Uganda Skills and Jobs Analysis
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Summary Recommendations

- Improve early job placement to improve first-time job matches to alleviate the long-run effect of mismatches.
- Improve job search assistance and create better quality jobs for young workers.
- Provide key skills training while “on-the-job” to improve job matches, especially for younger workers.
- Consider how to address gender specific labor market issues.

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1. Motivation
For this report, we employ the Manpower Survey Uganda (MAPU) 2016/2017 and the formal employer-employee linked dataset to understand a number of key dimensions of the Ugandan labor market.

First, jobs and the quality of the jobs is one key consideration. Here, we develop a multi-dimensional measure of job quality, in addition to a standard earnings analysis, which looks at employee earning adjusted for hours worked.

Second, we look at mismatches in the labor market in terms of skills and education, and look at answers to questions from the employee and employer section of the MAPU to understand the extent of mismatches in the Ugandan labor market.

Third, we identify some potential solutions for these mismatches after discussing job seeking behavior. We also analyze training and skills in more depth, in addition to the regulatory environment, and the various dimensions of job quality and formality.

Data analysis focuses on the formal employee/employer dataset: 83 percent of formal employees are in the services sector in Uganda, 14 percent in the industry sector, and only 1 percent in agriculture. The findings of this report mainly relate to the services and industry sector. The employees are also predominantly younger: 50 percent of the sample is below 30 years of age (Figure 1), and 60 percent of employees have been in their current job for less than six years.

Figure 1
2. **Background**

   i. **How to Measure Jobs and Labor Market outcomes**
      Following the labor market literature (Lemieux 2006), we look at employee earnings, adjusted for hours worked, based on an hourly log earnings measure. To assess the job quality, there is no clear labor market convention, so we develop our own multi-dimensional measuring method, as discussed below.

   ii. **Job Quality Dimensions**
      The multi-dimensional job quality indicator covers four distinct dimensions: (i) Income and Under/Over-Employment, (ii) Job Benefits, (iii) Security/Stability, and (iv) Satisfaction. Using the MAPU survey, we coded specific responses to specific subcategories are coded.

      The income and under/over-employment dimension (i) reflects whether the employee has above mean hourly earnings or not. The income measure is adjusted by hours worked and thereby indirectly takes account of potential under or over-employment.

      The job quality along the job benefit dimension (ii) reflects whether the employee is entitled to annual leave days or not and also whether the employer contributes to the social security fund for the employee or not.

      The security and stability dimension (iii) reflects whether the employee has a written contract or whether the employee has a permanent job.

      The job satisfaction dimension (iv) is harder to measure as the MAPU survey does not have a direct job satisfaction question. We employ instead an indirect measure of satisfaction: whether the employee is looking for another job or not.
All the responses to the questions are dummy responses (zero or one) and constitute components of our job quality indicator. In our job quality indicator, “zero” indicates that the employee does not have any of those dimensions and job quality is lowest. “One” indicates that the employee has all dimensions and therefore job quality is highest. ¹

3. The Labor Market

With the MAPU formal employee-employer data, we analyze the Ugandan labor market along several key dimensions. We look at how personal characteristics, age and gender, affect labor market outcomes. Then we also look at how experience and education determine labor market outcomes.

Where work is located, and other factors, may also matter beyond these individual characteristics, and so we look at firm size, sectors, and also geographical location.

Overall, the Ugandan labor market seems to follow patterns we expect to see based on the country context:

- Younger workers earn less, and have lower job quality.
- A gender earnings gap exists (Blau and Kahn 2017; Duflo 2012).
- Experience and education translate into higher earnings and better jobs.
- Larger firms pay higher earnings and offer better job benefits (Galiani and Weinschelbaum 2012).
- The service sector has a more compressed earnings structure and higher quality jobs.
- Jobs in urban areas pay higher earnings than in rural areas (Moretti 2012).

Young workers earn less than older workers. A large proportion of employee are below 24 years old (27 percent). Younger workers earn significantly less than older cohorts in terms of hourly earnings (Figure 2). On average they have lower earnings compared to their older counterparts. Most younger workers earn less than the average remunerated older worker.

¹ For the technical details, see Appendix.
Young women earn significantly less than others. Gender earnings gaps exist across the entire population, and all age cohorts. However, younger women earn significantly less than men. The earnings gap is almost twice the size than that for the entire population and the older cohorts (above 24 years) (Figure 3).

Experience matters, especially for younger workers. More experience translates into higher earnings across the board (the whole population, younger employees, females, and males). For younger workers, having slightly more experience translates into the highest earnings gaps. Each additional year does make a substantial difference for workers below 24, while those additional years do not seem to make such a large difference in terms of earnings later. The earnings premium of the initial years of experience is larger than for the entire population or than for other individual employee characteristics (Figure 4).

A bigger question is where does this earnings premium occur in the earnings distribution? Looking at the different points in the earnings distribution, low (0.25), median (0.5) or high (0.75)
earners, young employees gain across the board from having more experience/being older. In particular, the median earnings gain the most (Figure 5).

**Figure 4**

Experience Earnings Gap, weighted

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<th>Female</th>
<th>Male</th>
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</tbody>
</table>

**Figure 5**

Experience, weighted

- All
- Youth
- Above 24 years
- Female
- Male

- 25th
- 50th
- 75th
Younger workers earn more in the services sector. Where do young workers earn a premium? The service sector, compared to agriculture and industry, seems to offer a larger earnings premium (Figure 6). This earnings premium does not exist for older cohorts and seems specifically relevant for younger workers. The results need to be viewed also in the light that a large proportion of the sample is in the service sector, even after applying individual survey weights.

**Figure 6**

![Services Earnings Gap, weighted](image)

Younger workers are in lower quality jobs than older cohorts. Younger employees seem to earn significantly less than older cohorts. Are these jobs also of lower quality on other dimensions? Figure 7 shows that younger workers have lower quality jobs than older counterparts. Their jobs offer lower wages, fewer benefits, less stability, and lower satisfaction. Close to 70 percent (68%) of younger workers have a job quality indicator between 0 and 0.3 for their current job, which implies that they have very few of the job quality dimensions that we measure. This is contrary to the situation for the older cohort: 70 percent of older employees have a job quality indicator between 0.5 to 1. Younger employees are mostly in low quality job and older employees are mostly in high quality jobs.
Higher education translates into higher earnings. As one would expect, higher earnings accrue with higher levels of education (Figure 8). Below secondary education has the lowest mean earnings and the earnings distribution, far less than the other education levels. Completed secondary education and some tertiary education not completed gives higher earnings to employees than lower education. However, the highest level of education, completed tertiary education, translates into the highest mean earnings, and many employees with tertiary education earn more than the rest of the population.

The earnings gap for tertiary education is high across population segments for both females and males. However, the tertiary earnings premium is smallest for younger workers. This could be due to mismatches between job and education level, or it could also be due to the fact that younger employees, below 24 years of age, are yet to complete all education and gain experience (Figure 9).
**Highest levels of education potentially result in the highest earnings and highest job quality.** Completing tertiary education can potentially make it possible for the employee to reach the highest possible earnings percentiles of the earnings distribution. Being tertiary educated can lead to the highest payoffs at highest earnings distribution across the entire population, for younger workers, older cohorts, regardless of gender (Figure 10).

Do the highly educated also have access to higher quality jobs? An equally clear pattern emerges, similar to the earnings distribution by education levels (Figure 11); Tertiary educated employees are mostly in jobs with high quality characteristics, above 0.5 on the job quality indicator scale. While no education/primary educated employees are mostly in much lower quality jobs.

**Figure 10**
**Firm size is important for employee outcomes.** Are employer characteristics important for employee labor market outcomes? Where do high earnings and better job quality occur?

Larger firms pay higher earnings, and potential to reach the highest earnings are in jobs with larger firms (Figure 12). While average earnings do not differ substantially with firm size, more employees have higher earnings in larger firms than in micro/small and medium-sized firms. The earnings distribution is wider for larger firms.

The higher quality jobs are also within larger firms (Figure 13). Most employees in larger firms have a job quality indicator of 0.7 to 1, which indicates that they have almost all the amenities on all the job quality dimension. This could be also due to the fact that larger firms could be more compliant to regulations and labor laws as their size makes them more detectable by enforcement (Galiani and Weinschelbaum 2012).
Figure 12

Firm Size

Figure 13

Job Quality Indicator: Firm Size
Geography and employer sector affect earnings and job quality. Similar to firm size, the sector and geographical location of employers are important for labor market outcomes for employees. Earnings and job quality are higher in Kampala compared to other areas, which is in line with urban earnings trends in other parts of the world (Moretti 2012). The service sector has a more compressed earnings distribution around the mean than industry and agriculture. When comparing job quality in services and industry (Figure 14), services sector jobs are higher quality than in the industry sector; most service jobs range of 0.5 to 0.7 on the job quality indicator.

Figure 14
4. Mismatches

Job Matches in the Labor Market: After establishing a few key characteristics of the Ugandan labor market and labor market outcomes (earning and job quality), this section looks at the job matches in detail.

The main questions of interest here are:

1. How are employees matched according to their education and jobs?
2. What about first job matches and current job matches?
3. Why do potential mismatches occur? Do employees’ characteristics explain mismatches, or is there a problem with the job search or matching process?

In our analysis of the MAPU survey, we employ the following survey questions to determine job matches:

- “Did your first job match your education?” The response “Yes, matched” is then coded as first job match while the response “No” is then coded as a first job mismatch.

- “Does your current job match your official education/training (certificate/degree)?” The response “Yes” is then coded as current job match while any response “No” (whether other job than qualification, lower level or higher level) is coded as a current job mismatch.

Mismatch in first jobs have long-run earnings and job quality consequences. Current earnings for employees that had a first job-education mismatch are substantially lower at the mean and across the board than employees which report a job-education match for their first job (Figure 15). Long-run earnings consequences seem to exist for employees that did not succeed in getting a first job-education match. In terms of job quality, the first job-education match leads to current higher job quality on average than a first job-mismatch. Again, a long-run penalty for a first job mismatch exist for employees (Figure 16).
Figure 15

First Job-Education Match

Figure 16

Job Quality Indicator:
First Job Education Match

Percent

0  0.2  0.3  0.5  0.7  0.8  1

Job Quality

No  Yes
Mismatches in a current job also penalize earnings and job quality. The results for first job-education matches and mismatches in terms of earnings and job quality and their long-run consequences are mirrored in labor market outcomes of current job-education matches and mismatches. Employees reporting a current job-education match have higher average earnings, and across the board potentially higher earnings than employees that experience a current job-education mismatch (Figure 17). In terms of job quality, current job holders that report a job-education mismatch have lower quality jobs than employees with current job-education matches (Figure 18). Figure 17 and Figure 18 for the current job-education match labor market outcomes look almost identical as for the first job-education match outcomes (Figure 15 and Figure 16).

Figure 17
Who are the mismatched employees? Thirty percent of employees report a first job-education mismatch. Time seems to sort out some of these mismatches; only 12 percent of employees say that they have a current job-education mismatch. A closer look at what determines a job-education match for both the first and current job shows some striking results along individual characteristics and job characteristics (Figure 19 and Figure 20).

In terms of experience, there seems to be no significant difference between first job match or first job mismatch. For current job match, experience seems somewhat less likely to lead to a job mismatch.

There seems to be a gender dimension to mismatches: females are more likely to be mismatched in their first and their current job.

Being married reduces the chances of mismatch. Some possible explanations for this finding include: as one is married and possibly has the spousal income it might be possible for the job seeker to hold out a little longer in terms of job search or changing jobs to find a better match. Assortative matching (that is, meeting your spouse through work/education) and network effects (that is, the spouse could help through contacts finding a better matched job) could also lead to better job matches for married individuals.

Having more education increases the likelihood of a job-education mismatch. Secondary educated employees were more mismatched than below secondary educated employees; while tertiary educated employees were more likely to be mismatched than secondary educated workers.
In terms of sectors, having employment in the services makes increases the likelihood of having a match between job-education levels.

Figure 19

Figure 20
Employers do not share the opinion on job-education mismatches, but data may be an issue. We looked at employer responses in the MAPU to the question: “How many permanent/temporary/elementary employees do not have required qualification?” to assess the demand side of the labor market in terms of job-education matches. However, most employers (96 percent) report that they have zero employees in this category. Employers do not seem to perceive a qualification-job mismatch, while employees report mismatches in terms of skill and education qualification. One of the explanations could be that this is partly due to data quality of that particular question.

Still, employees should be concerned as a link between firm growth and mismatches seems to exist. Shrinking and stagnant firms have a higher percentage of the total mismatched employees (65%) in their current jobs than growing firms (Figure 21). For first job mismatches, 60 percent of employees are in shrinking and stagnant firms (Figure 22). Firm performance and employee mismatches are therefore correlated and possibly even causally related.

Figure 21
**What are some of the driving forces for those mismatches?** Given that the sample consists of relatively young employees in specific sectors, looking at their characteristics and job search behaviors for might help to explain mismatches and point to potential solutions. Nearly 50 percent of employees are in their first job (49 percent). Having more experience, a function of being older, makes it less likely to be in the first job. Being more educated makes it also less likely to be in the first job. Working in the service sector makes it less likely to be in the first job. Again, a striking gender component is present: being female makes it significantly more likely to be in the first job (Figure 23).

**How long does the job search take?** Almost 50 percent find their job immediately and 70 percent find their first job within one year (Figure 24). First-time job seekers do not search for a long time and settle on their job almost immediately. This could explain some part of the mismatches as job seekers settle for jobs that may not match their education qualifications. One possible explanation for mismatches, therefore, is finding the wrong first job too quickly.
Features of current jobs: short tenure for most employees, but longer tenure improves job quality.

Job-education mismatches and matches are only one feature of the jobs. Short job searches seem to be another feature of the labor market. What about the tenure in a job? Do people change jobs frequently?

A large share of employees report being in a professional occupation or work as service and sales workers or managers or technicians (Figure 25). A third of employees have been in their jobs 0 to 2 years (32 percent), and over half (54 percent) have been in their current job between 0 and 4 years (Figure 26). This seems to be related to job quality (Figure 27): looking at job quality and tenure, the lowest job quality is for tenure between 0 to 2 years, but job quality seems to increase with longer tenure.
Figure 25

Current Occupation

- Professionals
- Service and sales workers
- Managers
- Technicians and associate professionals
- Clerical support workers
- Elementary occupations
- Craft and related trades workers
- Plant and machine operators, assemblers

Figure 26

Tenure at Current Job

Figure 27
5. Possible Solutions to Mismatches in the Labor Market

As mismatches have long-run effects on earnings and job quality of employees, a number of possible solutions to mismatches might improve labor market outcome for workers, in particular the young and women.

We look at three possible mismatch solutions in turn:

(1) **Mismatch Solution 1: Job Seeking**.
(2) **Mismatch Solution 2: On-the-Job Match Improvement**.
(3) **Mismatch Solution 3: Regulatory Environment**.

**Mismatch Solution 1: Job seeking** looks at job search behavior more closely. As mentioned, first job seekers spend little time looking for matches and settle on a job very quickly. A large question is whether after being in a job, employees continue to search and improve their matches from their current job.

**Mismatch Solution 2: On-the-Job Match Improvement** considers on-the-job improvements. Current employees report mismatches in terms of jobs and education. An analysis of skills and possible training needs to close the perceived gap in terms of matches might help improve current labor market situations.

**Mismatch Solution 3: Regulatory Environment** seeks to understand job quality and benefits over various job dimensions. Perhaps creating better jobs or changing aspects of the environment in which these jobs exist on the labor demand side might change conditions for mismatched employees, or for firms with many mismatched employees.

5.1 Mismatch Solution 1 Job Seeking

Do employees themselves seek to improve matches in their current jobs? About 20 percent of employees are looking for a job. Do employees that are mismatched look to improve their matches? Employees with a current job-education mismatch seem to be more motivated to look for another job: 28 percent of current mismatched employees are job seekers, while only 19.5 percent of current matched employees are job seekers (close to the overall job seeker percentage of the sample). On-the-job training does not seem to motivate job search: about 20 percent of employees receiving training and employees not receiving training are job seekers.

What are the general characteristics of job seekers? More highly educated, specifically tertiary educated, are likelier to search for a new job. Marital status matters for job search, with the married/separated/divorced/widowed less likely to search for a job than single employees. Similarly, older and more experienced employees are less likely to search for new job (Figure 28)
Aspirations: Better work conditions, salary, benefits, and professional occupations are main motivators for job seekers.

What are the reasons for job seekers to search and be willing to move jobs? Is this related to mismatches? Is it related to job quality and earnings?

Employees response to the question: “Why are you willing to move?” points overwhelming to better salaries and better benefits (83 percent), which relates to our measures of labor market outcomes (earnings and job quality) (Figure 29).

What occupations do employees target? Employees focus on professional occupations, technicians and associate professionals, service and sales workers, and manager positions (Figure 30), which seem to be similar to the main current occupations that employees report.

Overall, it seems being in a job mismatch is a strong motivator for job search as job seekers aspire to improve job quality and earnings.
5.2 Mismatch Solution 2: *On-the-Job Match Improvement*

While job seekers may try to improve their labor market outcomes in terms of earnings, benefits, and overall job quality, and also seek to change perceived mismatches between job-education, there might also be on-the-job mismatch solutions.

Specific skills may be needed to improve current job performance and training may improve skill-job mismatches and job-education mismatches. In this section, we analyze employee responses on skills and training.
Higher earnings, better quality jobs: more skills are needed for job performance.

Employee responses of “Yes” or “No” to the question: “Do you need any specific skills to improve your performance at your current job?” were coded and then analyzed in terms of their labor market outcomes, earnings, and job quality.

Employees that report a specific skill is need to improve their performance at their current job tend to have somewhat higher mean earnings, and somewhat slightly higher earnings overall, compared to employees that do not report that specific skill need (Figure 31). Moreover, employees that report a specific skill need tend to be already in better quality jobs (Figure 32). These results are largely driven by the service sector, where employees enjoy higher mean earnings when reporting specific skill need for their job performance.

Figure 31
More elementary skills and more advanced professional and managerial skills are needed. An analysis of specific skills needs in response to the employee’s answer to the question: “In which area do you need specific skills?” showed the need for specific areas of improvement. On one hand, one-third of the sample (30 percent) reported needing professional skills, with the second highest group (24 percent) reporting needing technician and associate professional skills. Higher-end professional skills, such as managerial skills, seem to be needed by almost one-fifth of respondents (19 percent). Lower-skill needs in elementary occupation are also reported (12 percent). While these areas are broad, they may also be driven by the particular occupations that people are in (Figure 33).

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2 The figures report occupational categories according to ISCO1. Here we use the response interchangeably with skills.
Occupational skills examined more closely.\(^3\)

Looking at the specific skills in detail, four key skill needs areas emerge:

(i) administrative and business skills.
(ii) Legal, social, cultural skill.
(iii) Science and engineering skills.
(iv) Information and communications technology (ICT) skills.

Administrative and business skills are reported to be needed by managers (35 percent), professionals (47 percent), and technicians and associate professionals (25 percent). Legal, social, cultural skill needs are reported to be needed by a large share of technicians and associate professionals (38 percent), while science and engineering skills are reported to be needed by professionals (34 percent). Information and communications technology skills are reported to be needed by technicians and associate professionals (21 percent).

Employees seems to understand that their jobs require certain specific skills, and they understand what skills are needed. A larger question is whether employees receive training in these areas, and whether they can access training to build skills that are needed.

Training on the job: higher earnings and better-quality jobs

We examined employee responses to whether they received training since they joined their current employers in relation to labor market outcomes. Employees that receive training are in higher earning jobs than employees that do not receive training (Figure 34). Moreover, employers that receive training also receive benefits and amenities, and are in higher quality jobs (Figure 35).

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\(^3\) The following is based on ISCO2.
Major fields of training: professionals, technicians, and service and sales workers are the majority.

In response to: “What was the major field of training” a large share of employees respond that they received training in the professional domain (34 percent), the technician and associate professional field (20 percent) and services and sales workers (19 percent) (Figure 36).4 This is probably largely driven by the occupations that in which they are already in, and so more detailed analysis may shed light on their specific training received.5

Figure 36

Increasing scope of technical training for professionals.

Within professional occupations a large share of training is dedicated to teaching (42 percent) and business and administration (30 percent). At least the business and administration training component seem to match the large share of skill need reported by professionals, discussed in the earlier section.

Employees are much less likely to receive training in more technical fields and subjects with changing information, such as health (5 percent), science/engineering (8 percent), information and communications technology (5 percent) (Figure 37).

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4 See annex for details on services and sales workers, they are being trained in mostly one category ‘protective services’.

5 This is again based on ISCO1 and then ISCO2.
Increasing scope of technical training for technicians.

Within technician and associate professional occupations, a similar pattern to the professional occupations category in terms of training appears: low levels of information and communications technology (10 percent) and science and engineering training (8 percent) exist. The employees in these technical occupations receive a large share of business and administration training (37 percent) and also somewhat large training in health (24 percent) (Figure 38). While mostly Ugandan nationals were trained in this particular occupation area, a strikingly large share of Indian nationals (3 percent) were trained in the area of science and engineering.
Who receives training and for how long? About 25 percent of employees report receiving training, overall and in the service sector. Only 23 percent of women receive training, and 35 percent of the tertiary educated receive training.

More experienced, married, higher educated employees are more likely to receive training. Being in the service sector makes it more likely to receive training. Females are less likely to receive training (Figure 39).

The length of training tends to be somewhat short, with about 70 percent of employees reporting that their training was less than three months (Figure 40).
Figure 40

Length of Training

[Bar chart showing the distribution of training lengths across different months.]

Percent

Months

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20 21 22 24
5.3 Mismatch Solution 3: *Regulatory Environments*

To address mismatches in the labor market, we first looked at possible job search improvements to existing job matches.

Second, we looked at the improving the labor supply side through improving skills of current employees and at possible avenues for training and changes in training.

Third, we now look at possible improvements in job quality itself (labor demand side) and possible changes to the regulatory environments that these jobs are in. In this section, we look at formal-informal employees and within the universe of formal employees in different regulatory environments, for instance contractual situation and firm characteristics such as registration status and firm size.

**Are “good quality jobs” good on several dimensions?**

Looking at the sub-components of the job quality indicator, Figure 41 measures the degree of correlation between the different dimensions of quality.

All measures are highly correlated: Jobs that offer one dimension or one benefit are likely to offer other dimensions or other benefits as well. This reversely also implies that jobs that do not have some benefits, are not likely to have many of the other job quality dimensions.

A bifurcated world seems to emerge in the Ugandan labor market with two types of jobs, “good quality” jobs and “low quality” jobs.

**Figure 41**

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<th>Written Contract</th>
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Note: * indicates 1% significance level.

**Formal job holders: more experience, higher educated and higher earnings.**

Of our employee sample, 27.5 percent report that they have social contributions paid by their employer, which often represents the definition of a “formal” job. This definition is similar to the one employed in Latin American (Perry et al. 2007).

Employees are more likely to be formal if they have more education, especially if they have achieved tertiary education, and are older and more experienced. In terms of personal characteristics, females and also the marital status of being separated/divorced/widowed makes
a formal job more likely. This may be largely driven by the teaching profession, which would also mirror the large amount of training given in the teaching domain Figure 27). Being a teacher makes it somewhat more likely to be in a formal job (Figure 42).

Do formal employees earn more? Our analysis of formal-informal earnings finds that, once having accounted for other factors such as experience, education, gender, marital status, and sector and region, formal jobs earn a significant premium. Formal employees earn about 22-25 percent more than informal employees. This is not driven by public sector teaching, which does not change the earnings premium when accounted for.

Figure 42

**Contractual environment: most formal and informal employees have written contracts.**

Social security contributions are paid for 27 percent of employees (formal), while 68 percent do not have social security contribution (informal), and 5 percent report not knowing whether their employer contributes to the social security fund on their behalf (informal). The last two categories are counted as informal employees in our analysis.

Given our earlier analysis of correlation between job quality dimensions, one would expect that a large share of informal employees do not have a written contract. However, a surprisingly large share of informal employees does have a written contract (65 percent) while only 35 percent do not have a written contract. Still, the percent of employees with written contracts among informal employees is lower than for formal employees: 80 percent of formal employees report that they have a written contract, only slightly higher than informal employees (Figure 43).
Informal workers tend to be in smaller firms, while formal workers are in larger firms.

In which business type (firm size and firm registration) do formal and informal employees operate? Figure 44 distinguishes between different firm sizes: (i) micro/small with ten or less employees, (ii) medium with 11 to 29 employees, and (iii) large firms with 30 or more employees. The majority of informal employees (60 percent) are in micro/small firms while a similar percentage (55 percent) of formal employees are in either medium-sized or large firms. Smaller firms are less likely to contribute to social security contributions than larger firms.
Registered firms are more likely to contribute on behalf of employees to social security.

We can also look at firms’ registration status, whether formal or informal. In MAPU, 52 percent of firms respond that they are registered, which we classify as formal firms. About 13 percent of firms report that they are not registered (informal firms) and 35 percent of firms did not respond to the question (informal firms). We classified oth of the latter two responses as informal firms. Non-response could be due data quality or stigma attached to the response, or the respondent simply was not sure (for detailed discussion of firm formalization/registration, see de Mel et al. 2013).

Figure 45 shows that formality status of firms and formality status of workers seem to align: 75 percent of formal employees work in formal firms, while 52 percent of informal employees work in informal firms.

Figure 45

More experienced and higher educated employees benefit from formality in several dimensions, but this does not extend to female formal employees.

Within the universe of formal workers, what other benefits do formal employees have and what are their characteristics?

Eighty percent of formal employees have a written contract. 75 percent work in a registered, formal firm, and 55 percent have jobs in a medium-sized or larger firm. It seems formality aligns with other benefit dimensions and with formal/larger firms. Only less than 1 percent (0.7 %) of formal employees have none of the following l: written contract, work in a formal firm, and work in a medium sized/larger firm.

What individual characteristics contribute to being in a formal job, having a written contract, working in a formal firm, or working in a larger firm?
Higher levels of education and more experience make it more likely that an employee works as a formal employee with a written contract. Working as a formal employee in the service sector also somewhat increases the chances of having a written contract.

Formal employees within formal firms are less likely to have higher education and are also less likely to be in the service sector.

Female formal employees are less likely to have a written contract, work in formal firms, or work in larger firms (Figure 46).

**Figure 46**

![Graph](image)

**Earnings are much larger for formal employees with a written contract or who work for a larger firms.**

Within the universe of formal employees, what additional earnings do employees receive when combined other regulatory dimensions?

Formal employees with a written contract earn 57 percent higher earnings than formal employees with no written contract, after accounting for differences in education, experience, gender, marital status, sector, or region of work.

Formal employees within formal firms earn 42 percent less than formal employees within informal firms. This is somewhat surprising and could be due to a number of reasons: (i) being a subset of the sample as a large share of the industry sector has formal employees within formal firms (93%), (ii) firms passing on the cost of registration to their employees by paying lower wages, or (3) the risk premium of working in an informal firm.
Formal employees within medium-sized and larger firms earn 26 percent higher earnings compared to formal employees in small/micro firms.

**Formality does not explain skill and job-education mismatches.**

The percent of informal and formal employees that report first job-education and current job-education matches is almost identical (first job-education match 71 percent of informal employees and 69 percent of formal employees; current job-education match 88 percent of informal employees and 88 percent formal employees).

The percentages of informal and formal employees that report specific skill need for job performance in their current job are very similar (51 percent of informal employees and 53 percent of formal employees).

Informal employees receive training (22 percent) to a somewhat less degree than formal employees (30 percent).

**Overall, Job-Education Mismatches are explained by:**

- Initial job search behavior. Across the board, job seekers find their first job very quickly and this could possibly lead to low initial matches.
- Employees report a current occupation-education skills gap, but employers do not seem to recognize this gap.
- Scope of training is very limited and the length of training tends to be very short.
Recommendations

Improve early job placement to improve first-time job matches to alleviate the long-run effect of mismatches. First job search determines matches initially and most employees find their first job very quickly. The long-run effects of a job-education mismatch for employees’ first jobs is reflected in lower earnings and lower job quality in current jobs. Partly, this explains why a large share of first-time job seekers find jobs almost immediately.

Improve job search assistance and create better quality jobs for young workers. Job seekers are looking to improve their matches in terms of earnings, benefits, and current job-education matches. One-fifth of employees are currently job seekers and who aspire to find better work conditions, higher salary and benefits, and/or professional occupations. Improving job search assistance to increase matches between job seekers and employers, and creation of better quality jobs for young workers along the four dimensions of income, job benefits, security/stability and satisfaction may help improve the long-run outcomes and possibly reduce the need for additional job searches.

Provide key skills training while “on-the-job” to improve job matches, especially for younger workers. Increasing and improving on-the-job training for technical skills such as information and communications technology, science and engineering, and health may help reduce skill-performance mismatches and possibly job-education mismatches. The focus of training should be adjusted towards younger workers as well. More Education and experience improve the likelihood of having a job with social security contributions, hence formal, but formality does not explain job mismatches. Both formal and informal employees report similar specific skills needed for job performance, first job-to-education and current job-to-education matches. Informal employees report receiving less training, however, and employees report needing specific skills to improve performance in current jobs. Training tends to be provided to more educated and older workers, but is limited in scope and short in duration.

Consider how to address gender specific labor market issues. Addressing higher job mismatches for women, closing the gender earnings gaps, and improving contractual environments for women will help improve overall labor market functioning. Women earn less, have fewer formal work arrangements and less training, and experience higher job mismatches compared to men. Younger women especially earn significantly less than men. Moreover, women receive less training and are less likely to have formal work arrangements and benefits. Even in formal work with social security contributions, female employees are less likely to have other job quality dimensions such as a written contract or work in formal and/or larger firms. Overall, women are more likely to be mismatched in their first and current job in terms of the job-education dimension.
6. Annex

a. Details of variables and Weights

Earnings: The first and last percentile of the net earnings data were trimmed, and also the logarithm of earnings was taken. Earnings data are adjusted by hours worked. The analysis employs overall log hourly earnings.

Experience: This is a potential experience measure. The year of graduation before entering the labor market for the first time was used. The year 2017 minus the graduation year is then calculated for the experience measure.

Weights: All statistics use the individual weights, except for current job and first job mismatches by firm growth, which uses the employer/firm weights. The kernel density distribution does not employ weights, but an initial test shows that they are relatively similar looking (the graphs without the weights appear smoother but the general patterns remain). All the regressions are weighted by the employee weights.

b. Details of Regressions

All the regressions here followed the same set-up, with the following base categories (omitted categories/base): the central region, industry/agriculture, single, female, no/primary education.

The variables included were: experience, experience squared, experience cubic, experience quartic, female dummy, married, separated/divorced/widowed, secondary education, tertiary education, east region, north region, west region, service sector.

The education categories are collapsed to three level: (1) no/primary education, (2) secondary education complete/tertiary education incomplete, (3) tertiary education complete.

Also, regressions were conducted that did not include experience but instead age and age squared directly. These results are not reported here, except in the case of “The Determinants of Formality”, which reports the coefficient of age, which is based on a regression omitting experience (and its exponential forms) and replacing it with age and age squared.

The wage regression specification, subscript i is the employee level observation (individual level):

\[ \ln h_{ei} = \alpha + \beta_1 \exp_i + \beta_2 \exp_i^2 + \beta_3 \exp_i^3 + \beta_4 \exp_i^4 + \beta_5 X_i + \beta_6 S_i + \beta_7 R_i + \epsilon_i \]

Where

\( \ln h_e \) is logarithm of hourly earnings, \( \exp \) is potential experience, \( \exp^2 \) is potential experience squared, \( \exp^3 \) is potential experience cubed and \( \exp^4 \) is potential experience quartic.

\( X' \) is a vector of covariates relating to personal characteristics: gender dummy, education dummies and marital status dummies.
$S$ is service sector dummy for the sector of the employee is in and $R$ is dummy for the region of the country.
The regression specification follows a Mincer-style earnings regression (Lemieux 2006) with experience terms up to the quartic.
The quantile regressions follow the same regression specification and the earnings quantiles were 0.25, 0.5 and 0.75. The quantile regressions are also weighted by employee weights. The results are not bootstrapped.
The propensity/probability estimation for other outcomes were following the same right-hand side specification as the above model. The left-hand side would be replaced with a dummy (0/1) depending on what the outcome of interest was to be determined. The regression was a linear probability model to avoid any issues of estimation and interpretation that might be problematic with a probit model (e.g. the estimation of marginal effects and their interpretation and also in the case of an imbalanced 0/1 dummy the estimation may not be valid).
The outcomes in this case were:
1. First Job Match 1 and First Job Match 0 dummy
2. Current Job Match 0 and Current Job Match 0 dummy
3. First Job 1 and First Job 0 dummy
4. Job Search 1 and Job Search 0 dummy
5. Training 1 and Training 0 dummy
6. Formality 1 and Formality 0 dummy
7. Within formality: Contract 1 and Contract 0 dummy
8. Within formality: Formal firm 1 and Formal firm 0 dummy
9. Within formality: Medium/Large Firm size 1 and Medium Large Firm size 0 dummy
The coefficient plots also report confidence intervals as horizontal spikes. However, as most of the standard errors are very small, the figures almost have invisible confidence intervals across most of these figures.

c. **Job Quality Indicator Details**
The same method was employed when one scores cognitive and non-cognitive skills responses to create an indicator to the Big 5 or other type of indicator. Each of the responses here scored either a one or a zero. The job quality indicator is summed up and then divided by the number of items. No response has a higher weighting than another. The score is created using "alpha" command in STATA.
In STATA, for every observation for which there is a response to at least one item is recorded. The summative score is divided by the number of items over which the sum is calculated.
The range goes from 0 to 1 where 0 none of the benefits and 1 all benefits. In our case the graphs show 0, 0.2, 0.3, 0.5, 0.7, 0.8 and 1.
The four dimensions across which these benefits are scored are responses by employees.
d. Job History

Previous occupations reported by employees seem to fall within the same major categories of occupations as the current occupation: professionals, technicians and associate professional, and service and sales workers. Years of experience at previous work is about 0 to 3 years for most employees, which is similar to tenure at current job.
e. **Major Field of Training Details: Service/Sales Workers and Training**

As almost 20 percent report their major field of training to be within the services and sales workers category, a closer look at the details of this category does not seem to yield much variation. Almost 74 percent of this employee sample is receiving training in “protective services”. This is probably due to the fact that the sample of employees is a very specific one and does not cover the entire labor force.
References


