

Misperceptions, Promotions, and Turnover: Evidence from Ethiopia

ABSTRACT. High turnover rates are a common issue in manufacturing firms in developing countries. Our pilot study on 201 workers in Hawassa Industrial Park in Ethiopia found that new hires are significantly over-optimistic about job characteristics, especially regarding long-run salaries and likelihood of being promoted, and that over-optimistic priors correlate with workers' decision to remain employed in the industrial park. Qualitative interviews suggest workers react positively to information regarding long-run salaries and promotion likelihood.¹ We propose to implement an information treatment, with particular focus on long-run promotion incentives, and analyze the effect on belief update and turnover for different types of workers. We will sample 2,000 new female job applicants, and randomly provide information of entry-level operators, medium position, and high position. We plan to follow workers in 1 week and 6 months to measure update in perceptions of salaries and promotion, turnover, welfare, productivity, and skills.

1. Relevance to Policy Concerns and JOI's RFP Overview

High turnover rates are common in manufacturing firms in developing countries. In Hawassa Industrial Park in Ethiopia—one of the major government projects of industrialization supervised by the Ethiopian Investment Commission (EIC)—foreign firms provide many formal job opportunities to young female workers since 2016. Although these jobs offer relatively high amenities, worker benefits, and career incentives, administrative data show that 31% of workers quit within the first month. One leading reason of high turnover, the EIC speculates, is that new workers have misperceptions of job characteristics before they apply. Since 2018, EIC has worked with local government to launch an information campaign to potential job seekers. They informed interested workers of what types of jobs are offered, starting salary (750 ETB), work schedule, and benefits. The effect of the current information campaign on turnover, however, seems limited.

One possible reason is that the current information campaign does not address the **misperception of long-run promotion incentives**. We have conducted a pilot study in November – December, 2020 on 201 new hires. We found that new hires are significantly over-optimistic about job characteristics such as salaries and likelihood of being promoted. Preliminary evidence suggests that misperceptions of long-run promotion incentives correlate with workers' long-run plan to stay in the industrial park and short-run turnover. In addition, we recently conducted qualitative interviews with 24 workers, and results revealed that they place a significant weight on long-run salaries and the likelihood of being promoted to higher-level positions. We provided these workers with information about long-run salaries and promotion likelihood to assess their responses. Most workers reported finding the information very useful and some of them already considered changing career plans regarding the industrial park.² In addition, providing promotion incentives can potentially allow firms to retain high-skill workers for longer. We thus plan to launch an information treatment, with particular focus on long-run promotion incentives, to analyze its effect on the beliefs of jobs and turnover decisions for different types of workers.

This proposal speaks to the theme “Supply and matching” in JOI's RFP Overview. In particular, it directly addresses one priority research question “What are the most effective ways to align

¹ The pilot study and the qualitative study are funded by Strandberg Fund and the Center for Effective Global Action.

² One quote from a worker after enumerators provided the information: “I didn't have such information before, but now that I know I have a chance to be promoted, I will try to work hard to get the opportunity.” Another quote from a worker: “Salary after promotion is low. [...] I was planning to stay here for years, but now I will change the plan.”

people’s expectations with the realities of the labor market?” We hope to extend this research question by examining how biased expectations, especially of long-run promotion incentives, affect optimal job search behavior of different types of workers, which potentially helps high-skill workers stay in a good job opportunity and climb up the career ladder.

2. Research Design

Research questions:

- 1) Does an information treatment of promotion incentives help workers update beliefs of jobs in the industrial park?
- 2) Do misperceptions, especially of long-run promotion incentives, affect the turnover decisions for high-skill and low-skill workers?

2.1 Logistics. We will recruit 2,000 new hires in Hawassa Industrial Park from August to October. Most job applicants are young female who live within 60 km around the industrial park. We will thus only recruit female workers between 18 and 24 years old. We will randomly select workers in the grading center of Hawassa Industrial Park, where all the job applicants register and wait for a job assignment. We will conduct a baseline survey within this window, and we have communicated with the grading center and HR managers of firms to make sure that participation in the baseline survey does not affect workers’ job assignment. We will conduct a phone follow-up survey within 1 week, and an in-person follow-up survey after 6 months.

2.2 Implementing partner. Node Consult is a private survey company in Ethiopia that has been involved in multiple research projects in industrial parks. We have cooperated in the previous pilot study and qualitative survey. In this full study, we will hire 20 enumerators over a course of three months in the baseline survey, and another three months in the follow-up in-person survey.

2.3 Treatment design. We will provide benchmark salary and promotion information from a survey on current workers by EIC.³ We plan to implement the following cross-randomization design, stratified by marital status, education level, and age quartiles:

Table 1. Randomization Design

500 workers: Control	250 workers: T2(a)	250 workers: T2(b)
500 workers: T1	250 workers: T1 + T2(a)	250 workers: T1 + T2(b)

Treatment 1 (T1): We provide workers with salary of entry-level operators in the first month (750 ETB), average salary of entry-level operators after 6 months (1,082 ETB), and likelihood of being assigned as an entry-level operator at the beginning (90 out of 100 workers).⁴

³ We have obtained summary statistics from the director of EIC. EIC has surveyed 1,374 current workers from October 2020 to February 2021, and collected their current position, starting position, current salary and starting salary. We will focus on 429 workers who stayed for at least 6 months but no more than 2 years as a relevant benchmark for new hires. There is no other aggregate administrative data of workers’ salaries and positions available.

⁴ The main reason of the wage increase after 6 months for entry-level operators is that firms start to pay incentives and bonuses after 6 months. Primary analysis of the EIC current workers survey show that workers in the same

Treatment 2 (T2): We provide workers with salary and promotion likelihood after 6 months, to the medium position (T2(a)) or to the high position (T2(b)).

- 1) T2(a): We provide workers with salary in the medium position (1,346 ETB), salary premium (264 ETB more than entry-level operators), and likelihood of being promoted to the medium position from entry-level after 6 months and before 2 years (18 out of 100)
- 2) T2(b): We provide workers with salary in the high position (2,286 ETB), salary premium (1,204 ETB more than entry-level operators), and likelihood of being promoted to the high position from entry-level after 6 months and before 2 years (5 out of 100)

Comparing the effect of T1 and T2, we can show whether workers respond more to information of promotion incentives compared to that of entry-level operators when making turnover decisions. Comparing the effect of T2(a) and T2(b), we can show whether steeper promotion incentive scheme has a differential effect. A concern of estimation is that treated workers might spread the information to control workers, thus no effect detected potentially. We will thus implement the information treatment with varied intensity (10%, 50%, 90%) on different days, assuming that workers hired on different days have much lower chance to communicate with each other.

2.4 Outcomes. We observe worker's turnover through administrative data, including whether workers exit voluntarily or are fired by firms. In the baseline survey, we plan to measure (1) workers' misperceptions (detailed below), (2) career plans, (3) welfare indicators, and (4) types (including education, experience, general skills, specific garment skills). In the phone follow-up survey, we plan to update workers' perceptions on job aspects and collect their interaction with co-workers and managers in the firm. In the in-person follow-up, we plan to update workers' employment status, collect workers' paychecks to measure productivity on the job, and conduct lab games to measure workers' general skills, specific garment skills, and work attitude.

2.5 Measure of misperceptions. We will elicit workers' priors on the following job characteristics, for jobs in the industrial park and outside options respectively. We will then benchmark their answers to the information from the survey by EIC and compute misperception of each job aspect.

- 1) Work schedule: Work hours per day, days of work, extra hours, and night shifts per week
- 2) Work benefit: Provision of free transportation, free lunch, and attendance bonus
- 3) Salary for entry-level operators: In the first month and after 6 months
- 4) Promotion to medium position (team leader or quality controller): Likelihood, salary
- 5) Promotion to high position (supervisor): Likelihood, salary

2.6 Evaluation design. For research question (1), we plan to use the following specification:

$$Y_{ijt_1}^x = \alpha_j + \alpha_{t_0} + \beta_1^x T1_i + \beta_{2a}^x T2a_i + \beta_{2b}^x T2b_i + \gamma Y_{ijt_0}^x + \epsilon_{ijt},$$

where $Y_{ijt_1}^x$ is the misperception for worker i at firm j of job aspect x in the follow-up survey, controlling for initial misperception at baseline $Y_{ijt_0}^x$. $T1_i$, $T2a_i$, $T2b_i$ refer to different treatment status. α_j is the initial firm fixed effect. α_{t_0} is the hire day fixed effect. Standard error clusters two-way at initial firm and hire day level to account for the possibility that workers within the same

position get similar incentives or bonuses; the main explanatory variable of wage difference is career position. Tenure in the job does not explain much of the wage difference.

firm or hired at the same day share the same information set (spillover). Coefficients β_1^x , β_{2a}^x , and β_{2b}^x show the effect of information treatment (of entry-level operators, of promotion to the medium position, or of promotion to the high position) on workers' belief update on job aspect x .

For research question (2), we plan to use the following reduced-form specification:

$$1(Quit_{ijt}) = \alpha_j + \alpha_{t_0} + \sum_{z=1,2a,2b} \beta_z^x Tz_i \times f(Y_{ijt_0}^x) + \gamma f(Y_{ijt_0}^x) + \epsilon_{ijt},$$

where $1(Quit_{ijt})$ is whether workers i initially assigned to firm j has already left the industrial park at time t . The main independent variables, $Tz_i \times f(Y_{ijt_0}^x)$, are interactions of treatment status and initial misperceptions (with potentially non-linear or asymmetric functional form f) on job aspect x . Coefficients β_z^x thus show whether workers with different levels of misperceptions on a particular job aspect x , after being provided with information treatment z , are less or more likely to leave the industrial park compared to non-treated workers with the same level of misperceptions. This specification provides a causal estimate of the effect of misperceptions on turnover.

With the cross-randomization design, we can extend the specification to detect any additional effect of interaction of T1 and T2. We will conduct heterogeneity analysis in terms of types, considering high-skill workers might react to promotion incentives more strongly. Heterogeneity analysis by types can thus provide additional evidence on what type of promotion scheme best retains high-skill or low-skill job applicants, even if the industrial park pays relatively low salary to entry-level operators at the beginning.

2.7 Power calculation. We present calculations for the statistical power for detecting differences for our treatments relative to the control group. For continuous outcomes (such as priors over salaries), we will focus on specification (1) and a normalized outcome Y with standard deviation 1. For discrete outcomes (such as quitting), we conduct power calculations for a Pearson Chi-squared test for difference between independent proportions. We attached the results below comparing control group ($N_0 = 500$) and different sizes of treatment group ($N_1 = 500, 250$).

Figure 1a. Power calculations (continuous outcomes)

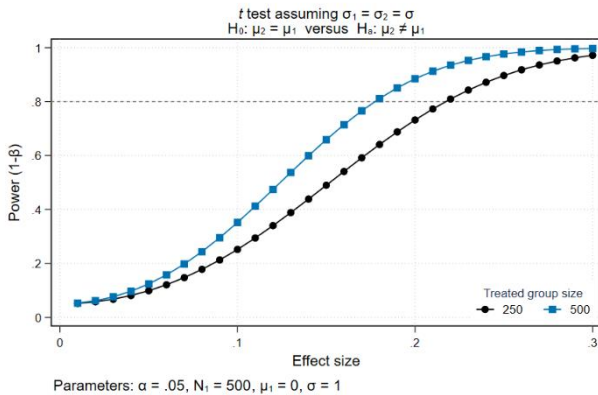
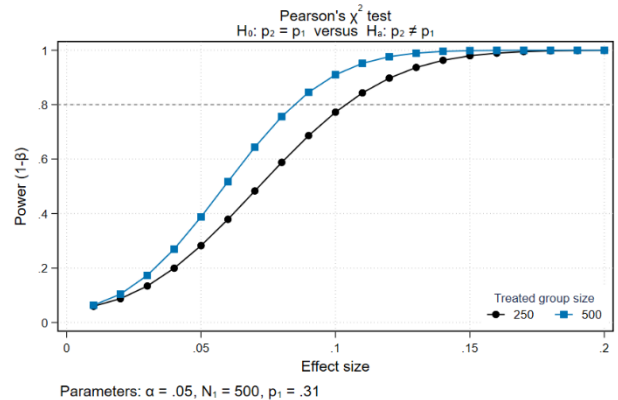


Figure 1b. Power calculation (discrete outcomes)



These calculations indicate that the proposed sample size allows us to detect at least .177 s.d. difference in the continuous outcomes at the significance level of 95% with power 80%. Detecting differences between the smallest treatment groups (e.g., T2(a) and T2(b)) with $N_1 = N_0 = 250$ allows us to detect at least .25 s.d. difference in the outcome at the significance level of 95% with

power 80%. For the discrete outcome such as quitting within a month, assuming a 31% probability of quitting within the first month in the control group (as administrative data indicates), we can detect a difference in proportions of 8 percentage points with $N_1 = N_0 = 500$, 12 percentage points with $N_1 = N_0 = 250$ at the significance level of 95% with power 80%.

3. Academic Contribution

A growing body of literature has identified high matching frictions in low-income countries (Blattman and Dercon 2018, Banerjee and Sequeira 2020), specifically showing high turnover rates in the manufacturing sector. The underlying mechanism of high turnover, however, has not been subject to rigorous empirical scrutiny. This project provides a new angle, misperceptions of salary and promotion incentives, to understand whether and to what extent it leads to matching frictions. Second, this project speaks to a traditional strand of literature of promotion as an incentive device to avoid moral hazard (Lazear and Rosen 1981, Prendergast 1993, Waldman and Zax 2020). We contribute to this literature by looking at whether promotion incentives help retain workers in the first place, which is more likely to be an urgent issue in low-income countries where new workers do not develop skills inside firms because of premature leaving.

4. Additional Comments

4.1 Gender analysis. Although our estimation specifications do not involve gender, we exclusively focus on female workers in garment industry in a low-income country where the majority work in agriculture sector and manufacturing sector starts only recently to grow at a rapid speed. Moreover, we measure gender-specific outcomes in both baseline survey and follow-up surveys, including whether workers plan to marry within 5 years and opinions on gender-relevant issues (e.g., “To what extent do you agree: It is a man’s job to earn money and a women’s job to take care of home and family”). Our analysis thus helps policy makers understand whether misperceptions have prevented female workers from staying in a better job and, as a result, engaging in labor market.

4.2 Scale-up potential. The information treatment we provide here can be easily implemented to a larger scale. EIC has already stated its interest in collaborating and adding promotion information in its current information campaign at the industrial park level or community level. We are also planning to conduct a cost effectiveness analysis of the information treatment. On workers, we will collect welfare outcomes and productivity in the follow-up surveys. On firms, we will first survey human resources managers of each firms to collect cost of hiring new workers. We will then calculate the aggregate productivity gain as a result of information treatment. We will also collect firm-level trade data from EIC to provide suggestive analysis of the effect on profitability.

4.3 Transparency. We plan to make anonymized data available for replication after we publish our study. We will soon register the trial with the AEA RCT registry, submit a pre-analysis plan and follow the existing guideline to ensure reproducibility.

4.4 Project viability. There was a concern before whether COVID-19 would affect the operation of the industrial park. Currently, all 22 firms have recovered mostly from COVID-19. There is also some ongoing political turbulence in Ethiopia, mostly in the most northern region. Hawassa Industrial Park is located in the southern part of the country, which is considered as a relatively safe region after Sidama autonomous region was approved in 2019. EIC and the survey company expect very little chance of any potential conflict in the region.