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Job quality and labour market transitions

Evidence from Mexican informal and formal workers

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Abstract: In this paper we analyse informal work in Mexico, which accounts for the majority of employment in the country and has grown over time. We document that the informal sector is composed of two distinct parts: salaried informal employment and self-employment. Relative to self-employment and formal salaried employment, on average informal salaried workers have lower wages and lower job quality as measured by an index. Education plays a different role in job matches and job transitions, depending on the type of informal employment. Well-educated workers are more likely to use informal salaried work as a stepping stone into formal salaried work, and are less likely to leave the formal sector once there. Less well-educated workers have higher exit rates from formality and shift more across informal sector jobs. For these latter workers there is more evidence that informal salaried work represents jobs of last resort rather than jobs of opportunity.

Key words: informal work, job quality, transitions, Mexico

JEL classification: J3, J21, J46, O17

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1   Introduction

In this paper we analyse informal work in Mexico, which accounts for the majority of all employment in the country (approximately 60 per cent) and has grown over time.[1] This growth occurred despite significant increases in education, particularly at upper levels, which raises questions about the ability of formal markets to absorb the increase in better-educated workers (Levy and López-Calva 2020; OECD 2019). To understand the size and persistence of informal work, we characterize the jobs and workers in this sector and compare them to formal ones. In doing this, we document two important facts about the informal sector in Mexico. First, it is split into two distinct parts: salaried informal employment and self-employment. In some settings the informal sector is dominated by self-employment, but in Mexico the sector is almost equally divided between those who work for themselves and those who work for someone else. This distinction applies to well-educated workers and to less well-educated ones, highlighting that education does not eliminate the existence of either type of informal employment.

Second, on almost every measure, informal salaried jobs are of lower quality than formal salaried or self-employed ones. This holds for wages, but also for an occupation wage index and a job quality index (similar to Sehnbruch et al. 2020) that we construct. The story for self-employment is more complex. Although average wages are on par with those for salaried formal work, the variance is also greater, manifesting itself in a greater percentage of low- and high-wage workers. This confirms earlier research that finds that self-employment in Mexico is divided between jobs of opportunity for some and jobs of last resort for others (Cunningham and Maloney 2001). There is less evidence, however, of this bifurcation within informal salaried work.

Combined, these stylized facts suggest the role of informal work and the possibility of transitioning to the formal sector depends on job type, which we classify as formal salaried, informal salaried, and self-employed. To better understand this, we focus on young workers (20–40 years old), who are less well established in the labour market and more likely to transition between job types. For example, we find that among well-educated workers, the transition rate from informal salaried to formal salaried work is highest before the age of 28. Young workers also capture the increase in educational attainment more than older workers, which means this group better represents how trajectories across jobs vary by education level.

Using descriptive statistics, propensity score models, and multinomial logit models, we characterize the workers in each job type and analyse the extent to which worker characteristics overlap across all three job types. The results reveal that education is a key factor explaining the disparities between formal salaried workers and either type of informal worker. While we see smaller differences in educational attainment between informal salaried and self-employment, the differences between both and formal work are notable. Formal salaried workers are also significantly more likely to work for the government or an NGO. When looking at all worker characteristics, there are overlaps in the propensity scores between all three job types, showing that individuals with similar observable characteristics are in each job type. This suggests transitions between formal and informal jobs are possible. However, the overlap is more notable between self-employed and informal salaried roles, suggesting these are closer substitutes for each other than either informal job type relative to formal work.

We next examine transitions across job types, as this reveals the role that informal salaried work and self-employment play in workers' lives. We find that transitions into formal salaried work are higher for well-educated workers, and are more likely to take place from informal salaried work than from self-employment. This suggests informal salaried work is a stepping stone into formal work for some, but more so for better-educated workers. In explaining the role of informal salaried work as a stepping stone,

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[1] Following the literature, we define informal sector jobs as those without social security benefits.

we find evidence favouring the hypothesis that restrictive labour laws make employers reluctant to hire workers with formal contracts without an initial probationary period. In a sub-sample of individuals with information on job tenure, approximately one-third of informal to formal transitions happen within the same employer, and the rate is higher for well-educated workers than for less well-educated ones.

We also explore the hypothesis that formal employment is a stepping stone to informal employment such as being a self-employed entrepreneur, by providing individuals with skills and capital to start their own firms. There is limited evidence of this among young workers. While some workers exit formal and enter informal employment, this happens more for informal salaried work than for self-employment. Given the lower average quality of informal salaried work, this suggests a stronger story of involuntary rather than voluntary exit from formality. Our study contributes to research and policy discussions on the informal labour markets in Mexico specifically (Cano-Urbina 2015, 2016; Levy 2008; Maloney 1999) and developing countries more broadly (Kanbur 2017). In the case of Mexico, our work follows that of Cano-Urbina (2015), who studies the effect of the informal sector on the career prospects of less well-educated workers. He finds that in addition to the skill accumulation that may occur, the informal sector plays an important role in screening young, new, less-educated workers. We also find evidence of this, but more for well-educated workers. This likely is because screening and knowledge acquisition have more salience in explaining informal to formal job transitions for this group. Cano-Urbina (2016) also finds that for young less-educated workers the heightened competition of the informal labour market results in higher wage growth than for the same group of workers in the formal sector. Our work suggests this may not be the case for all informal jobs, and that wage trajectories might look quite different for informal salaried and self-employed workers.

In the case of the broader discussion of informality, our contribution is multi-fold. First, we distinguish between two types of informal employment and characterize jobs by including a definition of job quality beyond wages. These comparisons reveal a more complicated story of informal work, as informal salaried work and self-employment emerge as very distinct job types. Improving informal jobs is an important policy goal, but the appropriate recommendations vary if we are talking about informal salaried jobs or self-employment. For example, business training and microcredit programmes would help the self-employed, but would have a more limited and indirect impact on informal salaried workers. Similarly, reforms that improve firms' ability to hire temporary workers or fire permanent ones may help reduce informal salaried work, but likely will have smaller impact on the self-employed.

Second, we clarify the role of education in initial job placement and in job-to-job transitions for younger workers. In countries where informality is high, like many Latin American countries (Perry et al. 2007), even with rising education levels more educated workers may find that their initial job is in the informal sector. We show that while well-educated workers are much more likely to start in the formal sector, a non-trivial percentage start in the informal sector as well. Studying these initial job placements is valuable, as the long-term consequences of labour market entry are well documented for developed countries (Kahn 2010; Oreopoulos et al. 2012), but less so for developing countries.

In investigating persistence, we find that well-educated workers who start in the informal sector are more likely to transition into formal employment. Less well-educated workers are less likely to exit informality and are more likely to shift from self-employment to informal salaried work, and vice versa. They also are more likely to exit formal salaried work into lower quality, informal salaried work. This is contrary to the idea of voluntary participation in the informal sector (Maloney 2004), and suggests some workers are stuck in the informal sector. This confirms that path dependence of informality may matter in Mexico, as pointed out by Levy (2008). The inability of workers to leave the informal sector may have long-term implications for social security contributions and the provision of benefits to formal and informal workers.

The rest of the paper is structured as follows: in Section 2 we describe the data set used in this study, including discussion of the characteristics of young Mexican workers; in Section 3 we use multinomial logit and propensity score models to better understand key differences between the characteristics of workers in different job types; in Section 4 we describe workers' transitions into and across jobs; and in Section 5 we summarize our main findings and provide reflections on potential policy implications.

2   Data

For our analysis we use the *Encuesta de Ocupación y Empleo* (ENOE), a rotating labour force survey conducted by the National Institute for Statistics and Geography (INEGI).[2] The ENOE started in 2005 and follows individuals in households for up to five quarters. We use the quarterly surveys from the first quarter of 2005 to the fourth quarter of 2017 and focus on young workers, defined as individuals who are between the ages of 20 and 40 when they enter the sample.[3] While we exploit the panel nature of these data to examine short-term transitions from school to work and across employment types, for the summary statistics we use responses as of the last interview to avoid double counting. We use no other restrictions on the sample, and include both men and women in rural and urban areas.

2.1   Job type

We define a job as formal if an individual is registered with the social security administration (IMSS) or equivalent agency (the military, Pemex, or state social security agency), which is required by Mexican labour regulations for workers with a contract.[4] This definition is used by the ENOE to classify jobs as formal (ENOE 2014), and has been used by other researchers as well (Cano-Urbina 2016, Bobba et al. 2019). One benefit of the ENOE is that it has workers' registration status and thus we do not have to make assumptions about this using job type (assuming all self-employed workers are informal) or firm size (assuming all workers in micro-enterprises are informal).

The information on registration status allows us to categorize three types of jobs: formal salaried jobs, informal salaried jobs, and self-employed.[5] Of these, we categorize formal salaried work as formal and informal salaried and self-employed as informal, since 99 per cent of self-employed workers in our sample are not registered with any type of social security programme. This means the informal sector is made up of two job types while the formal sector is made up of one.

Panel A of Figure 1 shows the percentage of paid workers aged 20–40 who fall into each job type. While formal salaried work has the highest proportion of workers as a single category, informal salaried work and self-employment combined account for the majority of employment. For example, by the end of 2017 informal salaried work and self-employment account for 54 per cent of all jobs for young workers. Among these, informal salaried work has the highest proportion, accounting for 33.9 per cent of all young workers in 2017, compared with 19.6 per cent for self-employment. This shows that in Mexico considering only self-employment ignores the largest portion of the informal sector—informal

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[2] The data and documentation for the ENOE are publicly available on INEGI's website: www.inegi.gob.mx.

[3] We also limit the employed sample to those who receive a salary. This means we exclude unpaid workers, who account for approximately 3.5 per cent of all workers.

[4] Social security registration also means a worker has access to state-funded medical services, and indeed, the determination of social security registration comes from a question on access to medical services.

[5] Salaried jobs are defined as those where an individual says they have a boss, while self-employed jobs either do not have a boss or are employers themselves. The latter is how ENOE defines self-employment.

salaried work. The graph also shows that salaried work, both formal and informal, has increased, while self-employment has declined. Thus, recent increases in the size of the informal sector are driven by informal salaried work rather than self-employment.

Figure 1: Composition of job types

Panel A: percentage of workers

Panel B: average education
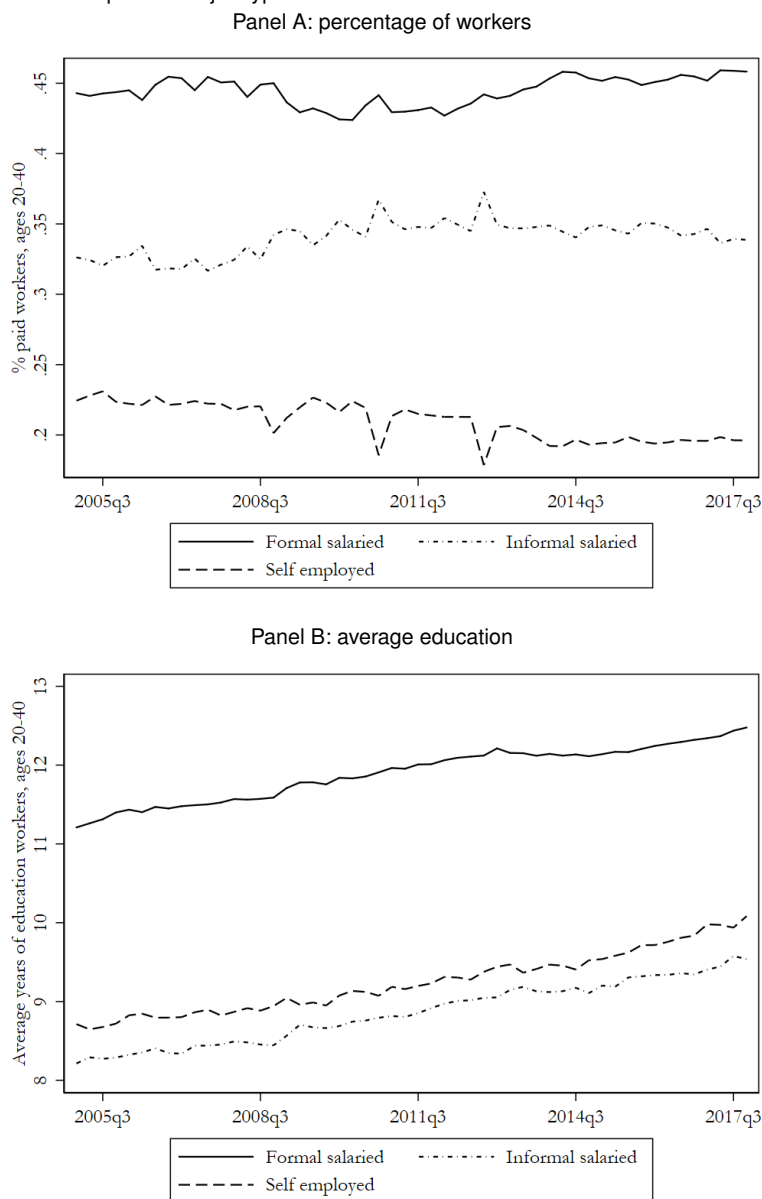
Note: workers are aged 20–40.

Source: authors' compilation based on ENOE Q12005–Q42017.

Panel B of Figure 1 shows the trajectory of average years of education for each job type. As expected, average education levels are significantly higher for formal salaried jobs than for either type of informal work. For example, at the end of 2017 average education was 12.5 years for formal salaried jobs, 9.5 years for informal salaried jobs, and 10 years for self-employment. This means the average formal worker has slightly more than an upper secondary education, while the average informal worker (both job types) has some upper secondary education (more than nine years). The figure also shows a steady increase in education levels for all types of employment, a result of rising educational attainment in Mexico (OECD 2019). For formal salaried workers, average education levels rose from slightly less than an upper secondary education to slight more, while for informal work (both types) the level rose from slightly less than a lower secondary education to slightly more. The increase in average education

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has been higher for informal salaried and self-employment than formal salaried (13 per cent versus 10 per cent). This captures the fact that the formal sector likely has not been able to absorb the increase in the number of better-educated workers, pushing many into the informal sector (Levy and López-Calva 2020).

2.2 Job characteristics

To assess the quality of jobs, we use several measures available in the ENOE, including wages, hours worked, whether or not the individual has a written contract, and having the benefits of paid vacation, bonuses (*aguinaldo*), and profit sharing (*reparto de utilidades*). We note that the last set of characteristics do not apply to the self-employed (individuals are only asked these questions if they have an employer). Finally, we consider satisfaction with a current job by whether or not someone said they searched for a new job in the past three months.[6]

We aggregate the non-wage measures into a job quality index (Sehnbruch et al. 2020). For each salaried worker, formal or informal, we code a value of 1 or 0 for each of the following six variables: (1) works more than 20 and less than 45 hours per week (in other words, is not under- or overworked); (2) has a written contract; (3) has *not* looked for a job in the past three months; (4) receives a bonus; (5) receives paid vacation days; and (6) is entitled to profit sharing. We add the responses on all values and divide by six, such that the index value represents the percentage of these six characteristics a worker has. For example, a value of 0.2 means the worker has 20 per cent of these job characteristics, while a value of 0.6 means they have 60 per cent of these job characteristics. For robustness, we construct an alternative job quality index using principal component analysis (the job quality PCA index), where we use the same variables included in the aggregated job quality index. The first principal component has a variance of 2.75, explaining 46 per cent of the total variance; it is also highly correlated with the aggregated job quality index (correlation coefficient of 0.95).

For earnings, we use real, hourly wages.[7] We also consider earnings potential, as measured by the rank of a job based on occupation and industry. To do this, we calculate the median wage for each occupation and industry combination (each at the two-digit level), and then rank these occupation–industry cells from lowest to highest. For example, we calculate the median wage for executives and officials (one specific occupation) in each of the 11 industries classified in the ENOE (agriculture, manufacturing, construction, etc.). Given that there are 11 industries and 18 occupations (excluding 'other' occupations), this yields 198 combinations.[8] The spread from the highest to lowest is quite large, as median wages range from 10.13 pesos per week (for workers in agriculture) to 62.85 pesos per week (for executives and officials in extracting industries and electricity). As shown in Figure 2, while there is a large dispersion across wage ranks in the percentage of the group that is informal (both salaried and self-employed), the overall correlation is negative. Thus we generally see that the percentage of informal workers declines as the occupation industry wage rank increases.

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[6] Searching for a new job includes looking for or planning to move abroad for a new job, looking within Mexico, starting a business, or generally becoming self-employed. The last observation means this measure is not limited to searching for other salaried employment.

[7] We deflate all earnings to be in quarter 1 of 2005 pesos using CPI data from INEGI. We also remove the top 0.1 per cent of wages.

[8] In quarter 2 of 2012 the ENOE changed its occupational coding system. We have matched the occupational codes across the two systems using a cross-walk from INEGI.

Figure 2: Occupation industry wage ranks

Panel A: percentage informal by wage rank
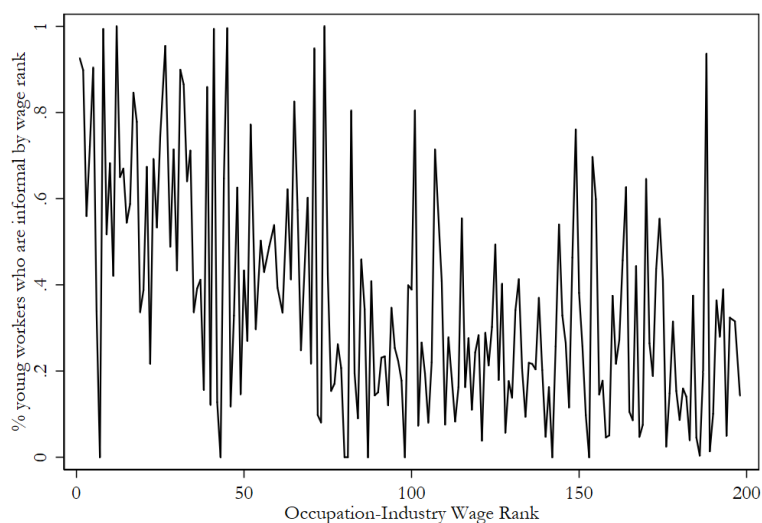
Panel B: scatterplot version
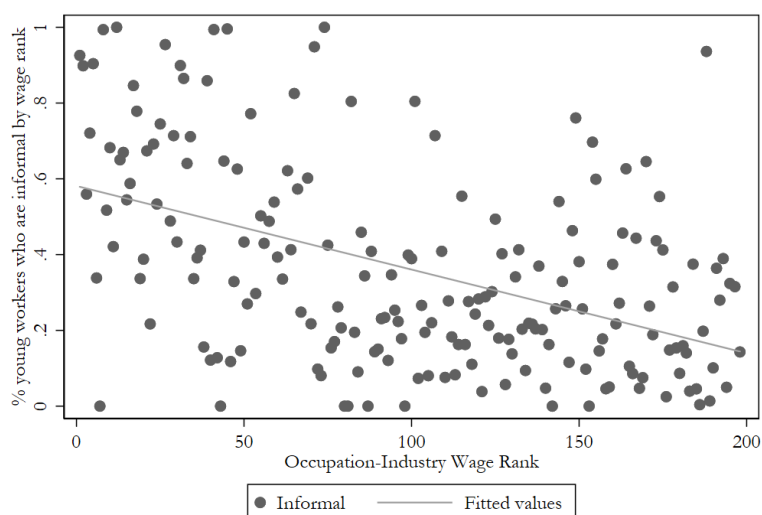
Note: all workers aged 20–40 earning non-zero wages.

Source: authors' compilation based on ENOE Q12005–Q42017.

Table 1 provides summary statistics on the characteristics described above. To see if job characteristics differ by education level, we split the sample into two groups: less well-educated workers with a primary education or less (six years or less) or lower secondary education (nine years); and better-educated workers with an upper secondary education (12 years) and college or more (16 years or greater). The latter group has grown the most in Mexico, as rising education levels are manifested at the higher end of the education distribution (see Figure 1). One open question is whether informal jobs look different for this group relative to less well-educated workers.[9]

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[9] The determination of educational attainment is complicated in the ENOE, as there is not a single variable that captures this. We use questions on the highest education level achieved and years completed at that level, which allows us to distinguish those who likely finished a level from those who dropped out. For example, both lower and upper secondary school require three years each. Someone who lists upper secondary school as the highest education level achieved but was there for one year likely is a dropout and is coded as achieving only a lower secondary education. Meanwhile, someone who completed three years at that level likely completed it. For college graduates, we code individuals as having a college degree if they list college (normal, technical, and university) as the highest education level achieved, are in programmes that require an upper secondary education, and have completed the requirements for the career (*carrera*). It is necessary to consider the requirements for the program to distinguish normal and technical secondary and tertiary education. Normal and technical programmes that only

Table 1: Job characteristics

	Primary and lower secondary			Upper secondary and college		
	(1) Salaried formal	(2) Salaried informal	(3) Self-employed	(4) Salaried formal	(5) Salaried informal	(6) Self-employed
Job characteristics						
Hourly wage (pesos)	18.13	15.53	18.46	31.78	22.03	33.66
	(11.35)	(12.92)	(23.72)	(26.77)	(22.95)	(37.90)
Occupation–industry wage rank	62.41	42.28	45.11	128.20	91.78	87.91
	(42.33)	(36.39)	(41.44)	(64.86)	(69.01)	(71.05)
Weekly hours	48.61	43.71	40.04	43.02	41.37	40.49
	(13.92)	(18.08)	(20.66)	(14.70)	(17.60)	(21.01)
Weekly hours >20 and <45	0.30	0.33	0.35	0.49	0.42	0.34
	(0.46)	(0.47)	(0.48)	(0.50)	(0.49)	(0.47)
Has written contract	0.85	0.05	.	0.93	0.25	.
	(0.36)	(0.23)	(.)	(0.25)	(0.43)	(.)
Bonus	0.91	0.16	.	0.95	0.26	.
	(0.28)	(0.37)	(.)	(0.21)	(0.44)	(.)
Paid vacation days	0.84	0.07	.	0.92	0.17	.
	(0.37)	(0.25)	(.)	(0.28)	(0.38)	(.)
Profit sharing	0.38	0.01	.	0.30	0.02	.
	(0.48)	(0.08)	(.)	(0.46)	(0.13)	(.)
Job quality index [0–1]	0.71	0.26	.	0.76	0.34	.
	(0.20)	(0.14)	(.)	(0.16)	(0.21)	(.)
Job quality PCA index	1.01	−1.88	.	1.18	−1.43	.
	(1.10)	(0.77)	(.)	(0.79)	(1.17)	(.)
Firm size						
0–10 employees	0.15	0.82	.	0.12	0.63	.
	(0.36)	(0.39)	(.)	(0.33)	(0.48)	(.)
11–50 employees	0.26	0.11	.	0.29	0.19	.
	(0.44)	(0.32)	(.)	(0.45)	(0.39)	(.)
51–250 employees	0.23	0.03	.	0.21	0.06	.
	(0.42)	(0.17)	(.)	(0.40)	(0.24)	(.)
>250 employees	0.30	0.01	.	0.33	0.08	.
	(0.46)	(0.12)	(.)	(0.47)	(0.26)	(.)
Observations	212,624	232,701	127,895	318,187	104,860	77,328

Note: population-weighted means reported. Standard deviations in parentheses. Workers aged 20–40.

Source: authors' compilation based on ENOE 2005–17.

The table shows that informal salaried work has lower average quality than either formal salaried work or self-employment on every measure other than hours.[10] Starting with wages, for well-educated workers average wages for informal salaried are 30 per cent lower than formal salaried, while for less well-educated workers they are 14 per cent lower. Meanwhile occupation–industry wage ranks are approximately 30 per cent lower for both education groups. We see even larger gaps in non-wage job characteristics. Informal salaried workers are 2.5–4.5 times less likely to receive a bonus, 4.5–11 times less likely to receive paid vacation, and 14–37 times less likely to receive profit sharing. The job quality index for informal salaried work is 154 per cent lower than for formal salaried among the less well-educated and 114 per cent lower among the better educated. This last statistic shows that education is not enough to make informal salaried jobs better than formal ones.

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require a primary or lower secondary education do not count as college. Individuals who have not completed the requirements are recorded as achieving only an upper secondary education.

[10] For overwork (more than 45 hours) we see a higher incidence for salaried formal, but only for the less well-educated. Meanwhile, we do see higher incidence of underwork (less than 20 hours) for self-employed individuals in both education groups.

When we look at self-employment there is less evidence of lower quality, since average self-employed wages are slightly higher than formal salaried ones for both education groups. Interestingly, however, the occupation–industry wage ranks are lower and the percentage of individuals in underwork (less than 20 hours) is higher, suggesting the profile of these jobs is different. The basic wage comparisons, however, suggest some self-employed jobs may be on par with salaried formal ones.

Table 1 also shows that wage gaps are larger across education levels than across job types. Better-educated workers earn more, on average, in every job type than less well-educated ones. For example, the average hourly wage for formal salaried workers is 75 per cent higher for more well-educated workers as compared to less well-educated ones (31.78 pesos versus 18.13 pesos). This same gap is 42 per cent for informal salaried workers and 82 per cent for self-employed workers. Similar gaps exist for the occupation–industry wage rank, showing that for all three job types better-educated workers earn significantly more than less well-educated ones.

For other job quality measures, the differences across education are less stark. For example, highly educated formal salaried workers have average hours that are 13 per cent lower than less well-educated workers, are 9 per cent more likely to have a written contract, 4 per cent more likely to have vacation days, and 9 per cent more likely to have profit sharing. In total the job quality index is only 8 per cent higher for formal workers and 14 per cent higher for informal salaried ones. These values are much lower than the comparable ones for wages, and again highlight that on every measure informal salaried work is of lower quality.

2.3   Wages

In this section we examine the distribution of hourly wages by job type. We start by dividing all wages into quartiles and calculating the percentage of each job type that falls into each quartile. These results are presented in panel A of Figure 3 and show distinct patterns across job types. For example, salaried formal work and salaried informal work have opposing patterns, with salaried formal work showing the highest percentage of workers in the highest wage quartile and the smallest percentage in the lowest wage quartile, while salaried informal work has the opposite (the highest percentage in the lowest wage quartile and the lowest percentage in the highest wage quartile). This provides even more evidence of the lower quality of informal salaried work. The same cannot be said, however, of self-employment. This exhibits a different pattern entirely, with an approximately equal percentage of workers in the highest and lowest wage quartile. This aligns with a story of duality in which self-employment represents the sector of last resort for some and an outlet for entrepreneurial talent for others.

One could argue that the wage results paint salaried informal work as the sector of last resort. As shown in panels B and C of Figure 3, the three earnings distributions of self-employed, formal, and informal salaried workers substantially overlap. However, the distribution of wages for salaried informal work is centred to the left of the distribution of salaried formal and self-employed workers. This implies the median earnings for self-employed and formal workers are higher than for informal employees. This pattern is found for both well-educated and less well-educated workers.

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Figure 3: Wages

Panel A: percentage of job type in each wage quartile
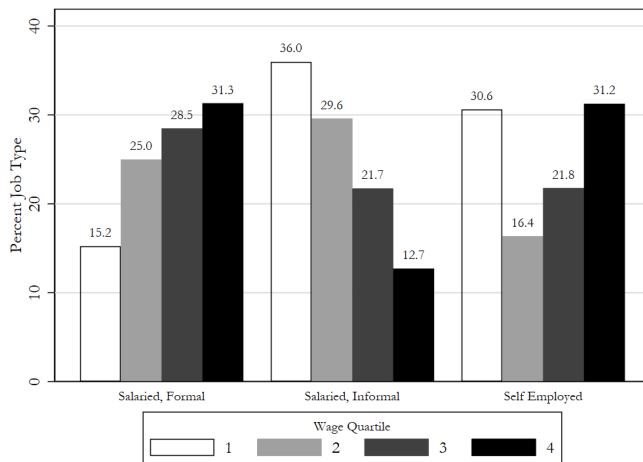
Panel B: distribution: lower secondary and primary educated
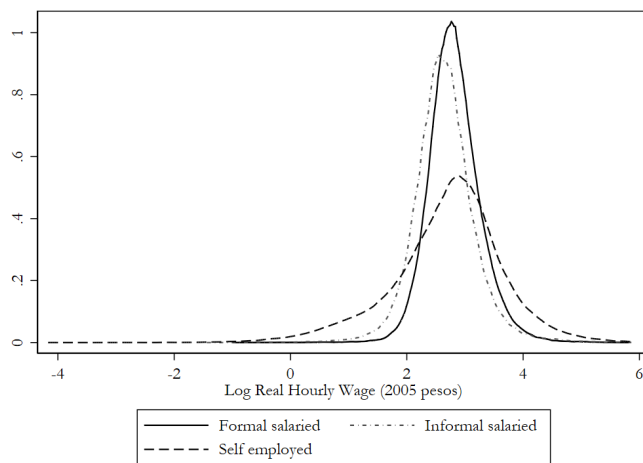
Panel C: distribution: upper secondary and college educated

Note: workers age 20-40. Wages in Q12005 pesos. Top 0.1 per cent trimmed.

Source: authors' compilation based on ENOE Q12005–Q42017.

3 Determinants of job types

The summary statistics in the previous section indicate that regardless of education level, informal salaried jobs have the lowest average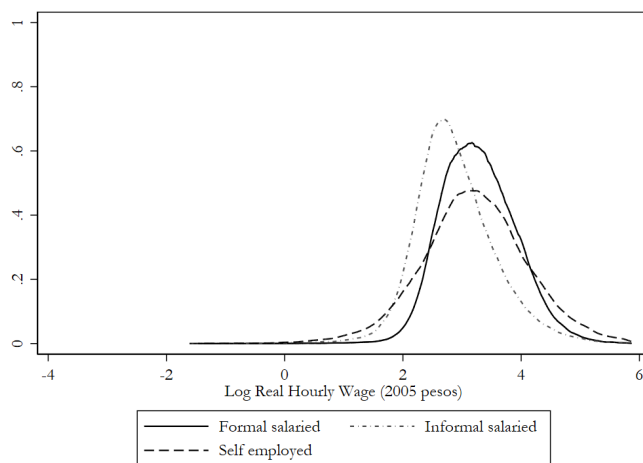 quality while, for some, formal salaried and self-employment are more similar. To answer the question of which individuals are more likely to be in each job type, we estimate the determinants of job type using a multinomial logit model. This model assumes no nesting across job types, thereby allowing us to consider all job types equally. We think this is a more realistic scenario, where individuals consider all three job types simultaneously, rather than one in which workers first choose informality and then decide to sort into informal salaried or self-employment.

Within the multinomial logit model, the probability that person i falls into job type j can be written as:

$$pr_{ij} = \left(\frac{\exp(X_i'\beta_j)}{\sum_{k=1}^{m} \exp(X_i\beta_l)} \right) \tag{1}$$

For observable characteristics (X) we include age, sex, whether or not a person has a spouse or partner or is the head of the household, the interaction of woman and married, urban status, education, industry, and state, year, and quarter fixed effects. The results are shown in Table 2. Our base group is informal salaried employment and the coefficients in the table are average marginal effects. Each coefficient therefore represents how a one-unit increase in the variable changes the probability that an individual is in formal salaried employment or self-employment relative to informal salaried employment.

For worker characteristics, the table shows small differences in age but notable differences by sex and marital status. In particular, while single women are more likely to be formal salaried workers and less likely to be self-employed, the opposite is true for married women. This aligns with the findings of Duval Hernández (2020), who argues that informal employment offers necessary job flexibility for women juggling work and dependent care obligations. Our findings further suggest that self-employment offers this flexibility while informal salaried work does not.

Table 2 also shows that education and industry are key determinants of job type. For educational attainment, the largest differences lie across formal and informal salaried jobs, as the differences in educational attainment between salaried informal and self-employment are not large. Formal salaried workers are 23–26 percentage points less likely to have a primary education or less compared to either type of informal worker, and are 16–21 percentage points more likely to have a college degree. This suggests education is more important in determining whether a worker is formally employed and less important in determining which part of the informal sector they are in. Finally, for industry we see that formal salaried work is dramatically higher and self-employment dramatically lower in the government and NGO sector.

In addition to examining differences in the average values of observable characteristics, we are also interested in whether or not the combined set of characteristics varies by job type. If the overlap in observable characteristics is large, this suggests it will be easier for workers to transition from one job type to another. On the other hand, if the overlap is small, this suggests job type transitions will be more difficult. To answer this we estimate the predicted probability of being in particular job types as a function of the same set of covariates using a probit model. The resulting propensity scores for different job types in comparison to one another are presented in Figure 4.

Figure 4 panel A shows the estimated propensity of being salaried for formal and informal workers. The two distributions exhibit some overlap, showing there are some individuals with the same characteristics who end up in either job type. However, overall the overlap is relatively small, which means there are significant differences in observable characteristics between most formal and informal employees. In particular, the kernel density distribution for informal employees has a large density at lower propensity scores, while the kernel density distribution for the formal employees has a large density at higher

propensity scores. The latter is not entirely surprising as one would expect actual formal salaried workers to have a higher probability to being formal based on their characteristics.

Table 2: Multinomial logit: relative to salaried informal (base)

	All		Lower secondary		Upper secondary	
	(1)	(2)	(3)	(4)	(5)	(6)
	Sal. formal	Self-emp.	Sal. formal	Self-emp.	Sal. formal	Self-emp.
Age	−0.0011***	0.0094***	−0.0014***	0.0104***	−0.0002	0.0081***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Woman	0.0334***	−0.0600***	0.0070**	−0.0515***	0.0623***	−0.0637***
	(0.0022)	(0.0023)	(0.0029)	(0.0034)	(0.0033)	(0.0028)
Married	0.0504***	0.0051**	0.0416***	0.0185***	0.0416***	−0.0042
	(0.0021)	(0.0020)	(0.0025)	(0.0028)	(0.0035)	(0.0027)
Woman * married	−0.1093***	0.1158***	−0.1332***	0.1345***	−0.0672***	0.0815***
	(0.0031)	(0.0029)	(0.0039)	(0.0042)	(0.0049)	(0.0039)
Head of household	−0.0050***	0.0372***	−0.0050**	0.0380***	0.0004	0.0317***
	(0.0017)	(0.0015)	(0.0021)	(0.0021)	(0.0029)	(0.0022)
Urban	0.0882***	−0.0242***	0.0994***	−0.0290***	0.0715***	−0.0177***
	(0.0014)	(0.0013)	(0.0017)	(0.0019)	(0.0024)	(0.0019)
Lower secondary	0.1371***	−0.0316***	0.1174***	−0.0142***	0.0000	0.0000
	(0.0018)	(0.0015)	(0.0017)	(0.0017)	(.)	(.)
Upper secondary	0.2423***	−0.0388***	0.0000	0.0000	−0.1302***	0.0170***
	(0.0019)	(0.0017)	(.)	(.)	(0.0023)	(0.0018)
College	0.3780***	−0.0249***	0.0000	0.0000	0.0000	0.0000
	(0.0020)	(0.0020)	(.)	(.)	(.)	(.)
Agriculture	−0.7288***	0.4485***	−0.5995***	0.3698***	−0.9445***	0.5684***
	(0.0110)	(0.0176)	(0.0116)	(0.0228)	(0.0244)	(0.0290)
Manufacturing	−0.3001***	0.2736***	−0.2210***	0.2284***	−0.4448***	0.3474***
	(0.0107)	(0.0176)	(0.0115)	(0.0229)	(0.0235)	(0.0288)
Construction	−0.6138***	0.3354***	−0.5434***	0.2746***	−0.7145***	0.4349***
	(0.0108)	(0.0176)	(0.0115)	(0.0228)	(0.0236)	(0.0288)
Commerce	−0.4814***	0.4486***	−0.3770***	0.4206***	−0.6465***	0.5066***
	(0.0107)	(0.0175)	(0.0114)	(0.0228)	(0.0233)	(0.0287)
Hospitality	−0.5464***	0.3912***	−0.4349***	0.3347***	−0.7181***	0.4820***
	(0.0108)	(0.0176)	(0.0116)	(0.0229)	(0.0235)	(0.0288)
Trans./comm.	−0.4834***	0.2701***	−0.4209***	0.2140***	−0.5924***	0.3659***
	(0.0109)	(0.0177)	(0.0117)	(0.0231)	(0.0236)	(0.0289)
Services	−0.5024***	0.3001***	−0.4489***	0.2279***	−0.6214***	0.4137***
	(0.0106)	(0.0176)	(0.0114)	(0.0229)	(0.0233)	(0.0287)
Gov. and NGOs	1.6666***	−3.6817***	1.3474***	−3.8941***	1.8344***	−2.8503***
	(0.0126)	(0.0197)	(0.0137)	(0.0256)	(0.0256)	(0.0313)
Observations	1,070,910	1,070,910	571,633	571,633	499,277	499,277
Baseline pred. prob.	0.45	0.21	0.33	0.24	0.62	0.16

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Population-weighted, average marginal effects from multinomial estimations reported. The base group is salaried informal. The base educational category is primary education or below. Other controls include state, year, and quarter fixed effects. Workers are aged 20–40.
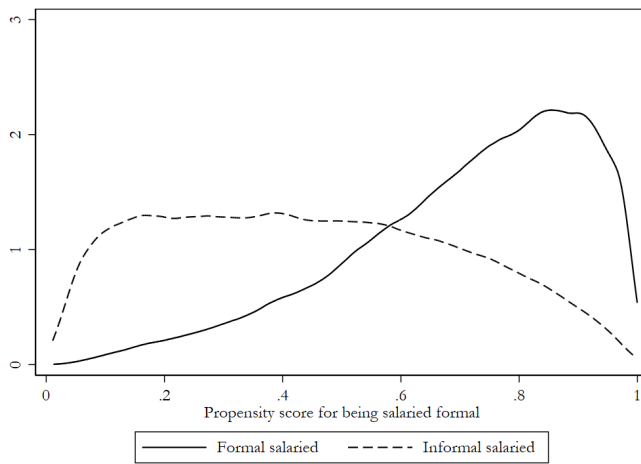
Source: authors' compilation based on ENOE 2005–17.

In Figure 4 panel B we compare the two types of informal workers: informal salaried and self-employed. This provides a deeper analysis of the two job types relevant to the informality literature. Here we see a greater overlap in the propensity scores for being currently self-employed and currently informal salaried employees. This suggests informal salaried and self-employed workers exhibit greater similarity in observable characteristics, with the most notable differences occurring at the lower end of the propensity score.

Finally, in Figure 4 panel C we compare formal salaried work to self-employment. This graph looks similar to panel A, in that there is less overlap between formal salaried and self-employed workers. What differs from panel A, however, is the fact that the self-employed exhibit higher propensity scores for

formal employment. This means there is greater overlap in observable characteristics between formal salaried and self-employed than between formal salaried and informal salaried. Among informal workers, self-employed ones appear to be more similar to formal ones than to informal salaried ones.

Figure 4: Predicted probability of job types

Panel A: informal salaried vs formal salaried

Panel B: informal salaried vs self-employed
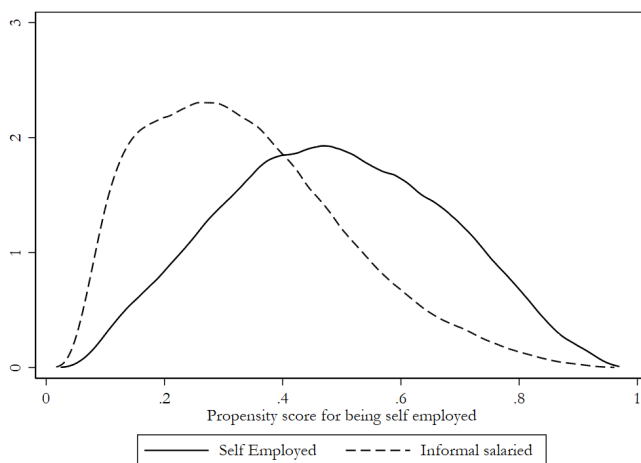
Panel C: formal salaried vs self-employed

Note: workers are aged 20–40.

Source: authors' compilation based on ENOE Q12005–Q42017.

In sum, the figures show overlaps in observable characteristics between all three job types, but the overlap is more notable between self-employed and informal salaried. This suggests informal salaried work and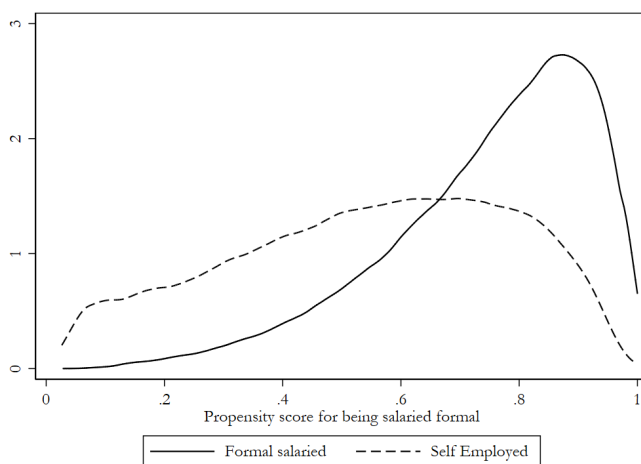 self-employment may play different roles in the working lives of individuals. For example, for some workers informal salaried work and self-employment are jobs of last resort, while for others self-employment, specifically, may be an optimal choice, providing higher wages and job flexibility. Yet for others salaried informal work may be a necessary first stage before transitioning to formal salaried work. This would occur if restrictive labour legislation makes employers reluctant to offer formal contracts to new workers. Employers instead start workers on informal contracts and move them into formal ones after a probationary screening period. We seek to illuminate each of these possibilities in the next section by looking at labour market transitions.

4   Labour market transitions

We turn to labour market transitions to examine if and when young workers shift across job types in order to better understand the role that informal salaried work and self-employment play. We do this in several parts, since the ENOE is a short panel in which individuals, at most, appear in five quarters. While the ENOE is not a long enough panel to see the evolution of individuals' working lives, we can see transitions for those who change jobs within this time frame. We can also exploit the large cross-sectional dimension of the ENOE to infer transition rates. Specifically, we graph the percentage of young workers by education level that fall into each job type by age. These are presented in the left-hand side of Figure 5 and show substantial differences by education level. As shown in panel A, close to 60 per cent of less well-educated workers of age 20 are in informal salaried work, while less than 10 per cent are self-employed. As workers age, the percentage in informal salaried work falls, but so does the percentage in formal salaried work. Meanwhile, the percentage in self-employment rises continuously, and by age 40 self-employment has more workers than formal salaried work and almost the same as informal salaried work. This suggests that for less well-educated workers the transitions into formality are low and that more change happens by shifting across informal sector employment.

As shown in Figure 5 panel B, for more well-educated workers we see an entirely different story. At age 20 an almost equal percentage are employed as formal or informal salaried workers (slightly less than 50 per cent), but the percentage who are formal salaried workers quickly rises while the percentage who are informal salaried workers quickly falls. By approximately age 28 the percentage in formal salaried is 60 per cent, while the percentage in informal salaried is less than 30 per cent. Furthermore, the percentage in formal salaried remains constant after around age 28. Meanwhile, like the less well-educated workers, there is a steady increase in the proportion that is self-employed as age rises, but the fraction of self-employed workers is generally much lower than that seen among the less well-educated workers. Figure 5 also shows that the likelihood of becoming a formal worker conditional on age is stronger among this better-educated group of workers. The less-educated workers start in salaried informal jobs, and their likelihood of transitioning to a formal job declines faster as they age.

We turn to the panel dimension of the ENOE to calculate and graph quarterly rates of informal salaried worker transitions into formal salaried jobs or self-employment. As shown in the graphs on the right-hand side of Figure 5, for both education levels the transition from informal salaried work to self-employment steadily rises over time and follows a similar trajectory. This aligns with a story in which salaried work, both formal and informal, provides workers with skills that they can apply to self-employment. A key difference across education levels, however, is that less-educated workers older than 26 have a higher rate of transition into self-employment than formal salaried work, whereas for better-educated workers the transition rate into formality is always higher than the one into self-employment. This suggests informal salaried work plays a different role in the working lives of less-educated workers relative to better-educated ones, and we explore this in more detail below.

Figure 5: Job type, transitions, and age

Panel A: primary and lower secondary education

Panel B: upper secondary and college education
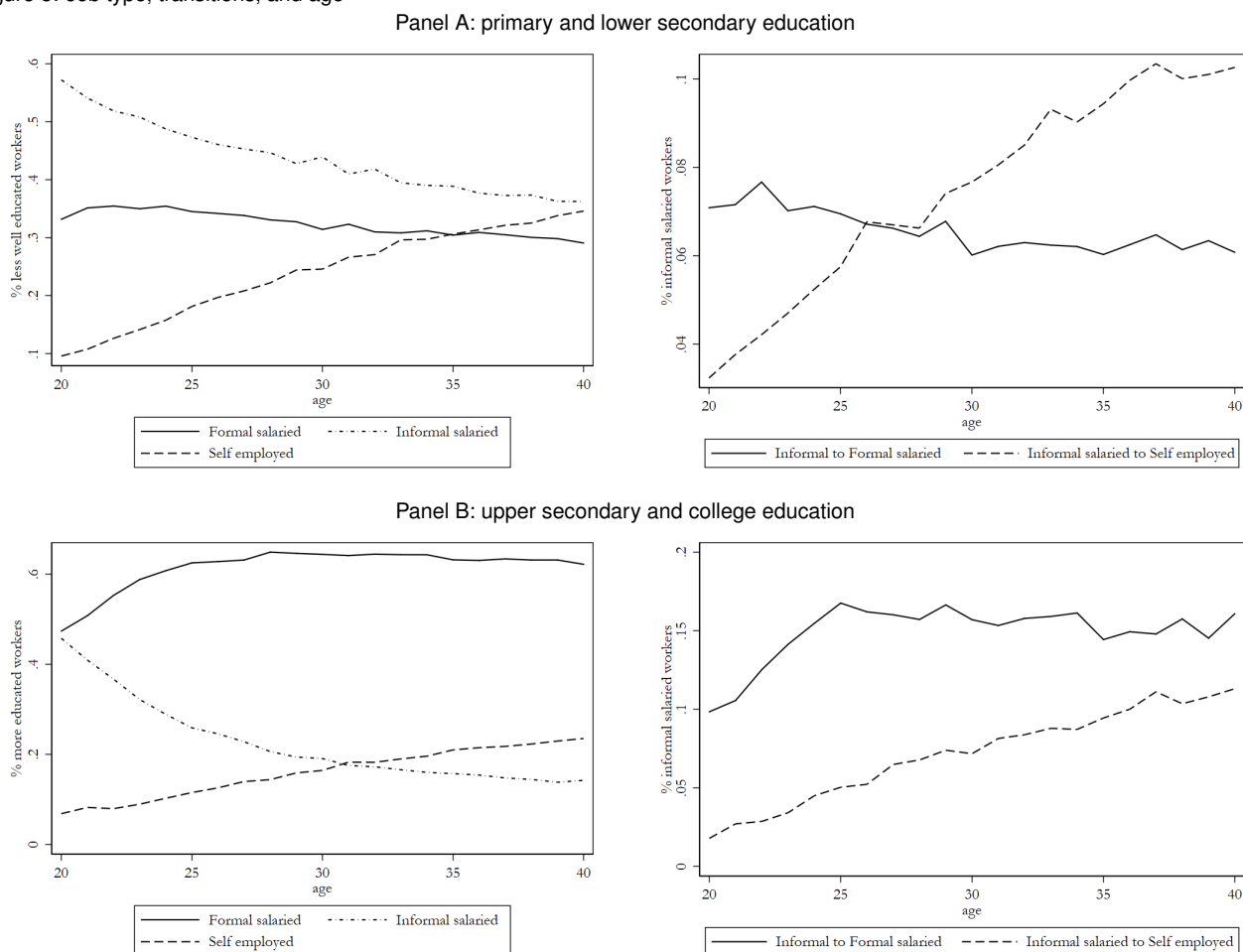
Note: workers are aged 20–40. Transition rates are defined as the percentage of informal salaried workers in one quarter who transition to salaried formal work or self-employment in the next quarter. These quarterly rates are averaged across age groups.

Source: authors' compilation based on ENOE Q12005–Q42017.

4.1 Transition from school to work

We begin with determinants of labour market outcomes for individuals who transition out of school and into work during the time they are in the ENOE.[11] While we do not know if the recorded jobs are the individuals' first ones, these individuals likely are at the earliest stages of their working lives. We thus argue that this group comes close to telling us about the determinants of initial job placement.

Similar to Section 2, we estimate the probability of salaried formal employment and self-employment relative to salaried informal employment using a multinomial logit. We include the same covariates as in Table 2, and present average marginal effects and their standard errors in Table 3. The first notable difference between these estimates and those for the full sample are in the predicted probabilities of each job type. The predicted probability of formal salaried work is 0.58 in the school-to-work transition

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[11] To do this we track individuals who are in school when they enter the panel but are not by the end. According to the documentation, 'in school' means an individual is matriculated in a school and 'out of school' means they are not. Thus, if a person is matriculated but absent from school for some reason during the interview, they are counted as being in school. This question is the only one that captures changes in student status, as the ENOE does not ask if an individual finished school.

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sample, but only 0.45 in the full sample. The predicted probability of self-employment is 0.12 in the sub-sample, but 0.21 in the full sample. The higher probability of formal salaried work means this sub-sample is skewed towards individuals with an upper secondary or college education, who have much higher incidence of this job type. Meanwhile, the lower predicted probabilities of self-employment stem from the fact that fewer individuals, regardless of education, start their working lives in this job type (as evidenced in Figure 5).

Table 3: Multinomial logit estimation of school-to-work transition

	Relative to salaried informal (Base)	
	(1) Salaried formal	(2) Self-employed
Age	0.0037***	0.0055***
	(0.0011)	(0.0007)
Woman	0.0272**	−0.0375***
	(0.0115)	(0.0091)
Married	0.0359**	0.0089
	(0.0167)	(0.0109)
Woman * married	−0.0509**	0.0502***
	(0.0227)	(0.0146)
Head of household	0.0265*	0.0217**
	(0.0149)	(0.0090)
Urban	0.0964***	−0.0208***
	(0.0103)	(0.0070)
Lower secondary	0.1682***	−0.0435***
	(0.0194)	(0.0114)
Upper secondary	0.2495***	−0.0495***
	(0.0178)	(0.0104)
College	0.3459***	−0.0401***
	(0.0191)	(0.0112)
Agriculture	−0.9011***	0.3407***
	(0.0810)	(0.0999)
Manufacturing	−0.3738***	0.2009**
	(0.0754)	(0.0991)
Construction	−0.6588***	0.2352**
	(0.0764)	(0.0996)
Commerce	−0.5604***	0.3073***
	(0.0748)	(0.0988)
Hospitality	−0.6378***	0.2866***
	(0.0761)	(0.0993)
Trans./comm.	−0.5094***	0.2074**
	(0.0770)	(0.0999)
Services	−0.5740***	0.2436**
	(0.0744)	(0.0988)
Gov. and NGOs	0.9491***	−2.0335***
	(0.0839)	(0.1109)
Observations	26,113	26,113
Baseline predicted probability	0.58	0.12

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses. Population-weighted, average marginal effects from multinomial estimations are reported. The base group is salaried informal workers. The base educational category is primary education or below. Other controls include state, year, and quarter fixed effects. Workers are aged 20–40.

Source: authors' compilation based on ENOE 2005–2017.

Outside of the predictive probabilities, most of the coefficients have the same sign and relative size as the estimates from the full sample. For example, urban, better-educated, and government and NGO workers are more likely to be in formal salaried employment and less likely to be in self-employment relative to informal salaried employment. Single women are more likely to be in formal salaried work and less likely to be self-employed, while the opposite is true for married women. This further highlights how self-employment may be an optimal job type for women balancing home and work demands. What is

different from the earlier results, however, are the coefficients on age. In the transition from school to work, age is positively, instead of negatively, associated with formal employment—a feature that speaks to the younger age of this group and the early transitions documented above.

4.2 Transitions within the labour market

To better understand if informal jobs play different role for workers depending on their education level, we estimate quarterly transitions across job types once individuals are in the labour market. Summary statistics are shown in Table 4. First, they show that better-educated workers are more likely to transition from either type of informal employment into formal employment. For example, well-educated workers are 40 per cent more likely to transition from informal salaried to formal salaried work (24 per cent versus 10 per cent) and 167 per cent more likely to transition from self-employment to formal salaried work (8 per cent versus 3 per cent). This indicates that informal work does provide a stepping stone into formal work for some, but more so for well-educated workers.

Table 4: Job type transitions

	(1) All	(2) Primary and lower secondary	(3) Upper secondary and college
Were salaried formal			
Stays sal. formal	0.89	0.86	0.91
Becomes sal. informal	0.09	0.12	0.07
Becomes self-employed	0.02	0.02	0.02
Were salaried informal			
Becomes sal. formal	0.14	0.10	0.24
Stays sal. informal	0.75	0.78	0.66
Becomes self-employed	0.11	0.12	0.10
Were self-employed			
Becomes sal. formal	0.05	0.03	0.08
Becomes sal. informal	0.19	0.21	0.15
Stays self-employed	0.76	0.76	0.77
Observations	2,725,657	1,451,091	1,272,305

Note: standard errors in parentheses. Population-weighted averages are shown. Transitions are calculated from one quarter to the next, conditional on remaining employed. Workers are aged 20–40.

Source: authors' compilation based on ENOE 2005–07,

Second, flows out of the formal sector and into the informal exist, but are driven by informal salaried work instead of self-employment. For example, among formally employed less-educated workers, 12 per cent transfer to informal salaried work and only 2 per cent transfer to self-employment. Among well-educated workers these values are 7 and 2 per cent, respectively. This contradicts a story of voluntary exit from formality driven by workers who use skills and capital gained in the formal sector to open their own firms. This may be because younger workers still face barriers to self-employment, and that the transition rates are higher among older workers. Why so many workers fall out of formal salaried work and into informal salaried work is unclear, and warrants further investigation.

Third, the rates of persistence are the highest for formal salaried work, with 91 per cent of well-educated workers and 86 per cent of less well-educated workers staying in formal salaried jobs across quarters. This is unsurprising as better job characteristics and restrictive labour legislation make job separation less likely. Rates of persistence in informal salaried jobs are lower for well-educated workers (66 per cent) than less well-educated ones (78 per cent), providing further evidence they serve as more of a stepping stone to formality for the former over the latter. Fourth, the rates of persistence in and transition out of self-employment are similar across education groups, with approximately three-quarters remaining in the job type and one-quarter transitioning out. Of those who transition, however, the majority shift into informal salaried work. In other words, they stay in the informal sector. It is unclear if these are

voluntary transitions driven by better informal job opportunities or involuntary ones driven by skill, capital, or labour constraints.

Finally, as shown in Table 5, which reports the average change as measured by the principal component and occupation–industry wage rank indices, as well as the proportion of workers moving in any of these directions, we find evidence that job type transitions result in job quality changes. As expected, transitions from informal salaried to formal salaried (column 1) are associated with improvements in job quality, while transitions from formal salaried to informal salaried (column 2) are associated with a deterioration. However, we also see that transitions from formal salaried to self-employment (column 4) are associated with an average decline in the average index, while the opposite transition results in improvement. This again shows that among a younger age cohort there is less evidence that self-employment is a sector of opportunity instead of last resort. Finally, regarding shifts within the informal sector, we see that movements into salaried informal work from self-employment are associated with an average decline, while the opposite results in an average improvement. This indicates that informal salaried work is the least appealing, and the reasons why some individuals transition into this work, or remain there, warrant further investigation.

Table 5: Changes in job quality

| | Transition | | | | | |
	(1) Informal sal. to formal sal.	(2) Formal sal. to informal sal.	(3) Self-emp. to formal sal.	(4) Formal sal. to self-emp.	(5) Informal sal. to self-emp.	(6) Self-emp to informal sal.
Job quality (PCA)						
Avg. change	1.768	−1.747	.	.	.	.
Higher (%)	0.768	0.116	.	.	.	.
Lower (%)	0.109	0.761	.	.	.	.
Same (%)	0.123	0.123	.	.	.	.
Occupation–industry wage rank						
Avg. change	6.018	−6.172	9.391	−9.958	6.357	−5.867
Higher (%)	0.318	0.230	0.437	0.338	0.326	0.215
Lower (%)	0.231	0.321	0.342	0.440	0.211	0.328
Same (%)	0.451	0.449	0.221	0.222	0.463	0.457
Observations	130,183	121,321	27,143	26,399	87,139	89,688

Note: population-weighted averages are shown. Transitions are calculated from one quarter to the next, conditional on remaining employed. Workers are aged 20–40.

Source: authors' compilation based on ENOE 2005–07.

4.3   Transitions across and within employers

We end by testing the hypothesis that informal salaried jobs are used by employers to screen new employees before offering them permanent contracts. We examine if transitions from informal to formal jobs involve changes across or within *employers*. We can do this for individuals who appear in the long-form questionnaire, applied approximately one in every four quarters, which includes questions about how long a person has been with their current employer.[12] For these individuals we therefore can see if an informal to formal transition happened by switching employers or within the same employer, indicating a screening process. These results are shown in Table 6, and reveal that for highly educated workers the majority of transitions (52 per cent) happen *within* employers. This value is 5 percentage points higher than for less-educated workers, and suggests that while the story of employer screening exists for both groups, it is greater for better-educated workers.[13]

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[12] Specifically, the extended questionnaire was administered in every quarter in 2005 and in the first two quarters of 2006. After that it was administered only once each year; in quarter 2 in 2007 and 2008 and in quarter 1 in 2009 onward.

[13] We find similar results when we split the sample by men and women, indicating this story does not differ by gender.

Table 6: Employers for transitions to formality

	Educational attainment	
	(1) Primary and lower secondary	(2) Upper secondary and college
Of those who become formal		
Employer is new	0.61	0.56
	(0.49)	(0.50)
Employer is the same	0.32	0.36
	(0.47)	(0.48)
Observations	10,925	9,156

Note: population-weighted averages are shown. Transitions are calculated from one quarter to the next, conditional on remaining employed. Workers are aged 20–40.

Source: authors' compilation based on ENOE 2005–07.

5   Summary and conclusion

In this paper we characterize formal and informal jobs for younger Mexican workers. We document the bifurcation of the informal labour market into individuals who work for someone else and those who work for themselves. Using different non-income measures and a wage index, we showed that within education groups, formal jobs are of higher quality than informal jobs. However, the gaps between formal and informal salaried jobs among the better-educated workers are smaller than for less-educated workers. This suggests that informal jobs may play a different role in the work trajectory of the higher-educated workers.

When we explore the subsequent labour market transitions for established workers, we find that higher-educated workers have higher transition rates from informal to formal work and lower transitions into informal salaried work. Furthermore, transitions *within* employers are higher for better-educated workers. These results suggest that some firms use informal contracts initially as a screening mechanism more often among better-educated workers. We also find that the type of sector matters for increasing the likelihood of formal employment. In particular, the government/NGO sector stands out as a creator of formal jobs.

Overall, our paper examines in detail the interplay of rising education levels and rising informality levels and finds that the formal sector has not been able to absorb the increased number of better-educated workers (Levy and López-Calva 2020). For those in the informal sector, informal salaried work has the lowest average quality. The reasons why some workers shift into or remain in this type of work warrants further investigation.

Our work can inform policy-makers, since given the prevalence of informal salaried work, reforms that make it easier for firms to hire temporary workers or fire permanent ones likely will reduce this type of employment. Such reforms likely will have a larger effect on increasing formal employment among workers with an upper secondary or college education, but could also have non-negligible effects on those with less education, helping to alleviate the concern of rising education in the presence of high informality. Furthermore, training and microcredit programmes can help informal workers, but mainly those in self-employment.

Beyond the scope of this paper is examining self-employed workers more closely. Future work could explore the data and theories that account for the U-shape in income quartiles documented here (Figure 3, panel B). The low number of transitions into informal self-employment could be explained by the particular types of self-employed jobs available to these younger cohorts, due to constraints in terms of

skills or capital. This could be examined by looking and comparing the dynamics of self-employment for the whole population and specific cohorts.

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