseline survey because as some PWDs who declined to take earlier courses were revisited for recruitment for later ones, it does not necessarily match the timing of their uptake decisions.

Who got skilled employment among PWDs? PWD's relationships with the head of households and their comparison between trainees and nontrainees among PWDs with skilled employment are similar to those among all PWDs. Almost all trainees with skilled employment are a head of households or his/her child.

Despite that disabled trainees were weak workers, the estimated impacts of the training are larger than those found for nondisabled trainees in extant works in developing countries as discussed above. My study captures middle-term effects about two years after the completion of the program on average. All studies which find a significant impact on employment and earnings in McKenzie's review (2017) have a shorter time frame. The following factors in my study are to be noted to interpret the large sustained impacts. First, employment was uncommon among PWDs in the control group (10% skilled employment). Second, since other labor market programs were not available among most PWDs in the control group, the estimated impacts of the vocational training capture its total effect relative to almost no services, but not its incremental effect relative to other services received by the control group. The latter is common in developed countries and might also apply to some contexts studied in developing countries. Third, trainees who took the training early could be stronger workers in terms of baseline economic outcomes than trainees who took the training late (Online Table A12).[45] This might be because local staff targeted communities with potentially stronger workers earlier. Whereas these three factors partly explain the large sustained impacts of the training, the results suggest that the vocational training for PWDs was effective for their economic inclusion through skilled employment. Descriptive evidence suggests that this was due to trainees' skill acquisition.[46]

3.3. Employment and Earnings among PWODs

[45] The comparison is according to the duration between the completion of the training course and the endline survey (median as a threshold). Baseline economic outcomes are considerably larger among early trainees than late trainees though no differences are statistically significant with a small number of observations.

[46] Among trainees in the PWD endline sample, over 90% considered the contents and the instructor of the courses and the staff and training and other facilities (like accommodation) of the training center at least middle according to a standard five-scale measure in the endline survey; about two thirds of trainees considered the overall quality of the program at least good and the remaining one third considered it middle. When trainees were asked about main benefits they could obtain during the training period (up to three), 87%, 62%, 54%, and 51% answered skill acquisition, tools, training facilities, and other facilities, respectively. When trainees were asked about main benefits they could obtain after the completion of the program (up to three), 84%, 63%, and 58% answered skill acquisition, new employment, and higher earnings, respectively. About 90% of trainees reported that the training helped their life, taking the training program was a right decision, and they would recommend the program to their relatives and friends.

The estimation results for employment and earnings among PWODs within households are reported in panel B of Table 6. The sample is households with at least one PWOD in the PWD endline sample. The first-stage estimate is 0.25 (F-value for the excluded instrument is 73) (column 1). The ITT estimates for skilled employment and earnings are positive, significant at least at a 10% significance level, and no smaller than those for PWDs (columns 3 and 5).[47] According to the TOT estimates, the training increased skilled employment among PWODs by 0.30 in probability (over 100% of the control mean), which is significant almost at a 10% significance level (the estimate becomes significant with the baseline outcome controlled for), and earnings from skilled employment by 26 USD (over two times the control mean). According to the log of earnings, the training increased earnings from skilled employment by 120% (Online Table A10 column 4). These ITT and TOT estimates are similar to those for any employment (columns 2 and 4). Thus, as found among PWDs, the training only increased skilled employment among PWODs without affecting unskilled day labor.

The distributions of earnings from skilled employment among PWODs shows that whereas the control distribution is first order stochastically dominated by the treatment distribution (Figure 2 panel B1), the treatment distribution of earnings among the employed shifts leftward from the control distribution (panel B2), which is opposite to what was found for PWDs. Thus, the training affected employment, but not earnings among the employed. As such, the training increased skilled employment among nondisabled household members in a way similar to PWDs (i.e., positive economic intrahousehold spillover).

The TOT estimates are over five times the corresponding OLS estimates (Table 6 panel B). The strong downward bias in the OLS estimates suggests that PWDs who belong to households with PWOD with weak-work readiness are more likely to have become trainees. Thus, negative self-selection of trainees is significant in terms of not only PWDs themselves, but also other household members. Despite that PWODs were weak workers, the ITT effects on their employment and earnings are larger than those found in the literature (e.g., McKenzie, 2017).

How was training uptake related to the demographic characteristics of PWODs? Training uptake is uncorrelated with the number of PWODs (Online Table A11 column 1). As young PWDs tended to take the training, PWODs who belong to households with trainees are older than

[47] The estimates without strata fixed effects are similar (Online Table A6). The results are similar when observations with top 2% earnings are dropped.

PWODs who belong to households with no trainees (Figure 1 panel D). Correspondingly, although PWOD's relationships with the head of households are similar between these two types of households, PWOD's relationships with PWDs are distinct: Spouse and child are less common among households with trainees than those without (spouse: 14% vs. 26%; child: 24% vs. 41%) and sibling and parent are more common in the former than the latter (sibling: 36% vs. 14%; parent: 28% vs. 11%) (Table 3 panel B columns 2 and 3).

Who got skilled employment among PWODs? Compared to all PWODs, PWD's child and parent, respectively, are more and less common among PWODs with skilled employment (45% and 4%, respectively); the proportion of PWD's spouse and sibling is similar.[48] Among PWODs with skilled employment, the comparison of their relationships with the head of households between trainees and nontrainees is relatively similar to that among all PWDs. Most PWODs with skilled employment are PWD's sibling (32%), child (29%), spouse (16%), or parent (16%).

As such, the vocational training for PWDs was effective for the economic inclusion of PWODs within households through skilled employment. This was so for a wide range of household members: PWD's sibling, child, spouse, and parent.

3.4. Household Income, Asset, and Labor Supply

An increase in skilled employment among PWDs and PWODs caused by the training program does not necessarily lead to an increase in total household income because it depends on their productivity and the reallocation of factors especially labor. Recall that although the training increased both the extensive and intensive margins of skilled employment among PWDs, it increased only the extensive margin for PWODs. The estimated ITT effects on total income, asset, and participation in and income earned from farm/nonfarm activities are reported in Online Table A13.[49] Both farm and nonfarm income are understated because earnings from paid employment with missing information about employment type are ignored. Thus, interpreting the results requires caution. On one hand, the training increased participation in

[48] Among PWODs with skilled employment, PWOD's relationships with the head of households are similar between households with and without trainees.

[49] Farm income is based on annual income. Asset index is a z-score constructed by taking the first principal component of 14 measures of land (owned land with 1 hectare or more), housing quality (number of rooms, better wall, better roof, better floor, electricity/generator, better toilet), and household assets (radio, television, telephone, cell phone, bicycle, motorcycle, sewing machine) (Filmer and Pritchett, 2001).

nonfarm activities and monthly nonfarm income per capita among households. The latter is through its impact on extensive margin (participation), but not intensive margin (income earned among participants) (see the CDFs and PDFs of nonfarm income in Online Figure A3 panels A1 and A1). On the other hand, the training decreased farm income, albeit statistically weak, without affecting participation in farming (Online Figure A3 panels B1 and B2). On the net, total income per capita was not affected; asset index was not affected, either.[50]

Corroborating results are obtained for labor supply, which is measured by hours worked in the past one week and days worked in the past one month. Both farm and nonfarm labor supply are understated in a significant way because of missing information about employment type. Thus, interpreting the results requires caution. The training decreased farm labor supply – both extensive and intensive margins – among PWDs, but not PWODs, and increased nonfarm labor supply – extensive margin, not intensive margin – among PWODs, but not PWDs; total labor supply was not affected (Online Table A14, Online Figures A4-A5). These results suggest that households with a trainee shifted activities from farming to nonfarm activities without altering total income, because both PWDs and PWODs intensified nonfarm activities little. This might reflect labor market constraints in nonfarm activities. At the same time, the combination of the results for earnings and labor supply indicates that the training increased earnings per unit of time among PWDs (wage in salary employment in particular, as shown below).

3.5. Discrimination and Stigma

The estimation results for experienced discrimination and internalized stigma among PWDs are reported in Table 7. All estimated ITT effects are positive. The ITT estimates for experienced discrimination index and internalized stigma index are both about 0.10 (columns 1 and 4); though only the former estimate is statistically significant, the latter estimate becomes significant with the baseline outcome is controlled for as shown below. Among original individual indicators, only shame is statistically significant and the ITT estimate is 0.10 (over 20% of the control mean) (columns 2, 3, 5-7). To address a concern about over-rejection for this outcome, I apply multiple hypothesis testing for the three original indicators (shame, guilt, and self-blame) by adjusting p-values. I employ the resampling-based stepdown method proposed by

[50] The treatment and control distributions of total income are similar; this is also the case for asset index (Online Figure A3 panels C and D). The ITT estimates for earned income and unearned income are not significant (Online Table A13).

Romano and Wolf (2005a, b, 2016) to control the family-wise error rate, the probability of rejections that are type I errors.[51] The adjusted p-value for shame is less than 0.5.

According to the TOT estimates, the training increased overall discrimination (index) by 0.35 standard deviation, overall stigma (index) by over 0.4 standard deviation, and shame by 0.37 in probability (over 80% of the control mean) (columns 1, 4, and 5). Figure 2 depicts the distributions of experienced discrimination index and internalized stigma index which take the lowest value when all 12 and 3 original indicators, respectively, take 0 (no discrimination and no stigma). The control distribution is first order stochastically dominated by the treatment distribution for both indices (panels C1 and D), the treatment and control distributions of positive discrimination index are relatively similar (panel C2),[52] and the treatment-control difference in stigma index becomes small as its value increases (panel D). These patterns suggest that the training mainly affected extensive margin (any discrimination/stigma).

The TOT estimates for discrimination index and shame are five times and over seven times, respectively, the corresponding OLS estimates; the OLS estimate for stigma index is negative (Table 7 columns 1, 4, and 5). The strong downward bias in the OLS estimates suggest that PWDs who are less discriminated and less stigmatized regardless of the training are more likely to have taken up the training. Among PWDs in the treatment group, training uptake is not significantly correlated with experienced discrimination index or internalized stigma index at the baseline (not shown). These results suggest that unobserved factors correlated with discrimination and stigma affected PWDs' uptake decisions.

Overall then, despite its strong positive economic impacts, the training rather increased discrimination experienced by PWDs and their stigma of disability even though trainees were those who are less discriminated/stigmatized. These results suggest that the training increased people's discriminatory behaviors against PWDs (i.e., negative psychological intergroup spillover), unless perception bias in discrimination reported by PWDs is significant (which I assess below).[53]

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[51] Distinct from conventional methods based on individual p-values, this method estimates the dependence structure of test statistics. Bootstrap samples of individuals are selected within each of the 12 strata. I do 1,000 bootstrap replications.

[52] The negative and positive values of experienced discrimination index correspond to no and any discrimination, respectively.

[53] Although PWDs could experience discrimination by other PWDs, it is likely to be minor because there are only a small number of other PWDs in the community, if any, as discussed above.

3.6. Subjective Well-being, Empowerment, and Social Capital

The estimated ITT effects on happiness, life satisfaction, empowerment, and social capital measured among household heads are reported in Online Table A15. The results show that the training affected none of them. The results among disabled heads of households are similar.[54]

3.7. Robustness

I first examine how robust the ITT estimates discussed so far are to controlling for baseline outcome. This is important because some baseline economic outcomes (skilled employment among PWDs, earnings from any/skilled employment among PWDs, earnings from any employment among PWODs) are not so balanced (Table 4). All estimates with baseline outcome controlled for are similar to the original results (Online Table A16). Next, I additionally controlling for baseline covariates reported in Table 4, age squared, district fixed effects (which capture 2011 floods), and interview month fixed effects (which capture seasonality). This affects the point estimates modestly (many statistical results become stronger especially for economic outcomes for PWDs) and has little impact on the qualitative conclusions. Lastly, when commune fixed effects and interviewer fixed effects are controlled for, most results are similar. The original TOT estimates are also robust to controlling for baseline outcome and covariates.

3.8. Attrition

Whereas the attrition from the PWD endline sample was not significantly related with the randomized treatment assignment (Online Table A2), the attrition was more common among trainees than nontrainees in the treatment group (Table 1). I conduct three analyses to assess the robustness of the ITT estimates to potential attrition bias. First, I estimate the ITT effects on demographic factors: household headship, marital status, household size, the number of PWOD (age 15-64) within households, and the presence of any PWOD. Significant effects suggest that the training affected household demographic composition through, for example, household formation and migration. Second, I estimate the ITT effects on PWODs' economic outcomes and PWDs' demographic factors in the household endline sample, the attrition rate of which is smaller than the PWD endline sample (Table 1) (this is possible because the information is

[54] The ITT estimates for the five original indicators for social capital are all small with no statistical significance.

available among tracked households). Third, I bound the estimates of ITT effects for possible attrition bias by imputing outcome values for attritors and missing values. For PWODs' economic outcomes, attrition from the household endline sample is considered. Specifically, I consider lower bounds by imputing the observed control mean plus 0.1, 0.25, and 0.5 standard deviations of the control distribution for missing outcome in the control group and the observed treatment mean minus 0.1, 0.25, and 0.5 standard deviations of the treatment distribution for missing outcome in the treatment group.[55]

All ITT estimates for demographic factors are small and mostly nonsignificant in both the PWD and household endline samples (Online Table A17).[56] Table 8 reports the re-estimated ITT effects for three main continuous outcomes – earnings from skilled employment among PWDs and experienced discrimination index in the PWD baseline sample (n=681), and earnings from skilled employment among PWODs in the PWD baseline sample with at least one PWOD (n=648).[57] The ITT estimate for PWODs' earnings in the household endline sample (column 3) is somewhat smaller than the original estimate (column 2).[58] This indicates upward bias due to attrition of PWDs from the household endline sample; it does not suggest anything about potential bias due to household attrition, however. The estimates for PWDs' earnings and discrimination are robust to 0.1 standard deviation and that for PWODs' earnings is not though it is substantial compared to the control mean (column 4); all of the re-estimated effects are substantial for 0.25, but not 0.5, standard deviation (columns 5-6). Compared to previous works conducing the same sensitivity analysis, the degree of robustness found is stronger than Karlan and Valdivia (2011) and Drexler, Fischer, and Schoar (2014). To better capture the different attrition patterns among trainees and nontrainees in the treatment group, I also conduct imputation for these two subgroups in the treatment group separately, finding results very similar to those based on the original imputation (Online Table A18).

4. Mechanisms

[55] If these imputed values for the control group are larger than the maximum value in the control group, the maximum value is imputed; if these imputed values for the treatment group are smaller than the minimum value in the treatment group, the minimum value is imputed.
[56] Although the ITT estimates for marital status are significant at a 10% significance level, the point estimates are small and they become close to 0 with baseline marital status controlled for.
[57] I assume that attrited households with at least one PWOD at the baseline had at least one PWOD at the endline.
[58] The result for skilled employment among PWODs is similar (not shown).

This section examines potential mechanisms underlying the significant impacts of the training program on intrahousehold and intergroup spillover found in the last section. The analyses focus on ITT estimates with strata fixed effects controlled for. All the results reported below are robust to controlling for baseline outcome and covariates.

4.1.Intrahousehold Spillover

Why did the training for PWDs increase skilled employment among PWODs within households? I first examine whether this positive intrahousehold spillover was driven by the economic inclusion of PWDs. To do so I additionally control for PWDs' skilled employment in equation (1). Since PWDs' skilled employment was affected by the recruitment, this analysis lacks causal interpretation. Still, if the estimated coefficient of the treatment indicator decreases in magnitude after additionally adjusting for this post-treatment variable, it provides evidence that the post-treatment variable captures potential underlying mechanisms.[59] The results for ITT estimates are reported in Table 9, where column (1) replicates the ITT estimate reported in column (3) of panel B of Table 6. When PWDs' skilled employment is additionally controlled for, the estimated coefficient of the treatment indicator decreases by 37% (column 2).[60] When PWDs' earnings from skilled employment are adjusted, the results are similar (not shown); this is true for all analyses using this method reported below. These results provide evidence that the economic inclusion of PWDs through skilled employment caused the positive intrahousehold spillover. At the same time, the results suggest that the training also affected PWODs' skilled employment not through PWDs' economic inclusion.

I next examine the training impacts on joint employment outcomes for PWDs and PWODs among households with at least one PWOD (with nonmissing values for employment for both PWDs and PWODs) (Online Table A19). The estimate of the ITT effect on whether either PWD or PWOD got skilled employment is 0.13 (about 40% of the control mean) which is significant at a 1% significance level.[61] The estimate of the ITT effect on whether both PWD and

[59] This is the net treatment difference defined by Rosenbaum (1984). In the economics literature, this method is employed by Maccini and Yang (2009) and Emerick et al. (2016), for example.
[60] When I re-estimate the ITT effect on skilled employment among PWODs in the sample with nonmissing skilled employment among PWDs (the same sample as column 2), the estimate is very similar to the original estimate.
[61] The corresponding TOT estimate indicates that the training increased the probability that either PWD or PWOD got skilled employment by 0.5 in probability (1.6 times the control mean). The TOT estimate is over four times the OLS estimate. These results are consistent with the separate results for skilled employment among PWDs and PWODs above.

PWOD got skilled employment is also substantial (0.03, or 45% of the control mean), but not statistically significant at conventional levels (due to weak power). Distinct from the results for employment for PWDs or PWODs, the corresponding TOT estimate is close to the OLS estimate (0.13 vs. 0.10). This suggests that for joint skilled employment of PWD and PWOD, negative self-selection of trainees is not significant. This corroborates the economic inclusion of PWDs driving the positive intrahousehold spillover.

A straightforward potential mechanism underlying the intrahousehold spillover through PWDs' skilled employment is that the training enabled the trainee and other household member to jointly establish a family enterprise. Then, the training should affect family enterprise more strongly than paid employment for both PWDs and PWODs. The results are opposite: For both PWDs and PWODs, the ITT estimates are significant only for paid employment and earnings and those for enterprise are close to 0; the estimates for salary employment/earnings are very similar to any paid employment/earnings (Online Table A20).[62] These sharp results suggest that the training increased salary employment, but not family enterprise, for both PWDs and PWODs. Additionally controlling for PWDs' salary employment in equation (1) for PWODs' salary employment yield very similar results to those reported in Table 9 (not shown). Although my data do not enable me to pin down mechanisms underlying the positive interhousehold spillover, I speculate several potential mechanisms in Online Appendix A.

4.2. Intergroup Spillover

4.2.1. Economic Inclusion

Why did the training for PWDs increase discrimination against them? I first examine whether this negative intergroup spillover was driven by the training's positive economic impacts. This could be possible if, for example, people in the community felt unfair or envy about the benefits the trainee and his/her family received. When PWDs' skilled employment is additionally controlled for in equation (1) for experienced discrimination, the estimated coefficient of the treatment indicator changes little (Table 9 column 2). This suggests that the negative intergroup spillover was not caused by the economic inclusion of PWDs. Next, I additionally control for PWODs' skilled employment in equation (1) for experienced

[62] The ITT estimates for any paid employment and earnings are about 0.06 in probability and near 80% of the control mean, respectively (Online Table A20 panel A columns 1 and 4), which were compared with other studies reviewed by McKenzie (2017) in the Introduction.

discrimination. Here I assign 0 to PWODs' skilled employment for households with no PWOD.[63] The estimated coefficient of the treatment indicator changes little (column 3). This suggests that the negative intergroup spillover was also not caused by the positive intrahousehold spillover. This finding is important because people might be more likely to feel unfair or envy about the benefits received by PWODs who were not eligible for the program than those received by eligible PWDs. These results do not corroborate such negative emotions. However, the possibility of negative emotions driven by benefits other than employment beneficiaries got, such as social protection, is not ruled out. This is addressed in the next subsection.

4.2.2. Intergroup Contact

I conjecture that the training increased intergroup interactions between PWDs and PWODs outside of households, resulting in an increase in intergroup bias, such as discrimination against disabilities (i.e., intergroup contact channel). Negative intergroup contact is known to be common among people who are not familiar with outgroup (MacInnis and Page-Gould, 2015). People's familiarity with disabilities can vary across communities. On one hand, in communities where people are familiar with disabilities, community-level stigma is likely to be high (e.g., more prejudice) unless people are sensitized to disabilities. On the other hand, in communities where people are not familiar with disabilities, community-level stigma is likely to be low because people do not notice or care about disabilities. In another word, disabilities are salient in the former communities, but not in the latter. The intergroup contact channel suggests that the negative intergroup spillover was likely to be higher in the latter communities than the former, because the training made disability salient in the latter. For example, separate from the economic inclusion of PWDs, their long absence during the training period might have attracted people's attention and the training might have changed their attitudes and behaviors in various ways (as discussed in Online Appendix A). For example, trainees might have become outgoing and social. In contrast, if negative emotions (e.g., envy) driven by other benefits beneficiaries got than employment are a driving force, it should be higher in communities with high stigma than communities with low stigma precisely because of the difference in community-level stigma.

[63] The difference in the number of observations from the PWD endline sample (columns 3 vs. 1) is due to missing values in skilled employment among PWODs. Repeating the analysis excluding households with no PWOD yields qualitatively the same results.

Such community-level stigma can be captured by perceived stigma collected from community leaders (which are correlated with internalized stigma among PWDs, Table 5). Specifically, I use baseline perceived stigma index which captures overall community stigma (0 as a threshold). In the endline sample, about 46% of communities have high perceived stigma and 45% of PWDs locate in communities with high stigma.[64] Low- and high-stigma communities are significantly different in perceived and internalized stigma at the baseline, as expected (Online Table A21 panel A). In contrast, almost no significant differences in baseline covariates exist between them. These results suggest that at the baseline, community-level stigma is correlated with psychological outcomes, but not baseline covariates. Since community-level stigma was not used as randomization strata, I check baseline balance in the low- and high-stigma communities separately (Online Table A22 panel A). Most baseline covariates and outcomes are well balanced in each group.[65]

I augment equation (1) as follows:

$$Y_{ics} = \alpha + \beta \cdot Treatment_i + \delta \cdot Treatment_i \times D_c + \mu \cdot D_c + \emptyset_s + \varepsilon_{ics}, \qquad (3)$$

where D_c is an indicator variable for high-stigma in community c at the baseline. The estimation results are reported in Table 10. The difference in the estimated ITT effects on experienced discrimination index is significant at a 1% significance level: 0.2 (double that in the whole sample) in the low-stigma communities vs. near 0 in the high-stigma communities (column 1).[66] The results for teasing and gossip are qualitatively the same; distinct from the whole sample, the treatment indicator and the interaction term are statistically significant at least at a 5% significance level (Online Table A23 panel A columns 1-2).[67] These sharp contrasts by community stigma provide evidence for the intergroup contact channel.

4.2.3. Discrimination

[64] The distribution of baseline perceived stigma index across communities is depicted in panel A of Online Figure A6.

[65] Baseline economic outcomes are not well balanced in both communities. Analyzing economic outcomes is not warranted.

[66] This contrast between the two types of communities is apparent in the distributions of experienced discrimination index and internalized stigma index (Online Figure A7). In the low-stigma communities, distinct from the whole sample, the training affected both extensive margin and intensive margin (panels A1 and A2). Although experienced discrimination is less common among treated individuals than controlled in the low-stigma communities (Online Table 22 panel A), the estimated positive effect is opposite to potential bias that might be caused by this imbalance.

[67] Although discrimination experienced by PWDs in the control group is more common in the high-stigma communities, this difference across communities vanish among PWDs in the treatment group. This is so for index, teasing, and gossip.

Why did the training for PWDs increase their stigma of disability? I conjecture that increased discrimination experienced by PWDs led to an increase in their internalized stigma (i.e., discrimination channel). When I additionally control for experienced discrimination index in equation (1) for internalized stigma index and shame, the estimated coefficients of the treatment indicator decrease by near 50% and 20%, respectively (Table 9 column 4). These results provide evidence for the discrimination channel. At the same time, the results suggest that the training also affected internalized stigma not through discrimination. With skilled employment among PWDs or PWODs additionally controlled for, the estimated coefficients of the treatment indicator change little (columns 2-3). These results suggest that the economic inclusion of PWDs or PWODs did not cause the disability stigma among PWDs, which is consistent with my early finding that neither of them caused discrimination.

Estimating equation (3) for internalized stigma index shows that the estimated ITT effects are significant only in the low-stigma communities (0.19, over 1.5 times that in the whole sample), though the interaction term is statistically nonsignificant (Table 10 column 4); the results for shame, but not guilt and self-blame are significant as in the whole sample (Online Table A23 panel A columns 3-5). These results are consistent with both the intergroup contract channel and the discrimination channel. It is infeasible to tell whether the intergroup contact caused stigma not through the discrimination channel.

Additionally controlling for post-treatment variable in equation (3) for experienced discrimination index and internalized stigma index shows that all results for low-stigma communities are qualitatively the same as the original results reported in Table 9 (Online Table A24 panel A).[68] This buttresses the earlier results of underlying mechanisms.

5. Perception Bias and Intragroup Spillover

This section addresses two potential threats to identification of the findings on discrimination and stigma above: perception bias in discrimination experienced by PWDs and psychological intragroup spillover among PWDs. I focus on ITT estimates with strata fixed effects controlled for; all the results reported here are robust to controlling for baseline outcome and covariates.

5.1.Perception Bias

[68] The results for shame are similar to those for internalized stigma index (not shown).

Experienced discrimination reported by PWDs might not reflect actual discrimination against them. In particular, the training might have increased discrimination perceived by PWDs even if their experience was the same as before. This change in their perceptions could be driven by trainees' intensive interactions with other PWDs at the training center (intragroup contact) and augmented through intergroup contact in communities, especially low-stigma communities. A change in PWDs' perceptions is substantial and does shape their internalized stigma; thus, perception bias does not alter the significance of the discrimination channel. If the perception bias is significant, however, the estimated training impacts on reported discrimination overstate those on discriminatory behaviors among people in the community (intergroup spillover).

This subsection provides evidence for actual discrimination using discrimination observed by community leaders to capture difference between perceptions among PWDs and people's discriminatory behaviors in the community. My underlying assumption is that at the endline, observed discrimination reported by community leaders better captures actual discrimination than experienced discrimination reported by PWDs, that is, perception bias in the former is smaller than that in the latter. This is likely to be the case because distinct from trainees, perception bias of community leaders is unlikely to have affected by the training for PWDs in the community. Then, the training impacts on experienced discrimination should be higher in communities where discrimination was actually observed than communities where no discrimination was observed, because the effects in the former communities more reflect actual discrimination than in the latter. Specifically, to capture overall community-level discrimination at the endline, I use observed discrimination index which is correlated with experienced discrimination (Table 5). Like experienced discrimination index, the negative and positive values, respectively, correspond to no and any observed discrimination according to the original 12 indicators (Online Figure A6 panel B). In the endline sample, discrimination was observed in 32% of communities and 32% of PWDs locate in those communities.

I estimate equation (3) with D_c redefined as an indicator variable for no observed discrimination at the endline in community c. Since the training could affect observed discrimination, this analysis has no causal interpretations. The results show that the treatment status is significantly positively correlated with experienced discrimination index and internalized stigma index in communities with any discrimination observed, but not in communities with no discrimination observed, though the interaction terms are not statistically

significant (Table 10 columns 2 and 5); the results for teasing, gossip, and shame, but not guilt and self-blame, are qualitatively the same, and the interaction terms for teasing and shame are statistically significant (Online Table A23 panel B).[69] These results provide evidence that the negative intergroup spillover found above was driven by actual discrimination in communities, though perception bias cannot be ruled out.

Although more direct evidence would be provided by an increase in discrimination observed by community leaders due to the training, it is infeasible to identify such causality at the community level based on the individual-level randomization in my experiment. The community-level correlation analysis reported in Online Appendix B shows that observed discrimination is not significantly correlated with the treatment indicator defined at the community level, thus providing no correlational evidence.

When I additionally control for post-treatment variable in equation (3) for experienced discrimination index and internalized stigma index, all results for communities with any discrimination observed are qualitatively the same as those in Table 9 (Online Table A24 panel B).[70] These results better reflecting actual discrimination buttress the earlier results of underlying mechanisms.

5.2. Intragroup Spillover

If the training increased discrimination against PWDs in the control group and their internalized stigma (i.e., psychological intragroup spillover), the estimated ITT effects on these outcomes found above are biased downward in magnitude, though they are qualitatively robust. Whether such intragroup spillover is significant is an important question by itself.[71] I focus on intragroup spillover within communities. I compare ITT effects between 1) communities with no common support, consisting of either treated or controlled individuals in the baseline sample, but not both, and 2) communities with common support, consisting of both treated and controlled individuals. If intragroup spillover within communities is significant in the latter communities, the ITT estimates should be smaller there than in the former communities where intragroup

[69] This contrast between communities with and without observed discrimination is apparent in the distributions of experienced discrimination index and internalized stigma index (Online Figure A8). In communities with any discrimination observed, the treatment status is positively correlated with any discrimination (extensive margin) and positive discrimination index (intensive margin) (panels A1 and A2).
[70] The results for shame are similar to those for internalized stigma index.
[71] With a very small number of trainees in the community (mostly 1 or 2), general equilibrium effects on economic outcomes through market prices should be negligible.

spillover is nil. In my experiment the individual-level randomization generated enough variations in these two types of communities because PWDs are scattered across communities. In the endline sample, 37% of communities have common support and 60% of PWDs locate in communities with common support.

The number of eligible PWDs in the community mechanically determines whether it has common support: No communities with only one eligible PWD have common support, and as the number of eligible PWDs increases, the community is more likely to have common support.[72] Since the number of eligible PWDs is correlated with community characteristics such as population size, these two types of communities are likely to be structurally different. Indeed, some baseline covariates at both the individual and community levels are significantly different between them (Online Table A21 panel B). Baseline economic outcomes among both PWDs and PWODs are also different across communities probably due to their distinct labor market conditions. In contrast, almost none of the psychological and social outcomes – at the individual, household, and community levels – are significantly different across communities. In each type of communities, baseline noneconomic outcomes are well balanced between the treatment and control groups (Online Table A25).[73] ITT effects could be distinct between communities with and without common support due to their structural differences. This comparison provides only suggestive evidence for potential intragroup spillover.

I estimate equation (3) with D_c redefined as an indicator variable for common support in community c. Standard errors are clustered at the community level because treatment status varies across communities, not individuals, in communities with no common support. The estimation results are reported in panel C of Table 10. On one hand, the difference in the ITT estimates for experienced discrimination index between communities with and without common support is small (column 3); the estimated coefficient of the interaction term for discrimination index becomes close to 0 with baseline outcome and covariates controlled for. The estimated coefficients of the interaction terms for teasing and gossip are virtually 0 (Online Table A23 panel C columns 1-2). These results provide counterevidence against the intragroup spillover of

[72] This is apparent in the scatter plot of the treatment assignment ratios in communities against the number of eligible PWDs in communities (Online Figure A6 panel E; the distribution of these two is shown in panels C and D).
[73] This across-communities comparison is thus not correlated with the comparison between the low- and high-stigma communities above. Baseline covariates are well balanced in communities with common support, but not in communities with no common support (Online Table A25). Interpreting the results in the latter communities requires caution.

discrimination. On the other hand, the difference in the estimated ITT effects on internalized stigma index is significant at a 5% significance level: 0.33 (near three times that in the whole sample) in communities with no common support vs. about 0 in communities with common support (Table 10 column 6). The results for the three original indicators (shame, guilt, and self-blame) are qualitatively the same; distinct from the whole sample, the treatment indictor and the interaction term are statistically significant for guilt and self-blame (Online Table A23 panel C columns 3-5).[74] Thus, although experienced discrimination which caused internalized stigma was not different between communities with and without common support, the training impacts on internalized stigma was sharply distinct between them. This provides evidence for the intragroup spillover of stigma not through discrimination. Then, the true training impacts on stigma, not discrimination, can be greater than those reported above.

Why did the training for PWDs increase the stigma among PWDs in the control group in the community not through discrimination? I speculate potential reasons. The first is the structural differences of communities. However, there is no obvious reason why training impacts on only stigma were heterogenous; both discrimination and stigma are not significantly different across communities at the baseline (Online Table A21 panel B). The second is the spillover of negative intergroup contact directly causing stigma, not through discrimination, to PWDs in the control group. However, there is no obvious reason why such negative intergroup contact did not cause people's discrimination against them though it caused discrimination against trainees. A remaining possibility is other mechanisms directly causing stigma without affecting people's discrimination. This seems possible because the scope of intragroup spillover of discrimination and stigma is different as follows. On one hand, the intragroup spillover of discrimination is a direct expansion of the intergroup spillover such that people augment discriminatory behaviors against PWDs in the control group. On the other hand, the intragroup spillover of stigma can occur in an indirect way. For example, observing that people's discrimination against trainees augmented and as a result their stigma increased (intergroup spillover) might have adversely affected the stigma of PWDs in the control group. Put differently, lack of intragroup spillover of

[74] These comparisons between communities with and without common support are consistent with the distributions of experienced discrimination index and internalized stigma index (Online Figure A7). On one hand, the comparison of the treatment and control distributions of experienced index is similar between communities with and without common support (panels A1, A2, B1, and B2). On the other hand, in communities with no common support, distinct from the whole sample, the training affected both the extensive and intensive margins of internalized stigma (panel A3); in communities with common support, the treatment and control distributions are very similar (panel B3).

discrimination provides additional evidence for actual discrimination because the intragroup spillover of perceived discrimination (perception bias) could occur in an indirect way.

Lastly, additionally controlling for post-treatment variable in equation (3) for experienced discrimination index and internalized stigma index shows that all results for communities with no common support are qualitatively the same as the original results reported in Table 9 (Online Table A24 panel C, where standard errors are clustered by community).[75] These results not contaminated by intragroup spillover are reassuring.

6. Conclusion

This paper reported the first experimental evaluation of vocational training for PWDs in developing countries. The NGO-run program in Cambodia was impressively effective for the economic inclusion of PWDs: It greatly increased their skilled employment (salary employment, not family enterprise) and earnings. Moreover, this economic inclusion led to skilled employment of nondisabled household members (PWD's sibling, child, spouse, or parent). Beneficiaries did not augment their total household income, however, because they shifted farming to nonfarm activities without intensifying the latter. The training impacts on subjective well-being, empowerment, and social capital are nil. At the same time, the training generated unintended negative consequences: It increased people's discrimination against disabilities, which led to an increase in disability stigma among PWDs. This negative psychological intergroup spillover was not driven by the economic inclusion of PWDs or PWODs (e.g., envy), but by their negative interactions with people who were not familiarity with disabilities in the community. These detrimental impacts on reported discrimination are not because it overstated actual discrimination. Since the training is likely to have adversely affected the stigma among PWDs in the control group within communities, but not discrimination against them, its true impacts on stigma can be even larger. To sum up, effective vocational training for PWDs could rather exacerbate people's discrimination against disabilities through negative intergroup contact and thus the disability stigma among PWDs. To mitigate such psychological externalities, vocational training for PWDs may need to be combined with individual psychological support and community-level social integration programs.

[75] The results for shame, guilt, and self-blame are similar to those for internalized stigma index (not shown).

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Table 1. Experimental design and attrition

	Baseline		Household endline		PWD endline	
		Proportion		Proportion remaining in sample		Proportion remaining in sample
Control	313	(0.460)	267	(0.853)	244	(0.780)
Treatment	368	(0.540)	304	(0.826)	278	(0.755)
No training	243	(0.357)	208	(0.856)	194	(0.798)
Training	125	(0.184)	96	(0.768)	84	(0.672)
Total	681	(1.000)	571	(0.838)	522	(0.767)
With PWOD	638	(0.937)	508	(0.796)	465	(0.729)

Note: PWODs are working-age adults (age 15-64) without disabilities in the household to which PWD belongs.

Table 2. Persons with disabilities

	All	Female Amputee	Female Non-amputee	Male Amputee	Male Non-amputee
Hand amputation	0.14	0.25	0.00	0.17	0.00
Leg amputation	0.62	0.79	0.00	0.85	0.00
Limb paralysis	0.26	0.02	0.95	0.00	1.00
Cause of disability (percentage):					
Landmine/UXO	50.5	39.7	2.7	72.4	4.8
War/armed conflict	6.3	4.8	0.0	8.7	3.2
Accident	9.2	9.5	11.0	8.4	11.1
Disease	17.5	22.2	49.3	4.3	42.9
Birth defects	11.9	23.8	24.7	3.7	27.0
Other	4.6	0.0	12.3	2.5	11.1
Combatant at disability onset	0.39	0.08	0.00	0.59	0.11
Median age at disability onset	21.0	10.0	1.0	25.0	2.0
Mean age at disability onset	18.4 (13.7)	13.1 (13.9)	5.4 (9.7)	24.6 (11.0)	6.8 (9.2)
Mean age at baseline	38.2 (12.0)	34.1 (13.1)	29.5 (11.3)	42.7 (10.0)	29.1 (9.1)
Household head at baseline	0.60	0.16	0.08	0.86	0.32
No. observations	522	63	73	323	63

Notes: The sample is the PWD endline sample. Sample proportions are reported for binary indicator variables. Standard deviations are in parentheses.

Table 3. Relationships of PWDs and PWODs

	(1)	(2)	(3)
A. PWDs			
	All	Nontrainee	Trainee
PWD's relationship with head of households:			
Head	0.603	0.642	0.405
Spouse	0.050	0.055	0.024
Child	0.280	0.235	0.512
Other	0.067	0.068	0.060
No. observations	522	438	84
B. PWODs			
	All	In households with no trainees	In households with trainees
PWOD's relationship with head of households:			
Head	0.111	0.102	0.161
Spouse	0.305	0.306	0.300
Child	0.562	0.569	0.522
Other	0.022	0.023	0.017
PWOD's relationship with PWD:			
Spouse	0.243	0.261	0.144
Child	0.387	0.412	0.244
Sibling	0.160	0.143	0.256
Parent	0.139	0.113	0.283
Other	0.071	0.071	0.072
No. observations	1196	1016	180

Notes: The sample is the PWD endline sample in panel A and PWODs with nonmissing relationship with the head of households in the PWD endline sample in panel B. Each column shows proportions.

Table 4. Baseline balance

	Control mean	Treatment-control difference	
Baseline covariates			
Hand amputee	0.156	-0.0196	(0.0309)
Years since disability onset	20.03	-0.582	(0.793)
Age	39.25	-0.607	(0.927)
Household head	0.664	-0.0604*	(0.0321)
Married	0.598	-0.0607	(0.0400)
Literate	0.631	0.0603	(0.0411)
Secondary education	0.168	0.0402	(0.0354)
Household size	4.934	0.0171	(0.164)
No. PWODs in household	2.406	0.126	(0.139)
Any age 5 or below in household	0.254	0.00901	(0.0390)
Asset index (z-score)	-0.218	0.139*	(0.0843)
One eligible PWD in community	0.189	-0.0179	(0.0341)
No. eligible PWDs in community	3.439	-0.0578	(0.184)
No. all PWDs in community	12.33	-0.652	(0.865)
No. households in community	265.9	-17.78	(16.56)
Distance to district capital (km)	16.90	-1.136	(1.140)
Baseline outcomes			
Any employment among PWDs	0.257	0.00752	(0.0402)
Skilled employment among PWDs	0.139	-0.0278	(0.0302)
Earnings from any employment among PWDs	3.476	2.006	(1.574)
Earnings from skilled employment among PWDs	1.776	0.567	(1.391)
Any employment among PWODs	0.407	0.0494	(0.0465)
Skilled employment among PWODs	0.190	-0.0283	(0.0357)
Earnings from any employment among PWODs	6.135	1.764	(1.831)
Earnings from skilled employment among PWODs	2.972	-0.375	(1.624)
Experienced discrimination index (z-score)	0.0482	-0.0835*	(0.0501)
Teasing	0.193	-0.0117	(0.0347)
Gossip	0.276	-0.0300	(0.0401)
Internalized stigma index (z-score)	0.0192	-0.0403	(0.0805)
Shame	0.519	-0.0327	(0.0449)
Guilt	0.457	-0.00500	(0.0450)
Self-blame	0.486	-0.0227	(0.0449)
Happiness (1-5)	3.262	-0.00113	(0.0692)
Life satisfaction (1-5)	3.156	0.0902	(0.0886)
Empowerment (1-5)	2.795	0.121	(0.0860)
Social cohesion index (z-score)	0.000901	-0.0172	(0.0594)
Joint significance F (p-value)			
Baseline covariates		0.665	
Baseline outcomes		0.515	
Baseline covariates & outcomes		0.274	
Maximum no. observations		522	

Notes: The sample is the PWD endline sample. The table reports the difference in each variable between the treament and control groups, controlling for strata fixed effects. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table 5. Correlations of discrimination and stigma indices

		(1)	(2)	(3)	(4)
A. Baseline					
(1)	Internalized stigma index	1.000			
(2)	Experienced discrimination index	0.308	1.000		
(3)	Perceived stigma index (community)	0.102		1.000	
(4)	Observed discrimination index (community)				1.000
B. Endline					
(1)	Internalized stigma index	1.000			
(2)	Experienced discrimination index	0.304	1.000		
(3)	Perceived stigma index (community)	0.217		1.000	
(4)	Observed discrimination index (community)		0.173		1.000

Notes: The same is the PWD endline sample (maximum no. of observations = 522) and the community analysis sample (maximum no. of observations = 258). See the definition of indices (z-score) in the text. Correlations between perceived stigma and observed discrimination indices are at the community level; all other correlations are at the individual level. Correlations with $p<0.1$ are shown.

Table 6. Employment and earnings

	Trainining	Employment		Earnings	
		Any	Skilled	Any	Skilled
	(0/1)	(0/1)	(0/1)	(USD)	(USD)
	(1)	(2)	(3)	(4)	(5)
A. PWDs					
ITT	0.277***	0.0635*	0.0592*	4.551**	4.638**
	(0.0284)	(0.0358)	(0.0310)	(2.119)	(1.917)
TOT		0.229*	0.214*	16.76**	16.75**
		(0.128)	(0.112)	(7.928)	(7.054)
OLS		0.126**	0.105**	4.686	4.309
		(0.0556)	(0.0500)	(3.262)	(2.980)
Control mean	0	0.155	0.101	5.891	4.076
No. observations	505	505	505	493	505
B. PWODs					
ITT	0.249***	0.0678	0.0738*	6.467*	6.627*
	(0.0292)	(0.0473)	(0.0448)	(3.555)	(3.487)
TOT		0.272	0.296	25.96*	26.59*
		(0.191)	(0.181)	(14.54)	(14.26)
OLS		-0.0156	0.0516	2.238	3.477
		(0.0702)	(0.0693)	(5.117)	(5.071)
Control mean	0	0.366	0.278	12.34	10.38
No. observations	451	451	451	449	451

Notes: The sample is the PWD endline sample in panel A and the PWD endline sample with at least one PWOD in the household in panel B. Earnings are monthly earnings (2011 USD). The treatment indicator is an excluded instrument for training in 2SLS. Columns (1) of panels A and B shows the first-stage estimates where F values for the excluded instrument are 94.8 and 73.0, respectively. The dependent variables in columns (2)-(3) of panel B are an indicator variable for employment of any PWOD and the dependent variables in columns (4)-(5) of panel B are the mean among PWODs. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table 7. Discrimination and stigma

	Experienced discrimination			Internalized stigma			
	Index	Teasing	Gossip	Index	Shame	Guilt	Self-blame
	(z-score)	(0/1)	(0/1)	(z-score)	(0/1)	(0/1)	(0/1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITT	0.100**	0.0277	0.0552	0.120	0.104**	0.0378	0.0380
	(0.0421)	(0.0264)	(0.0372)	(0.0781)	(0.0447)	(0.0451)	(0.0448)
MHT (p-value)					0.045	0.549	0.549
TOT	0.353**	0.0975	0.194	0.424	0.368**	0.133	0.134
	(0.150)	(0.0922)	(0.131)	(0.278)	(0.161)	(0.158)	(0.157)
OLS	0.0706	0.0209	0.0331	-0.0207	0.0495	-0.0426	-0.0376
	(0.0689)	(0.0415)	(0.0544)	(0.109)	(0.0624)	(0.0615)	(0.0619)
Control mean	-0.0534	0.0820	0.180	-0.0687	0.447	0.439	0.529
No. observations	522	522	522	522	522	522	522

Notes: The sample is the PWD endline sample. The treatment indicator is an excluded instrument for training in 2SLS. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. Adjusted p-values for multiple hypothesis testing (MHT) for the three interlized stigma variables are shown. *p<0.1, **p<0.05, ***p<0.01

Table 8. Sensitivity analysis

	Control mean	Unadjusted ITT estimate	Household endline	Lower bounds		
				0.1 SD	0.25 SD	0.5 SD
	(1)	(2)	(3)	(4)	(5)	(6)
Earnings from skilled employment among PWDs (USD)	4.076	4.638**		3.603***	2.197	-0.146
		(1.917)		(1.394)	(1.402)	(1.432)
Earnings from skilled employment among PWODs (USD)	10.38	6.627*	5.789*	4.048	2.522	0.767
		(3.487)	(3.307)	(2.523)	(2.533)	(2.555)
Experienced discrimination index (z-score)	-0.0534	0.100**		0.0781**	0.0468	-0.00535
		(0.0421)		(0.0322)	(0.0323)	(0.0330)

Notes: Columns (1) and (2) replicate the results reported in column (5) of panels A and B of Table 6 and column (1) of panel A of Table 7. Column (3) reports the ITT estimate in the household endline sample (n=491). In columns (4)-(9), the sample is the PWD baseline sample (n=681) for PWD earnings and experienced discrimination index and the PWD baseline sample with at least one PWOD in the same household at the endline (n=642) for PWOD earnings. I assume that attrited households with at least one PWOD at the baseline had at least one PWOD at the endline. In columns (4)-(6), I reestimate the ITT effect in column (2) by imputing the observed control mean plus X standard deviation of the control distribution for missing dependent variable in the control group, and the observed treatment mean minus X standard deviation of the treatment distribution for missing dependent variable in the treatment group, where X = 0.1, 0.25, and 0.5. If these imputed values for the control group are larger than the maximum value in the control group, the maximum value is imputed; if these imputed values for the treatment group are smaller than the minimum value in the treatment group, the minimum value is imputed. For PWODs' earnings, attrition from the household endline sample is considered. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table 9. Economic inclusion and discrimination

	(1)	(2)	(3)	(4)
Outcome:				
Skilled employment among PWODs	0.0738*	0.0479		
	(0.0448)	(0.0442)		
No. observations	451	438		
Experienced discrimination index (z-score)	0.100**	0.0971**	0.0988**	
	(0.0421)	(0.0435)	(0.0429)	
Internalized stigma index (z-score)	0.120	0.124	0.129	0.0650
	(0.0781)	(0.0793)	(0.0794)	(0.0758)
Shame	0.104**	0.106**	0.108**	0.0847*
	(0.0447)	(0.0456)	(0.0455)	(0.0450)
No. observations	522	505	508	522
Post-treatment variable additionally controlled for:				
Skilled employment among PWDs		YES		
Skilled employment among PWODs			YES	
Experienced discrimination index				YES

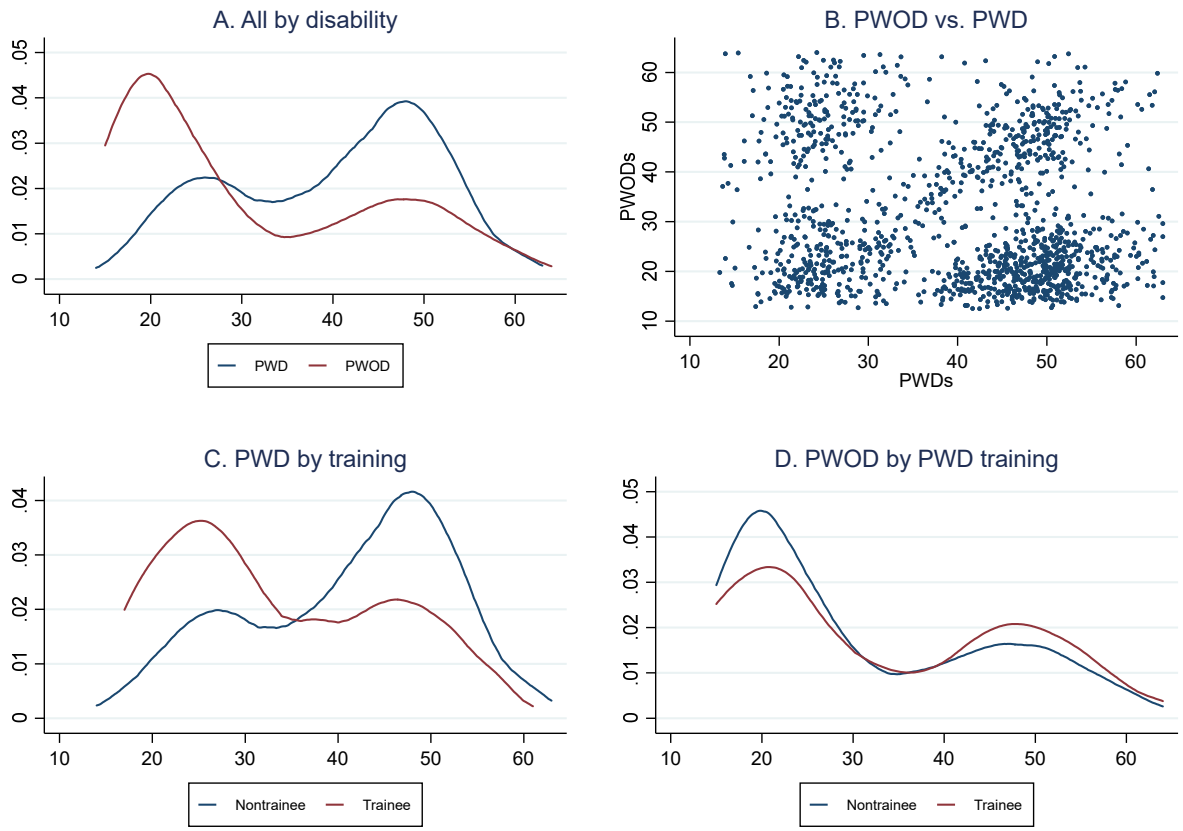
Notes: The sample is the PWD endline sample. Column (1) replicates the ITT estimates reported in column (3) of panel B of Table 6 and in columns (1) and (4) of Table 7. Columns (2)-(4) show the estimated coefficients for the treatment indicator with the corresponding post-treatment variables additionally controlled for in equation (1). In column (3), 0 is assigned to households with no PWOD. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table 10. Intergroup contact, perception bias, and intragroup spillover

	Experienced discrimination index (z-score)			Internalized stigma index (z-score)		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment (β)	0.200***	0.172*	0.124*	0.189*	0.244*	0.326**
	(0.0504)	(0.0914)	(0.0671)	(0.106)	(0.136)	(0.132)
Treatment × High community stigma (δ)	-0.239***			-0.127		
	(0.0868)			(0.159)		
High community stigma	0.240***			0.0927		
	(0.0598)			(0.119)		
Treatment × No observed discrimination (δ)		-0.110			-0.197	
		(0.0994)			(0.166)	
No observed discrimination		-0.142**			-0.0317	
		(0.0625)			(0.124)	
Treatment × Communities with common support (δ)			-0.0407			-0.352**
			(0.0812)			(0.163)
Communities with common support			0.0142			0.0800
			(0.0572)			(0.131)
β + δ = 0 (p-value)	0.586	0.155	0.089	0.602	0.631	0.787
No. observations	511	497	522	511	497	522

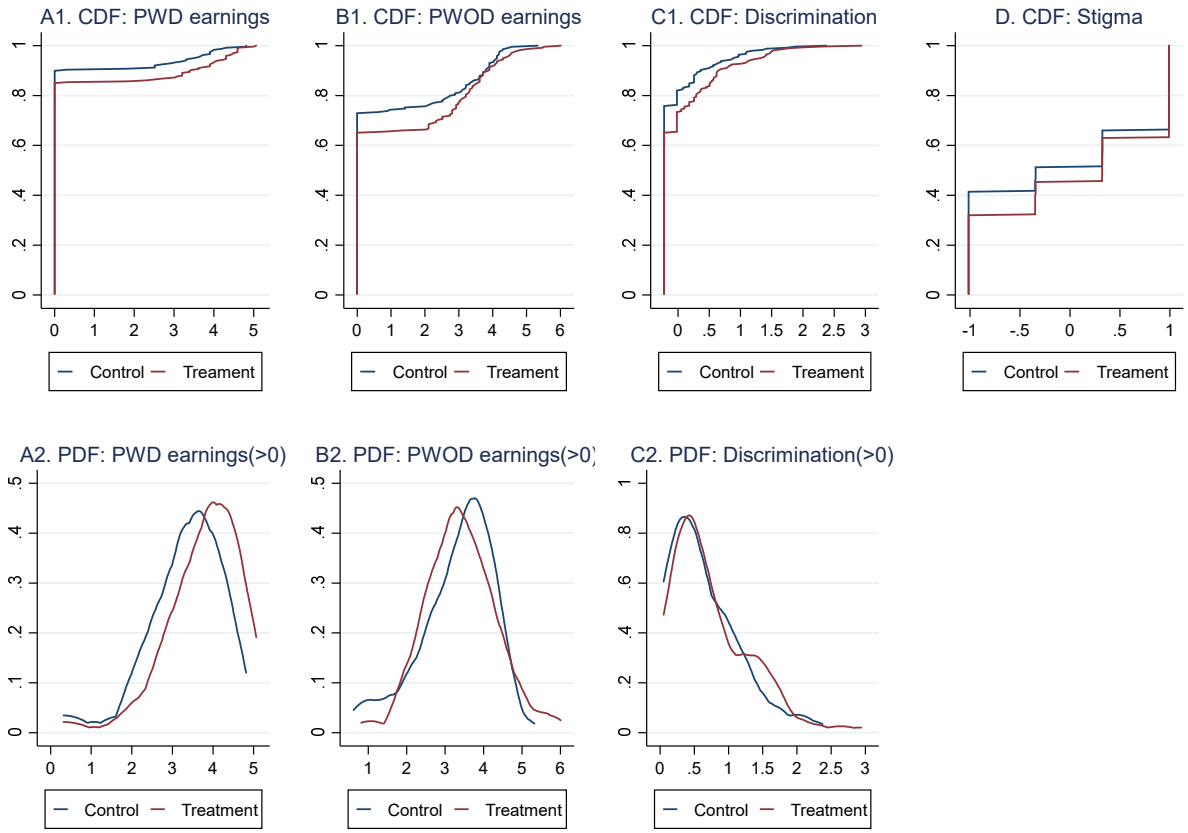
Notes: The sample is the PWD endline sample. In columns (1) and (4), communities with low and high perceived stigma are those with negative and nonnegative perceived stigma index at the baseline. In columns (2) and (5), communities with no and any observed discrimination are those with negative and nonnegative observed discrimination index at the endline. In columns (3) and (6), communities with no common support consist of either treated or controlled individuals and communities with common support contain both treated and controlled individuals. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses in columns (1), (2), (4), and (5) and standard errors clustered by community are shown in parentheses in columns (3) and (6). *p<0.1, **p<0.05, ***p<0.01

Figure 1. Age of PWDs and PWODs



Notes: The kernel density estimates of age at the endline survey are shown in panels A, C, and D, and the scatter plots of age of PWODs against age of PWDs at the endline survey are shown in panel B. The sample is the PWD endline sample: PWDs and PWODs in panel A, PWODs in panels B and D, and PWDs in panel C. In panel D, nontrainee and trainee are PWODs belonging to households with and without a trainee, respectively.

Figure 2. Distributions of earnings from skilled employment



Notes: The sample is the PWD endline sample in panels A1, C1, and D, the PWD endline sample with positive earnings from skilled employment among PWDs in panel A2, the PWD endline sample with at least one PWOD in the household in panel B1, the PWD endline sample with positive earnings from skilled employment among PWODs in panel B2, and the PWD endline sample with positive experienced discrimination index in panel C2. Earnings are log of monthly earnings (2011 USD). The log variable takes 0 if the orginal value is 0. Experienced discrimiation index (z-score) is shown in panels C1 and C2 and internalized stigma index (z-score) is shown in panel D.

For Online Publication

Disability, vocational training, and psychological externalities: Experiment evidence from Cambodia

Yoshito Takasaki

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Appendix A: Mechanisms for economic intrahousehold spillover

This appendix speculates potential mechanisms underlying the positive economic interhousehold spillover (Table 6 panel B, Table A20). The training for PWDs could increase salary employment among PWODs through at least five channels. First, trainees could transfer skills they acquired through the training to PWODs (i.e., human capital effect). Second, PWDs' experiences of training and employment could alter PWODs' belief about prospects for employment and preference for work (i.e., learning effect) (e.g., Jensen, 2012). Third, PWD's interactions with other PWDs (intragroup contact) in the training program could change his/her own belief about prospects for employment and preference for work, thus affecting PWODs' belief and preference (i.e., peer effect). Fourth, the training could improve trainees' social networks, helping PWODs get employment (i.e., network effect). Fifth, the program's social protection component could relax liquidity constraints and reduce risk concerns among beneficiaries (i.e., income effect).[1]

Since it is infeasible to pin down any of these potential channels with my data, I provide several pieces of suggestive evidence. First, there is no notable difference in types of salary employment between PWDs and PWODs.[2] This is consistent with the human capital, learning, peer, and network effects. Second, the weak work-readiness among trainees and PWODs discussed in the text is consistent with the income effect. Third, among PWDs in the treatment group, training uptake is much less common (half of the sample mean) if any PWOD had skilled employment at the baseline; in contrast, training uptake is not associated with whether PWD him/herself had skilled employment at the baseline (Online Table A11 columns 2 and 3). This is consistent with the income effect because PWODs with no skilled employment were weak workers. This is also consistent with the learning effect because belief update should be large for PWODs with no employment. Fourth, when trainees were asked about main benefits they could obtain after the completion of the program (up to three), 29% answered network with other trainees; 50% of trainees with skilled employment did so. This supports the network effect.

[1] Researchers show that cash transfers can increase not only welfare, but also production and investment presumably by addressing liquidity constraints and risk factors (Covarrubias, Davis and Winters, 2012; Gertler, Martinez and Rubio-Codina, 2012; Handa et al., 2018; Haushofer and Shapiro, 2016). Bryan, Chowdhury, and Mobarak (2014) develop a related theory on labor migration.

[2] Unspecified types of salary employment are common. There is no notable difference in types of salary employment between trainees and nontrainees among PWDs and between households with trainees and no trainees among PWODs, either. With a small number of individuals with salary employment, interpreting these results requires caution, however.

Fifth, since the amount of de facto inkind transfers of the program is mostly determined by the duration of training courses, the duration should be positively correlated with PWODs' skilled employment among households with trainees if the income effect is significant. The learning, peer, and network effects should also depend on the duration of training courses. Indeed, skilled employment among PWODs is more common for appliance repair – 12-months longest course – than other nonfarm courses taking 4-7 months and among the latter courses PWODs' skilled employment is very similar (56% vs. over 30%, Table A1). In contrast, the rates of skilled employment among trainees greatly vary across courses in a way not correlated with their duration. In particular, the employment rates for appliance repair (50%), lady hairdressing (50%), and barbering (32%) are much higher than those for motorcycle mechanics and sewing (6%) (Online Table A1). Thus, although the content of courses mattered for PWDs, their duration mattered for PWODs.

Appendix B: Community-level discrimination

This appendix examines the correlation of the treatment status with discrimination observed by community leaders. I consider communities with at least one treated individual as treated and communities with no treated individuals as controlled. About 75% of communities in the baseline sample are treated and in the endline sample 74% of communities are treated. Community attrition is more common among treated communities than controlled; the result is statistically significant with baseline covariates (discussed shortly) controlled for (Table A26).

In the community endline sample, except for an indicator for one eligible PWD in the community and the number of eligible PWDs in the community which mechanically determine the community-level treatment status as discussed in the text (Figure A6 panel E), all other baseline covariates and all baseline outcomes are balanced between treated and controlled communities (Online Table A27). The results in the community baseline sample are very similar (not shown).

Regressing observed discrimination index and gossip on the community-level treatment indicator in the community endline sample shows that the correlations are close to 0 (Online Table A28 columns 1 and 4). The results are similar when one eligible PWD in the community, number of eligible PWDs in the community, and baseline outcome are controlled for; the results

are also similar when other community-level covariates in Online Table A26 are additionally controlled for (not shown).

When I consider potential heterogeneity by common support as done in the text, no correlations are significant (columns 2 and 5). Note that since the treatment indicator always takes 1 for communities with common support, I only add the interaction term between the community-level treatment indicator and communities with common support. When I consider potential heterogeneity by baseline community-level stigma as done in the text, no correlations are significant, either (columns 3 and 6).

Next, I examine the correlation of the number of treated individuals in communities (treatment intensity) with observed discrimination in the same way. Since there are variations in the number of treaded individuals in communities with common support, I add the indicator for communities with common support and its interaction with the number of treated individuals. All correlations are small in magnitude with no statistical significance (not shown).

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Table A1. Training courses and trainees

	No. courses offered	Duration (months)	No. trainees					Skilled employment at endline (proportion)	
			All	Female		Male			
				Amputee	Non-amputee	Amputee	Non-amputee	PWD	PWOD
A. Baseline									
Appliance repair	3	12	22	0	1	11	9		
Motorcycle mechanics	4	5-7	27	0	0	18	9		
Barbering	3	4-5	29	0	1	22	6		
Hairdressing	1	5	10	6	4	0	0		
Sewing	3	5-7	24	10	13	1	0		
Vegetable farming	1	10 days	13	0	1	10	2		
Total	15		125	16	20	62	26		
B. Endline									
Appliance repair			12	0	0	6	6	0.500	0.556
Motorcycle mechanics			19	0	0	13	6	0.056	0.333
Barbering			22	0	1	17	4	0.318	0.316
Hairdressing			4	2	2	0	0	0.500	0.333
Sewing			18	8	9	1	0	0.063	0.364
Vegetable farming			9	0	0	8	1	0.000	0.286
Total			84	10	12	45	17	0.205	0.359

Note: The sample is trainees in the PWD baseline sample in panel A and the PWD endline sample in panel B.

Table A2. Attrition

	Household endline		PWD endline	
	(1)	(2)	(3)	(4)
Treatment	0.0330	0.0167	0.0179	-0.00163
	(0.0286)	(0.0285)	(0.0332)	(0.0335)
Covariates		YES		YES
Joint significance F (p-value):				
Strata fixed effects	0.930	0.726	0.948	0.873
Baseline covariates		0.232		0.061
District fixed effects		0.010		0.003
R squared	0.008	0.082	0.008	0.086
Control mean	0.147		0.220	
Overall mean	0.162		0.233	
No. observations	681	643	681	643

Notes: The sample is the PWD baseline sample. The dependent variable is an indicator variable for sample attrition. Strata fixed effects are always controlled for and covariates are those reported in Table 4, age squared, and district fixed effects. Robust standard errors are shown in parentheses.

Table A3. PWDs in baseline sample

	All	Female Amputee	Female Non-amputee	Male Amputee	Male Non-amputee
Hand amputation	0.14	0.23	0.00	0.17	0.00
Leg amputation	0.62	0.81	0.00	0.85	0.00
Limb paralysis	0.26	0.01	0.96	0.00	0.98
Cause of disability (percentage):					
Landmine/UXO	50.4	38.3	2.1	72.8	7.0
War/armed conflict	5.9	4.9	1.1	7.9	2.3
Accident	9.7	9.9	14.7	8.4	10.5
Disease	18.9	22.2	51.6	5.3	45.3
Birth defects	11.1	24.7	20.0	3.6	24.4
Other	4.0	0.0	10.5	1.9	10.5
Combatant at disability onset	0.51	0.06	0.00	0.81	0.09
Median age at disability onset	20.0	10.0	2.0	25.0	2.0
Mean age at disability onset	18.3 (13.6)	13.1 (14.0)	5.4 (8.9)	24.6 (11.1)	6.9 (8.6)
Mean age at baseline	37.8 (12.1)	33.8 (13.0)	28.7 (10.4)	42.3 (10.3)	29.5 (10.1)
Household head at baseline	0.58	0.17	0.06	0.83	0.33
No. observations	681	81	95	418	87

Notes: The sample is the PWD baseline sample. Sample proportions are reported for binary indicator variables. Standard deviations are in parentheses.

Table A4. Baseline balance in baseline sample

	Control mean	Treatment-control difference	
Baseline covariates			
Hand amputee	0.160	-0.0254	(0.0271)
Years since disability onset	19.72	-0.797	(0.702)
Age	39.24	-0.664	(0.819)
Household head	0.665	-0.0710**	(0.0292)
Married	0.584	-0.0725**	(0.0358)
Literate	0.636	0.0552	(0.0362)
Secondary education	0.166	0.0261	(0.0304)
Household size	5.019	-0.0460	(0.151)
No. PWODs in household	2.431	0.168	(0.126)
Any age 5 or below in household	0.265	-0.00730	(0.0344)
Asset index (z-score)	-0.221	0.106	(0.0739)
One eligible PWD in community	0.179	0.00207	(0.0301)
No. eligible PWDs in community	3.534	-0.128	(0.164)
No. all PWDs in community	12.24	-0.511	(0.763)
No. households in community	263.9	-7.540	(15.65)
Distance to district capital (km)	17.44	-1.398	(1.043)
Baseline outcomes			
Any employment among PWDs	0.267	-0.0173	(0.0350)
Skilled employment among PWDs	0.130	-0.0313	(0.0253)
Earnings from any employment among PWDs	4.200	1.093	(1.288)
Earnings from skilled employment among PWDs	1.589	0.433	(1.083)
Any employment among PWODs	0.408	0.0576	(0.0409)
Skilled employment among PWODs	0.173	-0.00860	(0.0313)
Earnings from any employment among PWODs	6.874	2.244	(1.576)
Earnings from skilled employment among PWODs	2.764	0.576	(1.371)
Experienced discrimination index (z-score)	0.0348	-0.0689	(0.0436)
Teasing	0.190	-0.0170	(0.0304)
Gossip	0.254	-0.0157	(0.0344)
Internalized stigma index (z-score)	0.0485	-0.103	(0.0705)
Shame	0.547	-0.0786**	(0.0395)
Guilt	0.460	-0.0316	(0.0394)
Self-blame	0.498	-0.0445	(0.0396)
Happiness (1-5)	3.236	0.0231	(0.0631)
Life satisfaction (1-5)	3.115	0.112	(0.0799)
Empowerment (1-5)	2.815	0.0959	(0.0769)
Social cohesion index (z-score)	0.00676	-0.0306	(0.0509)
Joint significance F (p-value)			
Baseline covariates		0.292	
Baseline outcomes		0.610	
Baseline covariates & outcomes		0.221	
Maximum no. observations		681	

Notes: The sample is the PWD baseline sample. The table reports the difference in each variable between the treament and control groups, controlling for strata fixed effects. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A5. Baseline balance in PWD endline sample with PWOD

	Control mean	Treatment-control difference	
Baseline covariates			
Hand amputee	0.163	-0.0335	(0.0326)
Years since disability onset	20.08	-0.967	(0.843)
Age	39.78	-1.238	(0.975)
Household head	0.688	-0.0730**	(0.0334)
Married	0.647	-0.0782*	(0.0421)
Literate	0.615	0.0846*	(0.0439)
Secondary education	0.167	0.0333	(0.0376)
Household size	5.077	-0.00114	(0.163)
No. PWODs in household	2.552	0.0731	(0.135)
Any age 5 or below in household	0.258	0.00622	(0.0419)
Asset index (z-score)	-0.203	0.182**	(0.0902)
One eligible PWD in community	0.181	-0.0183	(0.0360)
No. eligible PWDs in community	3.489	-0.0571	(0.196)
No. all PWDs in community	12.31	-0.479	(0.942)
No. households in community	260.8	-9.487	(18.02)
Distance to district capital (km)	17.25	-1.456	(1.204)
Baseline outcomes			
Any employment among PWDs	0.250	0.00688	(0.0419)
Skilled employment among PWDs	0.130	-0.0263	(0.0312)
Earnings from any employment among PWDs	3.720	1.315	(1.587)
Earnings from skilled employment among PWDs	1.907	-0.231	(1.343)
Any employment among PWODs	0.415	0.0366	(0.0476)
Skilled employment among PWODs	0.189	-0.0308	(0.0363)
Earnings from any employment among PWODs	6.349	0.914	(1.805)
Earnings from skilled employment among PWODs	3.055	-1.204	(1.566)
Experienced discrimination index (z-score)	0.0504	-0.0941*	(0.0539)
Teasing	0.200	-0.0259	(0.0364)
Gossip	0.273	-0.0176	(0.0424)
Internalized stigma index (z-score)	-0.00328	-0.0381	(0.0856)
Shame	0.505	-0.0163	(0.0476)
Guilt	0.445	-0.00527	(0.0472)
Self-blame	0.477	-0.0356	(0.0475)
Happiness (1-5)	3.303	-0.00344	(0.0694)
Life satisfaction (1-5)	3.186	0.113	(0.0919)
Empowerment (1-5)	2.828	0.120	(0.0888)
Social cohesion index (z-score)	-0.00278	0.00764	(0.0633)
Joint significance F (p-value)			
Baseline covariates		0.424	
Baseline outcomes		0.544	
Baseline covariates & outcomes		0.218	
Maximum no. observations		465	

Notes: The sample is the PWD endline sample with PWOD. The table reports the difference in each variable between the treament and control groups, controlling for strata fixed effects. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A6. Mean comparisons

	Baseline	Endline			
	All	All	Control	Treatment	p-value
Any employment among PWDs	0.254	0.186	0.155	0.213	0.093
Skilled employment among PWDs	0.121	0.129	0.101	0.154	0.075
Any employment among PWODs	0.429	0.401	0.366	0.434	0.139
Skilled employment among PWODs	0.175	0.317	0.278	0.353	0.085
Experienced disrimination index (z-score)	0.007	0.001	-0.053	0.049	0.011
Internalized stigma index (z-score)	0.012	-0.004	-0.069	0.054	0.110

Notes: The sample is the PWD endline sample. p-value is for the equality of tratment-control means based on robust standard errors.

Table A7. Instruments for stigma measures

	Instruments	Domain
Internalized stigma (Respondents: PWDs)		
	In the last 6 months, have you felt [fill in from list below] because of your disability status?	
a	Shame	
b	Guilt	
c	Self-blame	
Perceived stigma (Respondents: community leaders)		
	How do you think most people in your community would answer the following question?	
a	People with disability should be ashamed of themselves	
b	I would be ashamed if someone in my family had disability	
c	I would feel ashamed if I were disabled	
Enacted stigma (experienced discrimination) (Respondents: PWDs)		
	In the last 6 months, have you [fill in from list below] because of your disability status?	
1	Been excluded from a social gathering	Isolation
2	Been abandoned by your spouse/partner	Isolation
3	Been isolated in your household	Isolation
4	No longer visited or visited less by family and friends	Isolation
5	Been teased, insulted, or sworn at	Verbal stigma
6	Lost customers to buy produce/goods or lost a job	Loss of access[1]
7	Lost housing or not been able to rent housing	Loss of access[1]
8	Been denied religious rites/services	Loss of identiy and role
9	Had property taken away	Loss of access[1]
10	Been gossiped about	Verbal stigma
11	Lost respect/standing within the family and/or community	Loss of identiy and role
12	Been threatened with violence	Isolation
Enacted stigma (observed discrimination) (Respondents: community leaders)		
	Do you personally know someone who in the last 6 months has had the following happen to them because they were disabled?	
1	Been excluded from a social gathering	Isolation
2	Been abandoned by your spouse/partner	Isolation
3	Been isolated in your household	Isolation
4	No longer visited or visited less by family and friends	Isolation
5	Been teased, insulted, or sworn at	Verbal stigma
6	Lost customers to buy produce/goods or lost a job	Loss of access[1]
7	Lost housing or not been able to rent housing	Loss of access[1]
8	Been denied religious rites/services	Loss of identiy and role
9	Had property taken away	Loss of access[1]
10	Been gossiped about	Verbal stigma
11	Lost respect/standing within the family and/or community	Loss of identiy and role
12	Been threatened with violence	Isolation

[1] Loss of access to resources and livelihoods

Table A8. Transition and correlations of original discrimination and stigma indicators

	Internalized stigma			Experienced discrimination		Perceived stigma in community			Observed discrimination in community	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A. Sample mean										
Baseline	0.510	0.461	0.479	0.189	0.261	0.412	0.389	0.440	0.027	0.113
Endline	0.504	0.458	0.550	0.100	0.211	0.568	0.424	0.564	0.035	0.179
B. Transition from baseline to endline (percentage)										
1 to 0	24.2	24.2	20.0	16.1	19.0	20.6	23.3	20.2	2.7	8.2
0 to 0	25.5	30.1	25.1	73.9	59.9	22.6	34.2	23.3	93.8	73.9
0 to 1	24.0	24.4	27.6	7.5	14.4	36.2	26.8	32.7	3.5	14.8
1 to 1	26.3	21.3	27.3	2.5	6.7	20.6	15.6	23.7	0.0	3.1
C. Correlations at baseline										
(1) Shame	1.000									
(2) Guilt	0.697	1.000								
(3) Self-blame	0.675	0.703	1.000							
(4) Experienced teasing	0.227	0.236	0.219	1.000						
(5) Experienced gossip	0.249	0.256	0.279	0.497	1.000					
(6) Negative attitude about disability shame[a]	0.134	0.117	0.124		0.084	1.000				
(7) Hypothetical shame of disability of family[b]	0.093	0.093	0.094			0.823	1.000			
(8) Hypothetical shame of own disability[c]	0.118	0.130	0.127		0.092	0.803	0.821	1.000		
(9) Observed teasing									1.000	
(10) Observed gossip		0.075	0.086	0.095	0.078				0.243	1.000

(continued)

		Internalized stigma			Experienced discrimination		Perceived stigma in community			Observed discrimination in community	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
D. Correlations at endline											
(1)	Shame	1.000									
(2)	Guilt	0.574	1.000								
(3)	Self-blame	0.588	0.739	1.000							
(4)	Experienced teasing	0.138	0.182	0.198	1.000						
(5)	Experienced gossip	0.137	0.213	0.307	0.503	1.000					
(6)	Negative attitude about disability shame[a]	0.241	0.195	0.182		-0.083	1.000				
(7)	Hypothetical shame of disability of family[b]	0.169	0.097				0.510	1.000			
(8)	Hypothetical shame of own disability[c]	0.243	0.155	0.162			0.691	0.643	1.000		
(9)	Observed teasing									1.000	
(10)	Observed gossip		0.110	0.082	0.168	0.157	-0.105				1.000

Notes: The sample is the PWD endline sample (maximum no. of observations = 522) and the community endline sample (maximum no. of observations = 258). See the definition of variables in the text. Means and percentage of transition patterns for individual- and community-level measures are calculated at the individual and community levels, respectively. Correlations among community-level measures are at the community level; all other correlations are at the individual level. Correlations with $p<0.1$ are shown. [a]Perceived stigma question a, [b]Perceived stigma question b, [c]Perceived stigma question c (see Table A7).

Table A9. Baseline balance in PWD endline sample with disabled head of households

	Control mean	Treatment-control difference	
Baseline covariates			
Hand amputee	0.167	0.00751	(0.0439)
Years since disability onset	19.74	-0.837	(0.915)
Age	44.23	1.440	(0.903)
Household head	1	0	(.)
Married	0.821	-0.0677	(0.0444)
Literate	0.660	0.0527	(0.0529)
Secondary education	0.173	-0.0181	(0.0443)
Household size	4.895	-0.220	(0.199)
No. PWODs in household	2.216	-0.0732	(0.164)
Any age 5 or below in household	0.290	0.0415	(0.0532)
Asset index (z-score)	-0.272	-0.0811	(0.100)
One eligible PWD in community	0.160	-0.0147	(0.0408)
No. eligible PWDs in community	3.673	-0.306	(0.240)
No. all PWDs in community	12.59	-0.299	(1.126)
No. households in community	272.0	-11.10	(24.19)
Distance to district capital (km)	17.94	-0.708	(1.595)
Baseline outcomes			
Any employment among PWDs	0.272	-0.00165	(0.0518)
Skilled employment among PWDs	0.146	-0.0271	(0.0397)
Earnings from any employment among PWDs	4.558	0.210	(1.950)
Earnings from skilled employment among PWDs	2.670	-0.0674	(1.777)
Any employment among PWODs	0.401	-0.0132	(0.0584)
Skilled employment among PWODs	0.184	-0.0400	(0.0447)
Earnings from any employment among PWODs	7.040	-0.777	(1.850)
Earnings from skilled employment among PWODs	3.237	-0.586	(1.498)
Experienced discrimination index (z-score)	0.0716	-0.134**	(0.0676)
Teasing	0.204	-0.0759*	(0.0430)
Gossip	0.265	-0.00586	(0.0513)
Internalized stigma index (z-score)	-0.0124	-0.0464	(0.104)
Shame	0.506	-0.0395	(0.0577)
Guilt	0.451	0.00159	(0.0569)
Self-blame	0.457	-0.0317	(0.0572)
Happiness (1-5)	3.290	-0.105	(0.0849)
Life satisfaction (1-5)	3.154	-0.00896	(0.111)
Empowerment (1-5)	2.833	-0.0231	(0.105)
Social cohesion index (z-score)	-0.0572	0.00358	(0.0750)
Joint significance F (p-value)			
Baseline covariates		0.373	
Baseline outcomes		0.580	
Baseline covariates & outcomes		0.752	
Maximum no. observations		315	

Notes: The sample is the PWD endline sample with disabled head of households. The table reports the difference in each variable between the treament and control groups, controlling for strata fixed effects. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A10. Log of earnings

	PWDs		PWODs	
	Any (log USD) (1)	Skilled (log USD) (2)	Any (log USD) (3)	Skilled (log USD) (4)
ITT	0.256**	0.245**	0.279*	0.309*
	(0.127)	(0.114)	(0.165)	(0.158)
TOT	0.937**	0.883**	1.127*	1.245*
	(0.470)	(0.413)	(0.678)	(0.650)
OLS	0.364*	0.334*	0.0703	0.228
	(0.199)	(0.180)	(0.246)	(0.244)
Control mean	0.467	0.338	1.080	0.890
No. observations	492	504	448	450

Notes: The sample is the PWD endline sample in columns (1)-(2) and the PWD endline sample with at least one PWOD in the household in columns (3)-(4). Earnings are monthly earnings (2011 USD) and the log dependent variable takes 0 if the orginal value is 0 (one observation with negative original value is dropped); the dependent variables in columns (3)-(4) are the mean among PWODs. The treatment indicator is an excluded instrument for training in 2SLS. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A11. Correlates of training uptake

	(1)	(2)	(3)
Hand amputee	-0.104	-0.101	-0.101
	(0.0653)	(0.0662)	(0.0687)
Years since disability onset	0.00298	0.00293	0.00162
	(0.00311)	(0.00317)	(0.00337)
Age	-0.0350**	-0.0354**	-0.0287*
	(0.0158)	(0.0159)	(0.0164)
Age squared	0.000374**	0.000380**	0.000280
	(0.000189)	(0.000191)	(0.000201)
Household head	-0.0837	-0.0837	-0.0701
	(0.0998)	(0.105)	(0.113)
Married	-0.0969	-0.0961	-0.0726
	(0.0651)	(0.0669)	(0.0774)
Literate	0.134**	0.132**	0.151**
	(0.0557)	(0.0563)	(0.0586)
Secondary education	0.0597	0.0588	0.0674
	(0.0708)	(0.0713)	(0.0766)
Household size	-0.00764	-0.00756	-0.00581
	(0.0253)	(0.0257)	(0.0264)
No. PWODs in household	0.00900	0.00946	0.0151
	(0.0320)	(0.0322)	(0.0330)
Age 5 or below in household	0.0379	0.0379	0.0498
	(0.0691)	(0.0695)	(0.0727)
Asset index (z-score)	-0.0426	-0.0429	-0.0341
	(0.0314)	(0.0316)	(0.0325)
One eligible PWD in community	-0.156*	-0.160*	-0.136
	(0.0860)	(0.0869)	(0.0919)
No. eligible PWDs in community	-0.0242	-0.0255	-0.0235
	(0.0187)	(0.0193)	(0.0194)
No. all PWDs in community	-0.0000797	-0.0000207	0.000594
	(0.00339)	(0.00341)	(0.00338)
No. households in community	0.000274	0.000271	0.000331
	(0.000201)	(0.000205)	(0.000219)
Distance to district capital (km)	0.00263	0.00268	0.00234
	(0.00235)	(0.00238)	(0.00254)
Skilled employment among PWDs		0.0266	0.0976
		(0.0910)	(0.103)
Skilled employment among PWODs			-0.144*
			(0.0816)
No. observations	265	263	246
R squared	0.288	0.286	0.295
Mean of dependent variable	0.279	0.281	0.280

Notes: The sample is the endline treatment samples. The table reports OLS estimates. The dependent variables are an indicator variable for training uptake. Other covariates not shown here are strata fixed effects, and district fixed effects. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A12. Baseline comparison of trainees by the timing of completion of training

	Early trainees (A) vs. recent trainees (B)		
	B mean	Mean difference (A - B)	
Baseline covariates			
Hand amputee	0.0270	0.0372	(0.0611)
Years since disability onset	20.08	-3.825**	(1.748)
Age	31.76	0.962	(3.389)
Household head	0.351	0.0979	(0.121)
Married	0.270	0.0971	(0.129)
Literate	0.865	-0.102	(0.104)
Secondary education	0.378	-0.0931	(0.117)
Household size	4.919	0.525	(0.584)
No. PWODs in household	2.811	-0.0627	(0.499)
Any age 5 or below in household	0.216	0.165	(0.122)
Asset index (z-score)	0.144	-0.143	(0.236)
One eligible PWD in community	0.162	0.0160	(0.0868)
No. eligible PWDs in community	3.189	0.116	(0.556)
No. all PWDs in community	10.94	-0.800	(2.376)
No. households in community	240.7	-7.011	(31.61)
Distance to district capital (km)	19.51	-0.772	(2.937)
Baseline outcomes			
Any employment among PWDs	0.189	0.0190	(0.108)
Skilled employment among PWDs	0.0811	-0.0293	(0.0703)
Earnings from any employment among PWDs	5.373	0.710	(5.783)
Earnings from skilled employment among PWDs	1.828	1.225	(5.374)
Any employment among PWODs	0.471	0.0361	(0.133)
Skilled employment among PWODs	0.0882	0.0491	(0.0887)
Earnings from any employment among PWODs	7.902	7.010	(5.401)
Earnings from skilled employment among PWODs	0.672	6.797	(5.422)
Experienced discrimination index (z-score)	-0.116	0.0363	(0.0966)
Teasing	0.243	-0.169*	(0.0881)
Gossip	0.108	0.145	(0.104)
Internalized stigma index (z-score)	-0.108	0.166	(0.227)
Shame	0.459	0.0876	(0.129)
Guilt	0.378	0.101	(0.131)
Self-blame	0.432	0.0603	(0.126)
Happiness (1-5)	3.351	-0.237	(0.193)
Life satisfaction (1-5)	3.486	-0.215	(0.211)
Empowerment (1-5)	3.378	-0.332	(0.201)
Social cohesion index (z-score)	-0.237	0.239	(0.152)
Joint significance F (p-value)			
Baseline covariates		0.428	
Baseline outcomes		0.001	
Baseline covariates & outcomes		0.000	
Maximum no. observations		77	

Notes: The sample is trainees in the PWD endline sample with nonmissing duration between the completion of the training and the endline survey. The table reports the difference in each variable between early trainees (22 months or more after the completion) and recent trainees (21 months or less), controlling for strata fixed effects. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A13. Household income and asset

	Total (USD)	Earned (USD)	Farm (USD)	Nonfarm (USD)	Unearned (USD)	Farm (0/1)	Nonfarm (0/1)	Unearned (0/1)	Asset index (z-score)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ITT	-1.138	0.108	-4.091	4.218*	-1.256	-0.0222	0.105***	0.0618	0.0630
	(6.008)	(5.208)	(4.305)	(2.280)	(2.820)	(0.0336)	(0.0407)	(0.0404)	(0.0898)
Control mean	34.55	23.64	14.66	5.701	10.90	0.857	0.246	0.701	0.0764
No. observations	521	521	521	522	522	521	522	522	520
ITT on log income (log USD)	0.0274	-0.0381	-0.181	0.209*	0.102				
	(0.126)	(0.140)	(0.148)	(0.124)	(0.122)				

Notes: The sample is the PWD endline sample. The total and sectoral incomes are monthly income per capita (2011 USD). The log dependent variable takes 0 if the orginal value is 0. The dependent variable in columns (6)-(8) is an indicator variable for participation. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A14. Labor supply

	Hours worked per week			Days worked per month		
	Any (hours) (1)	Farm (hours) (2)	Nonfarm (hours) (3)	Any (days) (4)	Farm (days) (5)	Nonfarm (days) (6)
A. PWDs						
ITT	0.649	-5.375***	0.477	1.549	-2.256**	0.803
	(1.836)	(1.796)	(1.588)	(1.101)	(1.002)	(0.914)
Control mean	35.65	16.89	7.172	19.85	8.419	3.916
No. observations	483	509	512	485	509	512
ITT on log outcome (log hours, days)	0.111	-0.438***	0.0492	0.177	-0.295**	0.0746
	(0.114)	(0.150)	(0.126)	(0.114)	(0.123)	(0.108)
B. PWODs						
ITT	-1.123	-0.298	0.529	0.635	-0.155	0.966
	(1.735)	(1.537)	(1.608)	(1.040)	(0.850)	(0.767)
Control mean	40.40	9.739	8.485	21.54	5.310	3.667
No. observations	428	454	454	429	454	453
ITT on log outcome (log hours, days)	-0.00994	-0.0645	0.232	0.132	-0.0313	0.220*
	(0.0901)	(0.150)	(0.144)	(0.105)	(0.125)	(0.113)

Notes: The sample is the PWD endline sample. The dependent variables in panel B are the mean among PWODs. The log dependent variable takes 0 if the orginal value is 0. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A15. Subjective well-being, empowerment, and social capital

	Happiness (1-5) (1)	Life satisfaction (1-5) (2)	Empowerment (1-5) (3)	Social capital (z-score) (4)
A. All				
ITT	-0.0560	0.00856	-0.0154	0.0130
	(0.0654)	(0.0914)	(0.0924)	(0.0534)
Control mean	3.439	3.111	2.684	-0.00390
No. observations	521	522	520	518
B. Disabled head of households				
ITT	-0.0491	0.0782	0.00677	0.0416
	(0.0810)	(0.112)	(0.116)	(0.0673)
Control mean	3.440	3.107	2.655	0.0252
No. observations	334	334	333	332

Notes: The sample is the PWD endline sample in panel A and the PWD endline sample with disabled head of households in panel B. The five-scale index for happiness takes 1 (very unhappy) through 5 (very happy), that for life satisfaction takes 1 (very uncomfortable) through 5 (very comfortable), and that for empowerment takes 1 (totally unable to change life) through 5 (totally able to change life). Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A16. ITT estimates with covariates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Employment and earnings								
	PWDs				PWODs			
	Employment		Earnings		Employment		Earnings	
	Any	Skilled	Any	Skilled	Any	Skilled	Any	Skilled
	(0/1)	(0/1)	(USD)	(USD)	(0/1)	(0/1)	(USD)	(USD)
Wth strata fixed effects	0.0635*	0.0592*	4.551**	4.638**	0.0678	0.0738*	6.467*	6.627*
	(0.0358)	(0.0310)	(2.119)	(1.917)	(0.0473)	(0.0448)	(3.555)	(3.487)
N	505	505	493	505	451	451	449	451
With baseline outcome	0.0734**	0.0581*	3.857*	4.475**	0.0667	0.0793*	6.630*	6.839*
	(0.0352)	(0.0315)	(2.023)	(1.896)	(0.0471)	(0.0449)	(3.614)	(3.541)
N	497	497	478	497	443	443	441	443
With baseline covariates	0.0934**	0.0693**	5.425**	5.230***	0.0894*	0.0750	7.360**	6.625*
	(0.0366)	(0.0325)	(2.188)	(1.954)	(0.0477)	(0.0464)	(3.712)	(3.606)
N	478	478	459	478	429	429	427	429
B. Discrimination and stigma								
	Experienced discrimination			Internalized stigma				
	Index	Teasing	Gossip	Index	Shame	Guilt	Self-blame	
	(z-score)	(0/1)	(0/1)	(z-score)	(0/1)	(0/1)	(0/1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Wth strata fixed effects	0.100**	0.0277	0.0552	0.120	0.104**	0.0378	0.0380	
(N=522)	(0.0421)	(0.0264)	(0.0372)	(0.0781)	(0.0447)	(0.0451)	(0.0448)	
With baseline outcome	0.121***	0.0281	0.0571	0.152*	0.108**	0.0405	0.0421	
(N=514)	(0.0422)	(0.0265)	(0.0372)	(0.0784)	(0.0448)	(0.0452)	(0.0448)	
With baseline covariates	0.104***	0.0170	0.0685*	0.122	0.107**	0.0282	0.0493	
(N=501)	(0.0388)	(0.0268)	(0.0384)	(0.0791)	(0.0456)	(0.0450)	(0.0456)	

Notes: The sample is the PWD endline sample in columns (1)-(4) of panel A and panel B and the PWD endline sample with at least one PWOD in the household in columns (5)-(8) of panel A. The table reports ITT estimates. The dependent variables in columns (5)-(6) of panel A are an indicator variable for employment of any PWOD and the dependent variables in columns (7)-(8) of panel A are the mean among PWODs. The results with strata fixed effects in panels A and B replicate those reported in Tables 6 and 7, respectively. The results with baseline outcome additionally control for corresponding baseline outcome. The results with baseline covariates additionally control for baseline covariates reported in Table 4, age squared, district fixed effects, and interview month fixed effects. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A17. Demographics

	Hhld head (0/1) (1)	Married (0/1) (2)	Hhld size (person) (3)	No. PWODs (person) (4)	Any PWOD (0/1) (5)
A. PWD endline sample					
ITT	-0.0376	-0.0689*	-0.00426	-0.0857	-0.0249
	(0.0301)	(0.0415)	(0.155)	(0.135)	(0.0285)
Control mean	0.691	0.604	4.504	2.398	0.906
No. observations	516	516	522	522	522
B. Household endline sample					
ITT	-0.0341	-0.0792*	-0.120	-0.138	-0.0374
	(0.0298)	(0.0404)	(0.150)	(0.129)	(0.0274)
Control mean	0.684	0.601	4.524	2.416	0.910
No. observations	542	542	571	571	571

Notes: The sample is the PWD endline sample in panel A and the household endline sample in panel B. The table reports ITT estimates. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A18. Sensitivity analysis - alternative imputation

	Control mean	Unadjusted ITT estimate	Lower bounds 0.1 SD	0.25 SD	0.5 SD
	(1)	(2)	(3)	(4)	(5)
Earnings from skilled employment among PWDs (USD)	4.076	4.638**	3.668***	2.266	0.216
		(1.917)	(1.394)	(1.402)	(1.427)
Earnings from skilled employment among PWODs (USD)	10.38	6.627*	3.948	2.458	0.713
		(3.487)	(2.523)	(2.534)	(2.555)
Experienced discrimination index (z-score)	-0.0534	0.100**	0.0785**	0.0469	-0.00589
		(0.0421)	(0.0322)	(0.0323)	(0.0330)

Notes: Columns (1) and (2) replicate the results reported in column (5) of panels A and B of Table 6 and column (1) of panel A of Table 7. Column (3) reports the ITT estimate in the household endline sample (n=491). In columns (3)-(5), the sample is the PWD baseline sample (n=681) for PWD earnings and experienced discrimination index and the PWD baseline sample with at least one PWOD in the same household at the endline (n=642) for PWOD earnings. I assume that attrited households with at least one PWOD at the baseline had at least one PWOD at the endline. In columns (3)-(5), I reestimate the ITT effect in column (2) by imputing the observed control mean plus X standard deviation of the control distribution for missing dependent variable in the control group, the observed mean among nontrainees in the treatment group minus X standard deviation of the nontrainee treatment distribution for missing dependent variable among nontrainees in the treatment group, and the observed mean among trainees minus X standard deviation of the trainee distribution for missing dependent variable among trainees, where X = 0.1, 0.25, and 0.5. If these imputed values for the control group are larger than the maximum value in the control group, the maximum value is imputed; if these imputed values for the nontrainee treatment group are smaller than the minimum value in the nontrainee treatment group, the minimum value is imputed; if these imputed values for trainees are smaller than the minimum value among trainees, the minimum value is imputed. For PWODs' earnings, attrition from the household endline sample is considered. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A19. Joint employment of PWD and PWOD

	Skilled employment			
	PWD	PWOD	Either PWD or PWOD	Both PWD & PWOD
	(0/1)	(0/1)	(0/1)	(0/1)
	(1)	(2)	(3)	(4)
ITT	0.0815**	0.0765*	0.126***	0.0317
	(0.0338)	(0.0458)	(0.0470)	(0.0284)
TOT	0.329**	0.309*	0.510***	0.128
	(0.136)	(0.186)	(0.196)	(0.112)
OLS	0.175***	0.0475	0.124*	0.0986*
	(0.0615)	(0.0701)	(0.0727)	(0.0509)
Control mean	0.0995	0.280	0.308	0.0711
No. observations	438	438	438	438

Notes: The sample is the PWD endline sample with nonmissing values for both PWD and PWOD skilled employment. The dependent variables in columns (2)-(4) are an indicator variable for skilled employment of any PWOD, of both PWD and any PWOD, and of either PWD or any PWOD, respectively. The treatment indicator is an excluded instrument for training in 2SLS. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A20. Paid employment vs. family enterprise

	Employment			Earnings			Log of earnings		
	Any paid (0/1) (1)	Salary (0/1) (2)	Enterprise (0/1) (3)	Any paid (USD) (4)	Salary (USD) (5)	Enterprise (USD) (6)	Any paid (log USD) (7)	Salary (log USD) (8)	Enterprise (log USD) (9)
A. PWDs									
ITT	0.0564*	0.0554*	0.00325	4.072**	4.261**	0.336	0.238*	0.240**	0.000832
	(0.0339)	(0.0282)	(0.0134)	(2.018)	(1.807)	(0.639)	(0.122)	(0.108)	(0.0394)
Control mean	0.139	0.0798	0.0205	5.493	3.572	0.491	0.423	0.281	0.0554
No. observations	505	505	522	493	505	522	493	505	521
B. PWODs									
ITT	0.0821*	0.0881**	-0.0194	6.703**	6.889**	-0.0719	0.299*	0.328**	-0.0495
	(0.0464)	(0.0429)	(0.0234)	(3.352)	(3.272)	(1.021)	(0.161)	(0.153)	(0.0579)
Control mean	0.319	0.231	0.0724	10.65	8.656	1.057	0.971	0.782	0.142
No. observations	451	451	465	449	451	465	449	451	463

Notes: The sample is the PWD endline sample. Earnings are monthly earnings (2011 USD). The log dependent variable takes 0 if the orginal value is 0 (observations with negative original value for enterprise are dropped). The dependent variables in columns (1)-(3) of panel B are an indicator variable for employment of any PWODs. The dependent variables in columns (4)-(9) of panel B are the mean among PWODs. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A21. Baseline comparison across communities

	Panel A. High (A) vs. Low (B) baseline perceived stigma			Panel B. No common support (C) vs. Common support (D)		
	B mean	Mean difference (A - B)		D mean	Mean difference (C - D)	
Baseline covariates						
Individual/household-level:						
Hand amputee	0.118	0.0337	(0.0304)	0.182	-0.0764**	(0.0321)
Years since disability onset	19.35	0.984	(0.894)	19.77	0.175	(0.911)
Age	38.65	-1.192	(1.110)	35.61	4.263***	(1.109)
Household head	0.621	-0.0370	(0.0463)	0.550	0.0887*	(0.0474)
Married	0.568	-0.0487	(0.0499)	0.420	0.210***	(0.0483)
Literate	0.668	-0.0142	(0.0415)	0.656	0.0186	(0.0416)
Secondary education	0.171	0.0537	(0.0353)	0.225	-0.0460	(0.0347)
Household size	5.132	-0.284	(0.174)	4.880	0.174	(0.172)
No. PWODs in household	2.521	-0.0496	(0.143)	2.464	0.0439	(0.143)
Any age 5 or below in household	0.293	-0.0591	(0.0416)	0.249	0.0228	(0.0419)
Asset index (z-score)	-0.144	0.0111	(0.0901)	-0.122	-0.0220	(0.0904)
Community level:						
One eligible PWD in community	0.370	0.0118	(0.0610)	0.647	-0.647***	(0.0384)
No. eligible PWDs in community	2.449	-0.0594	(0.213)	1.538	2.082***	(0.185)
No. all PWDs in community	10.41	1.054	(1.211)	8.980	4.191***	(1.171)
No. households in community	226.0	17.84	(20.65)	212.7	50.84**	(21.26)
Distance to district capital (km)	15.80	-1.446	(1.564)	13.98	2.709*	(1.635)
Baseline outcomes						
Individual/household-level:						
Any employment among PWDs	0.276	-0.0302	(0.0411)	0.240	0.0280	(0.0408)
Skilled employment among PWDs	0.132	-0.0163	(0.0304)	0.0931	0.0492*	(0.0296)
Earnings from any employment among PWDs	4.233	0.556	(1.618)	3.048	2.258	(1.503)
Earnings from skilled employment among PWDs	1.571	0.805	(1.418)	0.0808	3.043**	(1.237)
Any employment among PWODs	0.414	0.0333	(0.0469)	0.429	0.00274	(0.0479)
Skilled employment among PWODs	0.153	0.0487	(0.0390)	0.110	0.106***	(0.0356)
Earnings from any employment among PWODs	6.878	0.807	(2.788)	6.357	1.594	(2.254)
Earnings from skilled employment among PWODs	2.818	0.423	(2.665)	0.912	3.392*	(2.022)

(continued)

	Panel A. High (A) vs. Low (B) baseline perceived stigma			Panel B. No common support (C) vs. Common support (D)		
	B mean	Mean difference (A - B)		D mean	Mean difference (C - D)	
Experienced discrimination index (z-score)	-0.0229	0.0787	(0.0593)	-0.00751	0.0239	(0.0585)
Teasing	0.177	0.0346	(0.0384)	0.184	0.00709	(0.0373)
Gossip	0.231	0.0773*	(0.0431)	0.238	0.0381	(0.0412)
Internalized stigma index (z-score)	-0.0571	0.172**	(0.0862)	-0.0163	0.0464	(0.0865)
Shame	0.477	0.0829*	(0.0484)	0.490	0.0324	(0.0477)
Guilt	0.426	0.0894*	(0.0477)	0.442	0.0323	(0.0476)
Self-blame	0.444	0.0846*	(0.0468)	0.476	0.00479	(0.0471)
Happiness (1-5)	3.289	-0.0520	(0.0698)	3.301	-0.0615	(0.0690)
Life satisfaction (1-5)	3.195	0.0331	(0.0902)	3.291	-0.136	(0.0887)
Empowerment (1-5)	2.913	-0.133	(0.0817)	2.893	-0.0647	(0.0833)
Social cohesion index (z-score)	0.0140	-0.0192	(0.0626)	-0.0181	0.0273	(0.0616)
Community level:						
Perceived stigma index (z-score)	-0.810	1.808***	(0.0303)	0.0844	-0.140	(0.119)
Negative attitude about disability shame	0.0584	0.814***	(0.0368)	0.442	0.0301	(0.0631)
Hypothetical shame of disability of family	0.0438	0.846***	(0.0338)	0.468	-0.0241	(0.0631)
Hypothetical shame of own disability	0.117	0.815***	(0.0360)	0.513	0.00588	(0.0633)
Observed discrimination index (z-score)	-0.00163	-0.00573	(0.0576)	-0.0487	0.110*	(0.0646)
Observed gossip	0.0949	0.0238	(0.0391)	0.0974	0.0252	(0.0400)
Joint significance F (p-value)						
Individual/household-level:						
Baseline covariates		0.191			0.000	
Baseline outcomes		0.367			0.000	
Baseline noneconomic outcomes		0.382			0.733	
Baseline covariates & outcomes		0.029			0.000	
Community level:						
Baseline covariates		0.741			0.000	
Baseline outcomes		0.000			0.000	
Baseline covariates & outcomes		0.000			0.000	
Maximum no. observations		511			522	
Maximum no. observations (community)		256			264	

(continued)

Notes: The sample for individual/household-level variables is the PWD endline sample. The sample for community-level variables is the community endline sample. The table reports the difference in each variable between two community groups. Communities with low and high baseline perceived stigma are those with negative and nonnegative perceived stigma index at the baseline. Communities with no common support consist of either treated or controlled individuals and communities with common support contain both treated and controlled individuals. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors clustered by community are shown in parentheses for individual/household-level variables and robust standard errors are shown in parentheses for community-level variables. *p<0.1, **p<0.05, ***p<0.01

Table A22. Baseline balance by community stigma

	Panel A. Low community stigma			Panel B. High community stigma		
	Control mean	Treatment-control difference		Control mean	Treatment-control difference	
Baseline covariates						
Hand amputee	0.146	-0.0342	(0.0398)	0.165	-0.0206	(0.0484)
Years since disability onset	19.42	-0.860	(1.070)	20.90	-0.780	(1.177)
Age	39.83	-0.398	(1.277)	38.37	-0.820	(1.399)
Household head	0.701	-0.0752*	(0.0443)	0.619	-0.0379	(0.0515)
Married	0.655	-0.109**	(0.0549)	0.521	0.00665	(0.0611)
Literate	0.611	0.137**	(0.0540)	0.660	-0.0536	(0.0639)
Secondary education	0.160	0.0190	(0.0459)	0.175	0.0517	(0.0582)
Household size	5.153	-0.198	(0.217)	4.670	0.268	(0.263)
No. PWODs in household	2.472	0.00766	(0.188)	2.320	0.277	(0.218)
Any age 5 or below in household	0.299	0.00233	(0.0561)	0.196	0.0435	(0.0568)
Asset index (z-score)	-0.233	0.162	(0.123)	-0.167	0.0466	(0.122)
One eligible PWD in community	0.153	0.0269	(0.0451)	0.227	-0.0779	(0.0561)
No. eligible PWDs in community	3.590	-0.0610	(0.256)	3.278	0.148	(0.284)
No. all PWDs in community	11.69	-0.0415	(1.049)	13.22	-1.328	(1.617)
No. households in community	239.4	15.39	(15.90)	302.3	-45.87	(34.23)
Distance to district capital (km)	18.08	-1.208	(1.651)	15.02	-0.117	(1.584)
Baseline outcomes						
Any employment among PWDs	0.279	0.0119	(0.0565)	0.234	0.0314	(0.0621)
Skilled employment among PWDs	0.143	-0.0210	(0.0429)	0.138	-0.0281	(0.0459)
Earnings from any employment among PWDs	3.032	2.998	(2.029)	4.259	0.957	(2.921)
Earnings from skilled employment among PWDs	1.004	1.341	(1.636)	2.983	-0.904	(2.626)
Any employment among PWODs	0.385	0.0585	(0.0643)	0.420	0.0516	(0.0730)
Skilled employment among PWODs	0.148	0.0100	(0.0479)	0.250	-0.0784	(0.0589)
Earnings from any employment among PWODs	4.915	3.485*	(1.988)	8.128	-1.136	(2.813)
Earnings from skilled employment among PWODs	1.753	2.014	(1.698)	4.945	-3.426	(2.445)

(continued)

	Panel A. Low community stigma			Panel B. High community stigma		
	Control mean	Treatment-control difference		Control mean	Treatment-control difference	
Experienced discrimination index (z-score)	0.0449	-0.158**	(0.0619)	0.0634	-0.0108	(0.0815)
Teasing	0.201	-0.0575	(0.0454)	0.188	0.0312	(0.0549)
Gossip	0.250	-0.0392	(0.0519)	0.323	-0.0240	(0.0652)
Internalized stigma index (z-score)	-0.0243	-0.0847	(0.112)	0.0940	0.00214	(0.122)
Shame	0.500	-0.0621	(0.0613)	0.552	-0.00568	(0.0703)
Guilt	0.431	-0.0128	(0.0613)	0.500	-0.000432	(0.0704)
Self-blame	0.465	-0.0520	(0.0618)	0.521	0.00931	(0.0708)
Happiness (1-5)	3.271	0.0226	(0.0916)	3.237	0.0258	(0.112)
Life satisfaction (1-5)	3.125	0.122	(0.128)	3.186	0.0968	(0.130)
Empowerment (1-5)	2.889	0.0283	(0.113)	2.660	0.244*	(0.135)
Social cohesion index (z-score)	-0.0112	0.0444	(0.0868)	0.0135	-0.0406	(0.0885)
Joint significance F (p-value)						
Baseline covariates		0.135			0.606	
Baseline outcomes		0.427			0.864	
Baseline noneconomic outcomes		0.188			0.829	
Baseline covariates & outcomes		0.066			0.701	
Maximum no. observations		280			231	

Notes: The sample is the PWD endline sample. The table reports the difference in each variable between the treament and control groups, controlling for strata fixed effects. Communities with low and high baseline perceived stigma are those with negative and nonnegative perceived stigma index at the baseline. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A23. Intergroup contact, perception bias, and intragroup spillover - original indicators

	Experienced discrimination		Internalized stigma		
	Teasing (0/1) (1)	Gossip (0/1) (2)	Shame (0/1) (3)	Guilt (0/1) (4)	Self-blame (0/1) (5)
A. Intergroup contract					
Treatment (β)	0.0839**	0.151***	0.136**	0.0793	0.0681
	(0.0327)	(0.0485)	(0.0609)	(0.0604)	(0.0608)
Treatment × High community stigma (δ)	-0.137**	-0.204***	-0.0625	-0.0984	-0.0295
	(0.0550)	(0.0747)	(0.0909)	(0.0907)	(0.0906)
High community stigma	0.117***	0.131**	0.0281	0.137**	-0.0265
	(0.0394)	(0.0536)	(0.0667)	(0.0663)	(0.0663)
β + δ = 0 (p-value)	0.238	0.363	0.277	0.781	0.571
No. observations	511	511	511	511	511
B. Perception bias					
Treatment (β)	0.158***	0.142**	0.208***	0.0507	0.107
	(0.0560)	(0.0716)	(0.0779)	(0.0804)	(0.0790)
Treatment × No observed discrimination (δ)	-0.189***	-0.116	-0.164*	-0.0281	-0.103
	(0.0639)	(0.0830)	(0.0953)	(0.0970)	(0.0961)
No observed discrimination	0.00760	-0.0392	0.0485	-0.0874	-0.00840
	(0.0385)	(0.0562)	(0.0694)	(0.0703)	(0.0700)
β + δ = 0 (p-value)	0.301	0.557	0.434	0.685	0.945
No. observations	497	497	497	497	497
C. Intragroup spillover					
Treatment (β)	0.0286	0.0527	0.161**	0.197***	0.130*
	(0.0465)	(0.0579)	(0.0756)	(0.0745)	(0.0749)
Treatment × Communities with common support (δ)	-0.000961	0.00882	-0.105	-0.269***	-0.153*
	(0.0593)	(0.0727)	(0.0932)	(0.0934)	(0.0911)
Communities with common support	0.00581	0.0388	-0.0533	0.0969	0.0758
	(0.0435)	(0.0530)	(0.0754)	(0.0738)	(0.0695)
β + δ = 0 (p-value)	0.452	0.184	0.322	0.210	0.665
No. observations	522	522	522	522	522

Notes: The sample is the PWD endline sample. In panel A, communities with low and high perceived stigma are those with negative and nonnegative perceived stigma index at the baseline. In pnael B, communities with no and any observed discrimination are those with negative and nonnegative observed discrimination index at the endline. In panel C, communities with no common support consist of either treated or controlled individuals and communities with common support contain both treated and controlled individuals. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses in panels A and B and standard errors clustered by community are shown in parentheses in panel C. *p<0.1, **p<0.05, ***p<0.01

Table A24. Economic inclusion and discrimination - community subgroups

Outcome:	(1)	(2)	(3)	(4)
A. Low community stigma				
Experienced discrimination index (z-score)	0.200*** (0.0504)	0.190*** (0.0509)	0.198*** (0.0510)	
Internalized stigma index (z-score)	0.189* (0.106)	0.187* (0.108)	0.189* (0.108)	0.0766 (0.104)
No. observations	511	495	497	511
B. Any observed discrimination				
Experienced discrimination index (z-score)	0.172* (0.0914)	0.167* (0.0934)	0.183* (0.0936)	
Internalized stigma index (z-score)	0.244* (0.136)	0.214 (0.139)	0.267* (0.137)	0.152 (0.128)
No. observations	497	481	483	497
C. No intragroup spillover				
Experienced discrimination index (z-score)	0.124* (0.0671)	0.132* (0.0681)	0.120* (0.0704)	
Internalized stigma index (z-score)	0.326** (0.132)	0.323** (0.136)	0.331** (0.138)	0.258** (0.129)
No. observations	522	505	508	522
Post-treatment variable additionally controlled for:				
Skilled employment among PWDs		YES		
Skilled employment among PWODs			YES	
Experienced discrimination index				YES

Notes: The sample is the PWD endline sample. Column (1) in panels A, B, and C, respectively, replicates the ITT estimates reported in columns (1) and (4), (2) and (5), and (3) and (6) of Table 10. Columns (2)-(4) show the estimated coefficients for the treatment indicator with the corresponding post-treatment variables additionally controlled for in equation (3). In column (3), 0 is assigned to households with no PWOD. The estimated coefficients for *Treatment* × *D* and *D* are not reported. In panel A, communities with low and high perceived stigma are those with negative and nonnegative perceived stigma index at the baseline. In panel B, communities with no and any observed discrimination are those with negative and nonnegative observed discrimination index at the endline. In panel C, communities with no common support consist of either treated or controlled individuals and communities with common support contain both treated and controlled individuals. Strata fixed effects are always controlled for. Robust standard errors are shown in parentheses in panels A and B and standard errors clustered by community are shown in parentheses in panel C. *p<0.1, **p<0.05, ***p<0.01

Table A25. Baseline balance by common support

	Panel A. With no common support			Panel B. With common support		
	Control mean	Treatment-control difference		Control mean	Treatment-control difference	
Baseline covariates						
Hand amputee	0.250	-0.0935	(0.0574)	0.103	0.0250	(0.0352)
Years since disability onset	19.44	0.156	(1.323)	20.36	-1.205	(0.962)
Age	36.40	0.514	(1.478)	40.86	-1.045	(1.212)
Household head	0.614	-0.0329	(0.0588)	0.692	-0.0719*	(0.0379)
Married	0.453	0.00891	(0.0618)	0.677	-0.0784	(0.0522)
Literate	0.636	0.0215	(0.0685)	0.628	0.0931*	(0.0516)
Secondary education	0.182	0.0284	(0.0584)	0.160	0.0394	(0.0455)
Household size	4.795	0.0393	(0.270)	5.013	0.0306	(0.211)
No. PWODs in household	2.364	0.142	(0.226)	2.429	0.136	(0.173)
Any age 5 or below in household	0.227	0.0284	(0.0587)	0.269	0.00157	(0.0522)
Asset index (z-score)	-0.293	0.267**	(0.133)	-0.176	0.0632	(0.111)
One eligible PWD in community	0.523	-0.122*	(0.0690)	0	0	(.)
No. eligible PWDs in community	1.818	0.297*	(0.173)	4.353	-0.0158	(0.226)
No. all PWDs in community	10.08	-0.563	(0.963)	13.62	-0.0528	(1.246)
No. households in community	241.7	-37.45**	(17.13)	279.4	1.348	(24.80)
Distance to district capital (km)	16.54	-2.636	(1.759)	17.09	0.0295	(1.559)
Baseline outcomes						
Any employment among PWDs	0.233	-0.00597	(0.0619)	0.272	0.0228	(0.0521)
Skilled employment among PWDs	0.105	-0.0292	(0.0434)	0.159	-0.0124	(0.0394)
Earnings from any employment among PWDs	3.072	-0.630	(1.643)	3.707	3.998	(2.536)
Earnings from skilled employment among PWDs	1.136	-1.607	(1.070)	2.141	2.495	(2.342)
Any employment among PWODs	0.402	0.0365	(0.0749)	0.410	0.0587	(0.0594)
Skilled employment among PWODs	0.122	-0.0239	(0.0497)	0.229	-0.0169	(0.0495)
Earnings from any employment among PWODs	3.697	4.144**	(1.689)	7.524	0.472	(3.008)
Earnings from skilled employment among PWODs	0.416	1.106	(0.820)	4.428	-0.730	(2.837)

(continued)

	Panel A. With no common support			Panel B. With common support		
	Control mean	Treatment-control difference		Control mean	Treatment-control difference	
Experienced discrimination index (z-score)	0.0899	-0.137	(0.0851)	0.0245	-0.0290	(0.0623)
Teasing	0.216	-0.0445	(0.0549)	0.181	0.0145	(0.0463)
Gossip	0.284	-0.0571	(0.0634)	0.271	0.00121	(0.0528)
Internalized stigma index (z-score)	-0.0381	0.00976	(0.135)	0.0517	-0.0523	(0.102)
Shame	0.466	0.0159	(0.0735)	0.548	-0.0534	(0.0575)
Guilt	0.443	-0.00420	(0.0731)	0.465	0.00314	(0.0583)
Self-blame	0.466	0.00299	(0.0734)	0.497	-0.0283	(0.0583)
Happiness (1-5)	3.295	0.00880	(0.115)	3.244	-0.00365	(0.0879)
Life satisfaction (1-5)	3.250	0.105	(0.129)	3.103	0.0711	(0.120)
Empowerment (1-5)	2.909	-0.0348	(0.135)	2.731	0.213*	(0.112)
Social cohesion index (z-score)	-0.0618	0.0568	(0.0931)	0.0363	-0.0671	(0.0794)
Joint significance F (p-value)						
Baseline covariates		0.011			0.895	
Baseline outcomes		0.016			0.737	
Baseline noneconomic outcomes		0.739			0.624	
Baseline covariates & outcomes		0.000			0.373	
Maximum no. observations		209			313	

Notes: The sample is the PWD endline sample. The table reports the difference in each variable between the treament and control groups, controlling for strata fixed effects. Communities with no common support consist of either treated or controlled individuals and communities with common support contain both treated and controlled individuals. See the definition of variables in the text. Earnings are monthly earnings (2011 USD). Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Table A26. Community attrition

	(1)	(2)
Treatment	0.0430	0.0878*
	(0.0409)	(0.0462)
Covariates		YES
Joint significance F (p-value):		
PWD in community		0.000
Baseline covariates		0.488
District fixed effects		0.055
R squared	0.003	
Control mean	0.0933	
Overall mean	0.125	
No. observations	295	291

Notes: The sample is the community baseline sample. The dependent variable is an indicator variable for sample attrition. The treatment indicator takes 1 if at least one individual in the community is treated and covariates are community-level baseline covariates in Table A25 and district fixed effects. Robust standard errors are shown in parentheses. The joint significance test for PWD in community is for an indicator variable for one eligible PWD in community and number of eligible PWDs in community and that for baseline covariates is for other community-level baseline covariates in Table A25.

Table A27. Baseline balance at community level

	Control mean	Treatment-control difference	
Baseline covariates			
One eligible PWD in community	0.691	-0.391***	(0.0654)
No. eligible PWDs in community	1.456	1.249***	(0.163)
No. all PWDs in community	9.235	1.270	(1.329)
No. households in community	218.6	15.78	(18.61)
Distance to district capital (km)	16.51	-1.777	(1.868)
Perceived stigma index (z-score)	0.0183	-0.0417	(0.132)
Negative attitude about disability shame[a]	0.412	0.0303	(0.0700)
Hypothetical shame of disability of family[b]	0.456	-0.0454	(0.0704)
Hypothetical shame of own disability[c]	0.500	-0.0474	(0.0708)
Observed discrimination index (z-score)	-0.0417	0.0453	(0.0576)
Observed gossip	0.0882	0.0433	(0.0424)
Joint significance F (p-value)			
Baseline covariates		0.000	
Baseline covariates excluding one eligible PWD in community and no. eligible PWDs in community		0.571	
Baseline outcomes		0.154	
Baseline covariates excluding one eligible PWD in community and no. eligible PWDs in community & outcomes		0.288	
Maximum no. observations		258	

Notes: The sample is the community endline sample. The table reports the difference in each variable between the treament and control groups. The treatment indicator takes 1 if at least one individual in the community is treated. See the definition of variables in the text. Robust standard errors are shown in parentheses. [a]Perceived stigma question a, [b]Perceived stigma question b, [c]Perceived stigma question c (see Table A7). *p<0.1, **p<0.05, ***p<0.01

Table A28. Community-level discrimination

	Index (z-score)			Gossip (0/1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.0106	0.000973	0.0317	0.00367	-0.0245	0.0511
	(0.0589)	(0.0730)	(0.0751)	(0.0527)	(0.0591)	(0.0636)
Treatment × Communities with common support		-0.0217			0.0529	
		(0.0674)			(0.0564)	
Treatment × High community stigma			-0.0948			-0.106
			(0.120)			(0.108)
High community stigma			0.0989			0.120
			(0.0998)			(0.0911)
Treatment + Treatment × Communities with common support (p-value)		0.926			0.645	
Treatment + Treatment × High community stigma (p-value)			0.498			0.529
Control mean	0.0134			0.176		
No. observations	258			258		

Notes: The sample is the community endline sample. The treatment indicator takes 1 if at least one individual in the community is treated. In columns (2) and (5), communities with low and high baseline perceived stigma are those with negative and nonnegative perceived stigma index. In columns (3) and (6), communities with no common support consist of either treated or controlled individuals and communities with common support contain both treated and controlled individuals. Robust standard errors are shown in parentheses. *p<0.1, **p<0.05, ***p<0.01

Figure A1. Timeline

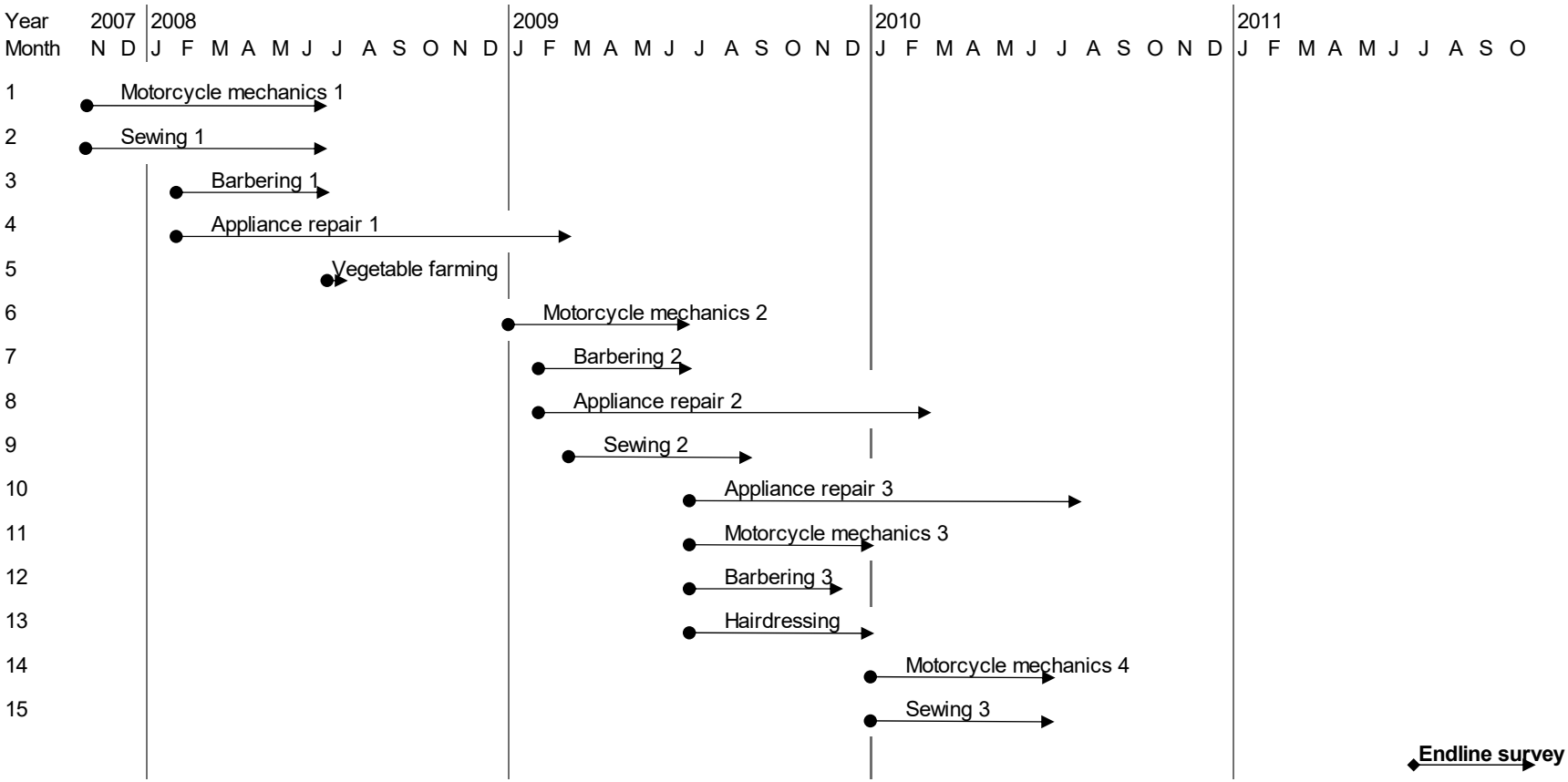
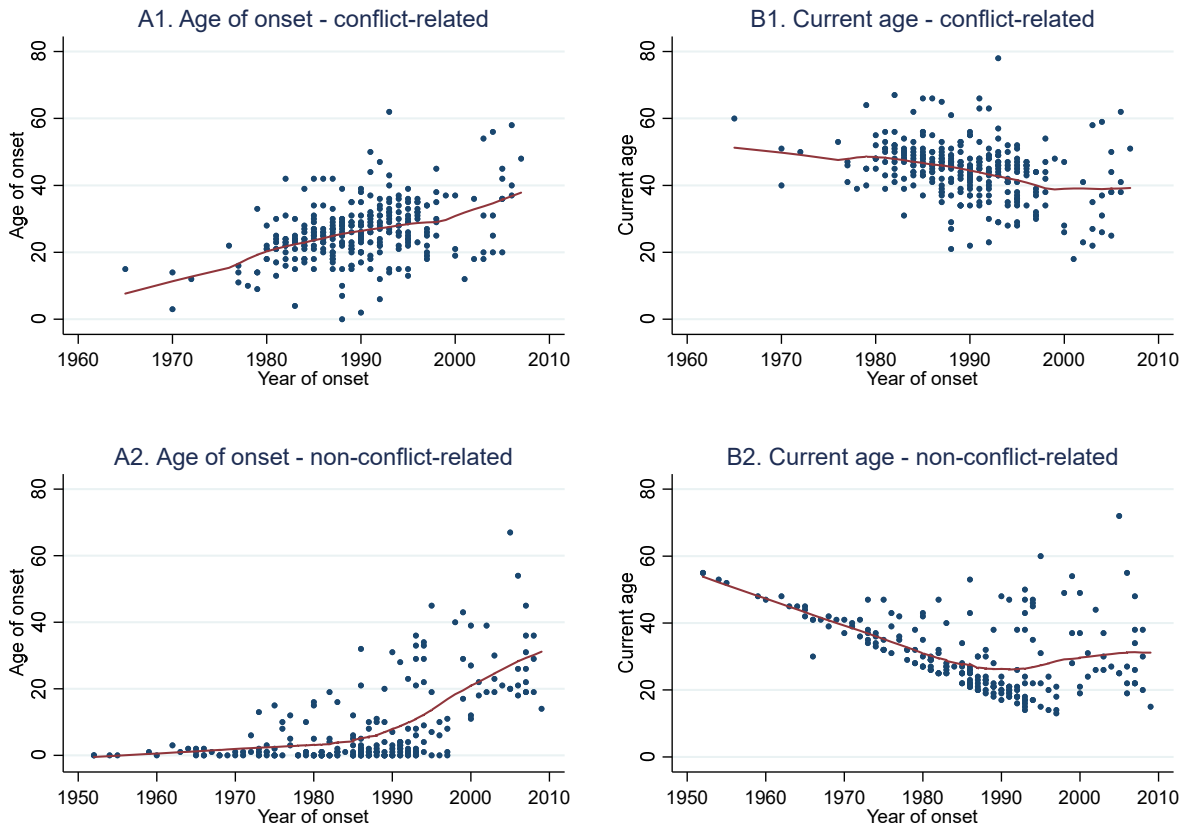
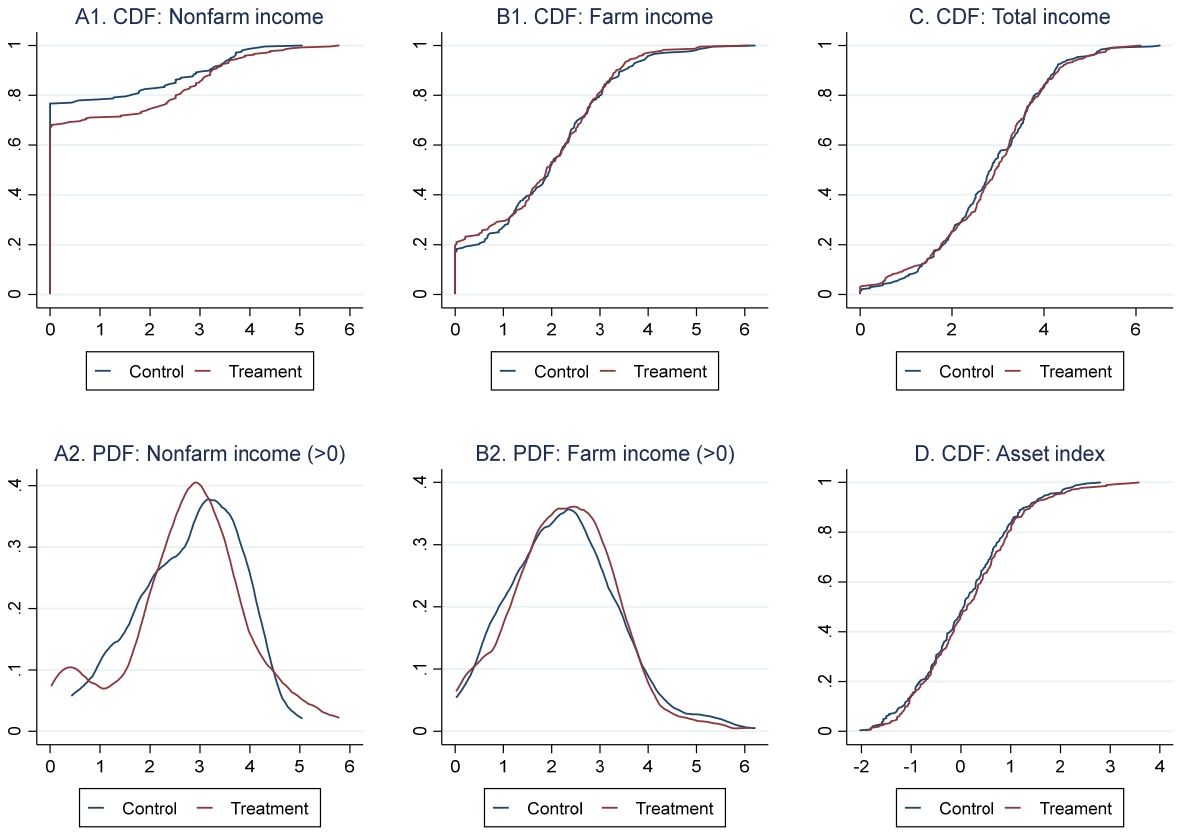


Figure A2. Age and onset of disability



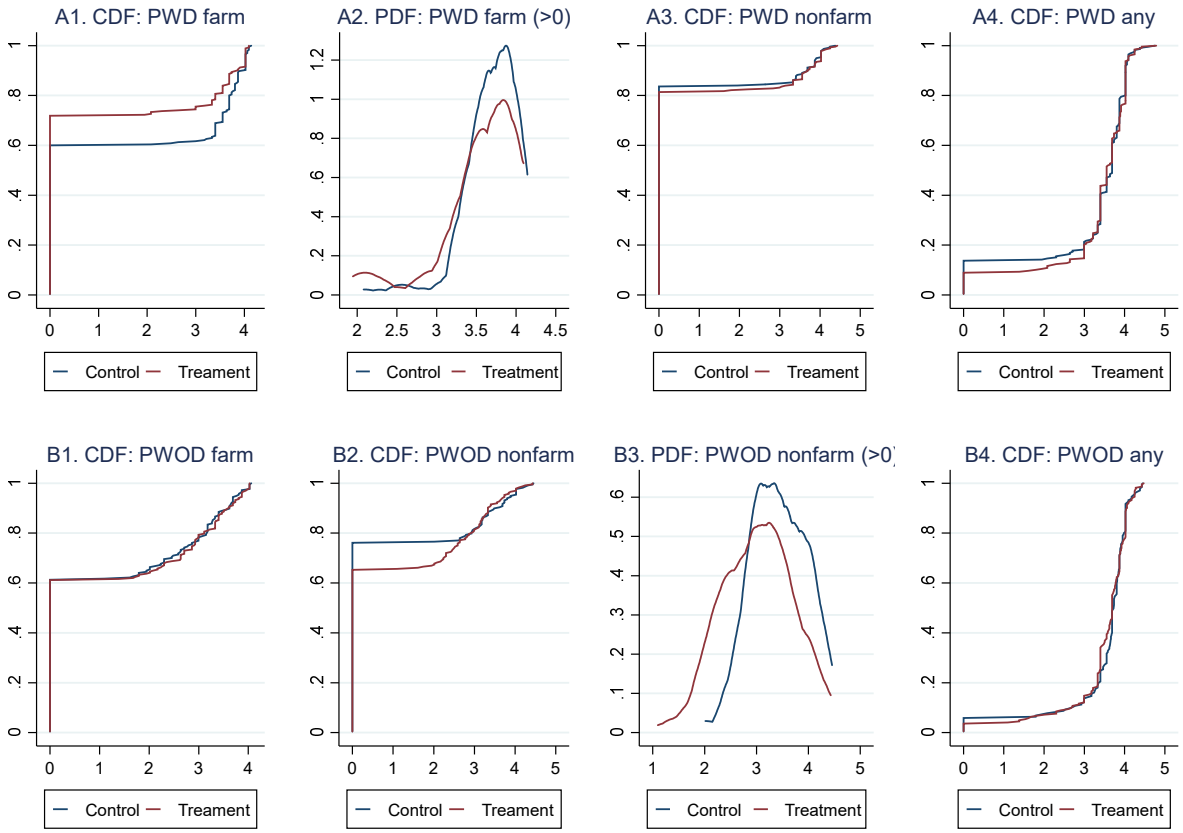
Notes: The sample is the PWD endline sample. Current age is at the baseline. Lines are Lowess smoothers.

Figure A3. Distributions of income and asset



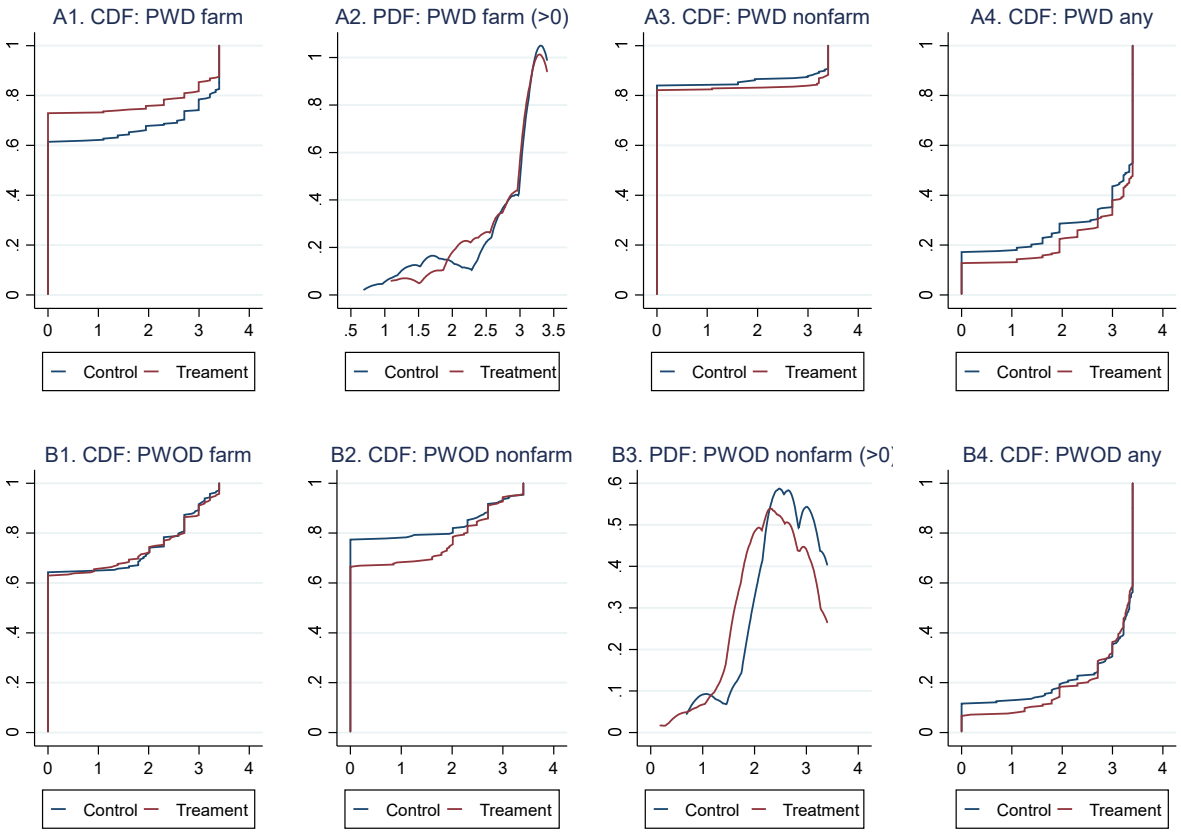
Notes: The sample is the PWD endline sample in panels A1 and B1, the PWD endline sample with positive farm income in panel A2, and the PWD endline sample with positive nonfarm income in panel B2. Farm and nonfarm income is log of monthly household income per capita (2011 USD). The log variable takes 0 if the orginal value is 0.

Figure A4. Distributions of labor supply - hours per week



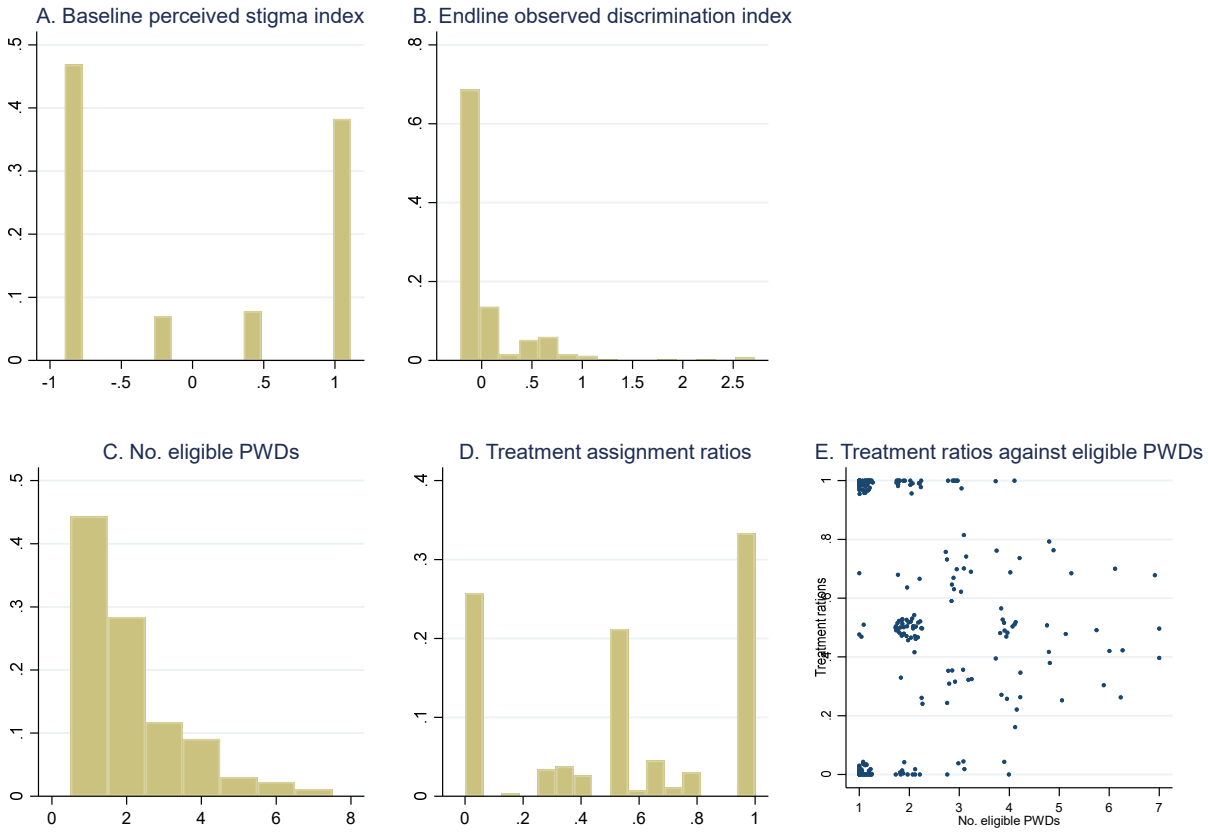
Notes: The sample is the PWD endline sample in panels A1, A3, and A4; the PWD endline sample with positive labor supply in panel A2; the PWD endline sample with at least one PWOD in the household in panel B1, B2, and B4; and the PWD endline sample with at least one PWOD with positive labor supply in panel B3. Labor supply is log of hours worked per week. The log variable takes 0 if the orginal value is 0.

Figure A5. Distributions of labor supply - days per month



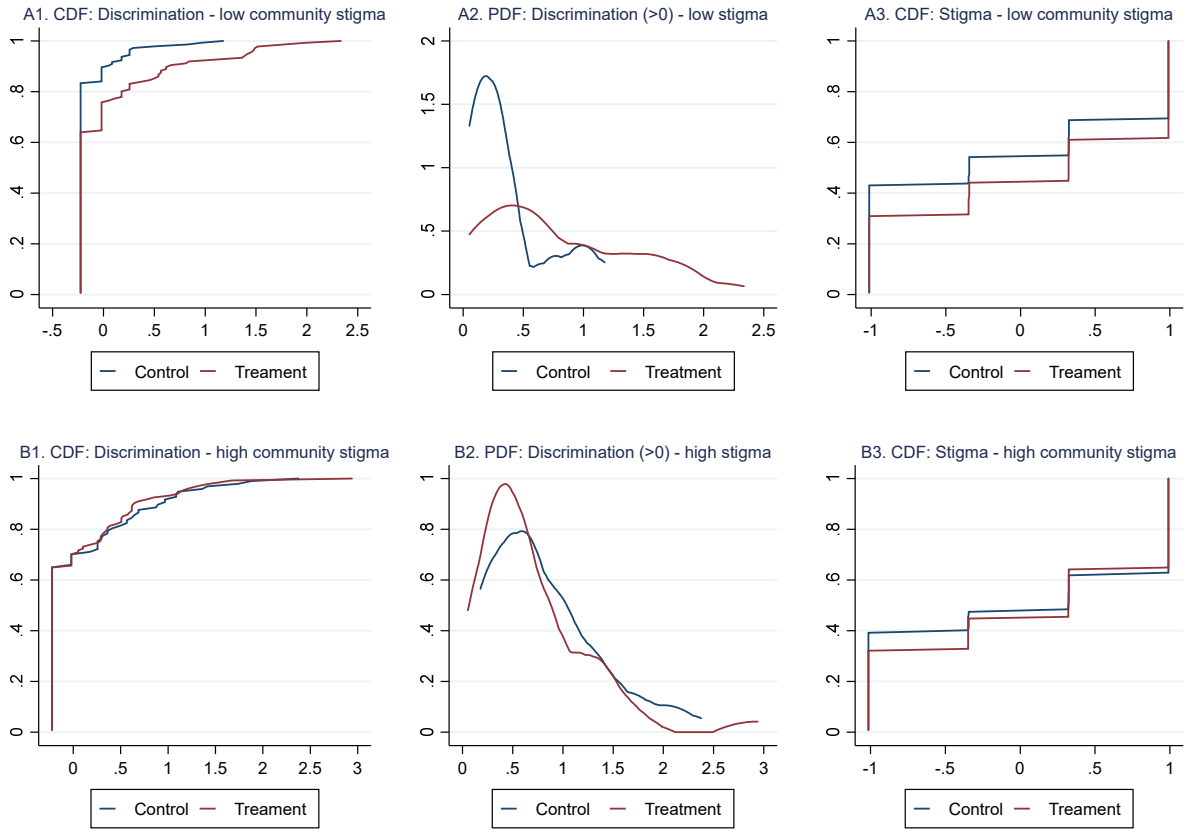
Notes: The sample is the PWD endline sample in panels A1, A3, and A4; the PWD endline sample with positive labor supply in panel A2; the PWD endline sample with at least one PWOD in the household in panel B1, B2, and B4; and the PWD endline sample with at least one PWOD with positive labor supply in panel B3. Labor supply is log of ays worked per month. The log variable takes 0 if the orginal value is 0.

Figure A6. Community stigma, observed discrimination, and common support



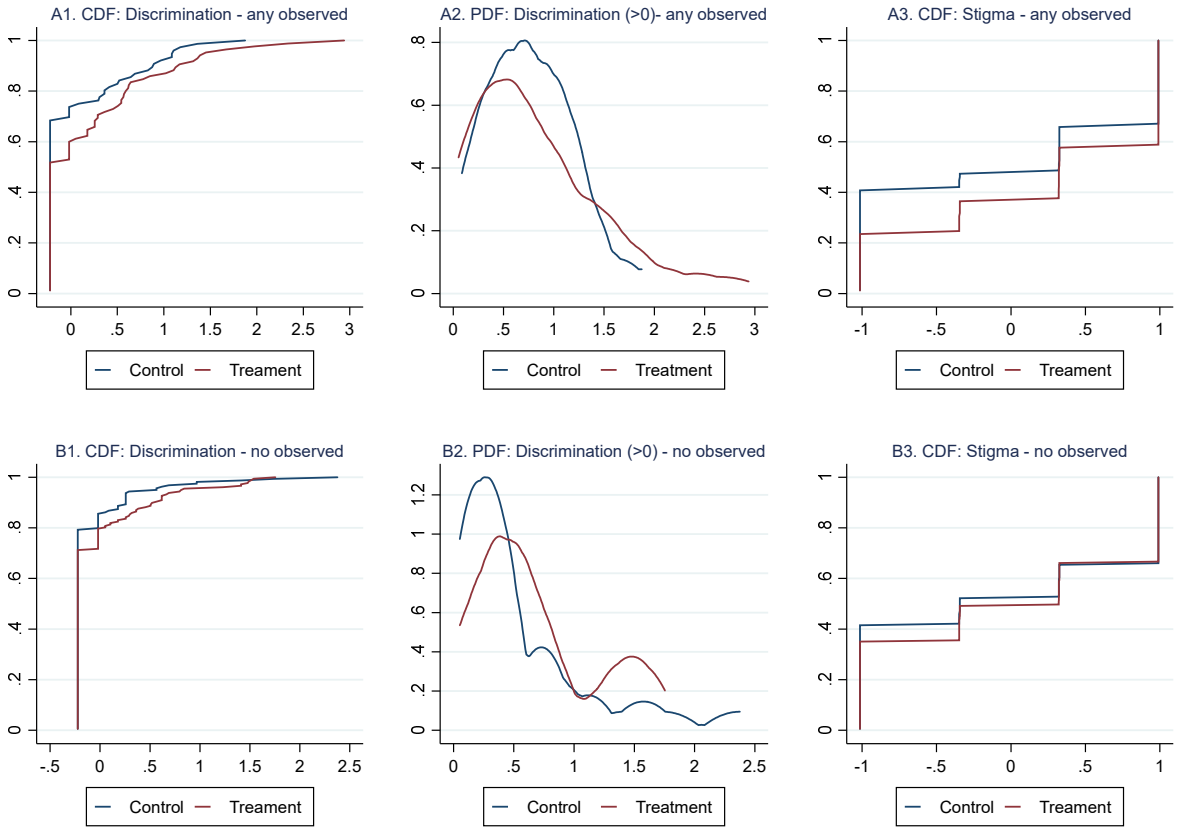
Notes: The sample is communites in the PWD endline sample. Indices are z-score in panels A and B. Fractions are shown in panels A-D. Points are perturbated for exposition in panel E.

Figure A7. Distributions of discrimination and stigma by baseline community stigma



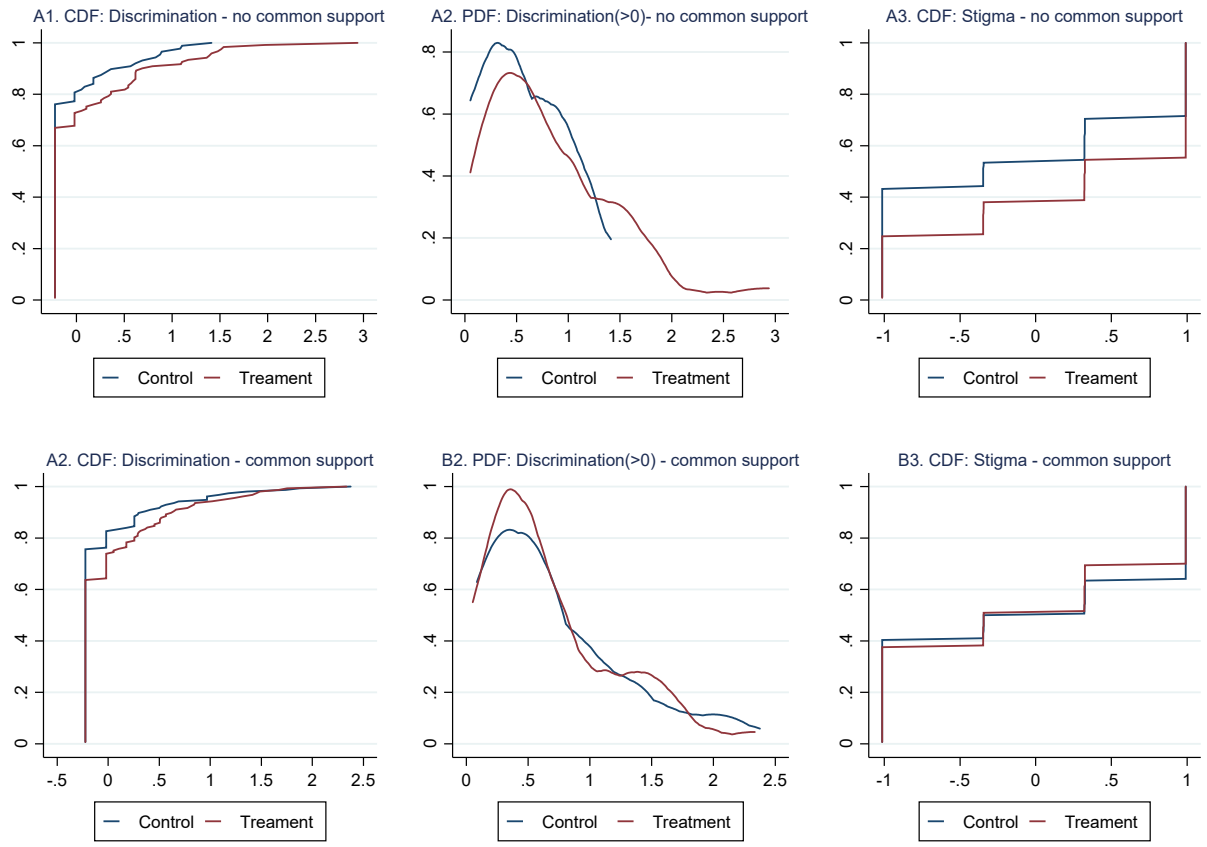
Notes: The sample is the PWD endline sample. Experienced discrimiation indices (z-score) are shown in panels A1, A2, B1, and B2 and internalized stigma indices (z-score) are shown in panels A3 and B3. Communities with low and high baseline perceived stigma are those with negative and nonnegative perceived stigma index.

Figure A8. Distributions of discrimination and stigma by endline observed discrimination



Notes: The sample is the PWD endline sample. Experienced discrimiation indices (z-score) are shown in panels A1, A2, B1, and B2 and internalized stigma indices (z-score) are shown in panels A3 and B3. Communities with no and any endline observed discrimination are those with negative and nonnegative observed discrimination index at the endline.

Figure A9. Distributions of discrimination and stigma by common support



Notes: The sample is the PWD endline sample. Experienced discrimiation indices (z-score) are shown in panels A1, A2, B1, and B2 and internalized stigma indices (z-score) are shown in panels A3 and B3. Communities with no common support consist of either treated or controlled individuals; communities with common support contain both treated and controlled individuals.