What Aspects of Formality Do Workers Value?

Evidence from a Choice Experiment in Bangladesh

Minhaj Mahmud (BIDS and BIGD)
Italo Gutierrez (RAND Corporation)
Krishna Kumar (RAND Corporation)

Shanthi Nataraj (RAND Corporation)

G|L|M O LIC

What Aspects of Formality Do Workers Value?

Evidence from a Choice Experiment in Bangladesh

Minhaj Mahmud (BIDS and BIGD)
Italo Gutierrez (RAND Corporation)
Krishna Kumar (RAND Corporation)

Shanthi Nataraj (RAND Corporation)

I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

UKaid
from the British people

ABSTRACT

What Aspects of Formality Do Workers Value?
Evidence from a Choice Experiment in Bangladesh*

In this study, we use a choice experiment to elicit workers' willingness to pay (WTP) for specific job benefits typically associated with formal employment (contracts, termination notice, paid leave, preferred working hours, and access to a retirement account). We find that workers most value job stability: the average worker would be willing to give up 19 percent of monthly income for a 6-month contract, 27 percent for a 1-year contract and 44 percent for a permanent contract (relative to no contract). Thirty days' of termination notice would also be valued at about 12 percent of monthly income. Using a latent class model, we explore preference heterogeneity and find that government workers are more likely to place a higher value on long-term contracts than private sector employees, while casual workers are more likely to have a particularly strong preference for higher salary, and a relatively low WTP for various benefits. This heterogeneity may be driven by sorting or loss aversion. Our work also lends support to the use of choice experiments to overcome the challenges associated with estimating WTP for specific job benefits from hedonic wage regressions or from observed job durations.

Corresponding author:
   Shanthi Nataraj
   RAND Corporation
   1776 Main Street
   Santa Monica, CA 90407
   USA
   E-mail: snataraj@rand.org

1. Introduction

A large share of workers in developing countries are part of the "informal" economy – whether that is measured in terms of tax evasion, self-employment, employment in small firms, or firm registration (LaPorta and Shleifer, 2008; Tybout, 2000). The prevalence of informality presents a concern for a variety of reasons, including the fact that workers in the informal sector are often subject to poor working conditions, and receive few of the benefits that are available to formal workers such as written contracts or paid leave.

Cross-country comparisons suggest that informality and per-capita income are negatively correlated – that is, richer countries tend to have much lower shares of self-employment and tax evasion, and higher shares of registered firms (LaPorta and Shleifer, 2008). One common interpretation of this negative correlation has been that as economies grow, the share of informality will fall, as more entrepreneurs find it worthwhile to take advantage of the benefits of formality, such as access to formal financing and infrastructure.[2]

Despite the strong, negative relationship between income and informality on a cross-country basis, a number of individual countries have experienced strong growth in recent years, with little change in the overall share of informal employment (ILO, 2014). In the case of Bangladesh, for example, per-capita GDP rose substantially between 2002 and 2010, while the share of formal employment (measured by the share of "regular paid employees" in nationally-representative labor force surveys) remained at approximately 15 percent (Figure 1).

---

[2] This is what LaPorta and Shleifer (2008) characterize as the "dual" view of informality.

Figure 1. Formal Employment and Per-Capita GDP in Bangladesh

Source: Share of formal employment based on authors' calculations using Labour Force Survey (LFS) data. GDP from World Bank Databank.

To the extent that informality may continue to be prevalent in developing countries like Bangladesh for a substantial period of time, it is important to examine whether it may be possible to extend certain benefits of formal employment to employees in the informal sector, in order to enhance their quality of employment. While many employment protections, such as basic occupational safety or paid leave, are supposed to apply to all workers, in reality such protections are more likely to be enforced in larger, formal firms, and government agencies may not have sufficient resources to extend enforcement efforts to numerous, small firms. Moreover, attempting to extend additional formal protections – or to enforce all existing protections – in the informal sector may encourage informal firms to move even further into the shadows. Thus, an important question that can help policymakers to focus on specific areas that are most critical is which aspects of formality workers value most.

In this paper, we use a choice experiment to elicit workers' preferences for specific benefits associated with formal employment. In the choice experiment, each worker was presented with two different jobs, which differed in terms of five attributes: a written contract, termination notice, paid leave, working hours, and access to a retirement fund. The worker was also told the monthly income that would be associated with each job.[3] The worker was then asked to decide which job he or she would select, if given an opportunity to choose between the two alternatives. We used the tradeoffs between monthly income and each of the other attributes to estimate the willingness to pay (WTP) for that particular attribute (i.e., job benefit).

A key contribution of our work is that it is one of only a handful of choice experiments that examine preferences for job attributes. Such stated preference methods have been used extensively in the marketing, environmental, health and transportation literature; however, while there are a few papers that use choice experiments to elicit preferences for job attributes (Ubach et al. 2003, Scott et al. 2004), these are generally limited to specific health care occupations. Our work enables us to elicit preferences for job benefits from a wide range of workers, thus allowing us to examine the extent to which preferences for specific attributes differ by individual characteristics and type of current employment.

Although incentive compatibility might be a concern when using stated preference methods, such methods can help to overcome a critical challenge that arises when using revealed preference methods to estimate willingness-to-pay for job attributes: namely, unobserved heterogeneity among workers means that workers with greater

---

[3] Monthly income was presented as percentage increase in income compared to the respondent's current monthly income from his or her main economic activity.

abilities are usually observed in jobs with higher pay as well as better benefits, thus biasing hedonic estimates (Hwang et al., 1992). Some studies have attempted to overcome these difficulties using panel data, with mixed results (Brown 1980, Duncan and Holmlund 1983). Another approach adopted to overcome this challenge is to use information on job duration – namely, to estimate preferences for specific job benefits by examining whether workers stay longer in jobs with those benefits (Gronberg and Reed 1994, Reed and Dahlquist 1994). However, it is not clear that duration models solve the key problem of unobserved heterogeneity; an important identifying assumption is that the *involuntary* separation rate is the same across jobs with different benefits. The benefit of a choice experiment is that it can create a hypothetical tradeoff between job benefits and wages, thus allowing us to estimate willingness to pay for a particular benefit type.

Our study also contributes to the growing body of literature on informality. As noted above, there is a disconnect between the cross-country relationship between informality and income, and the experiences of specific countries that have experienced growth without a concurrent reduction in informality. At the micro-level, a number of studies have sought to understand why certain firms operate formally or informally, and what factors might encourage firms to formalize (see, among others, de Mel et al. 2011, De Soto 1989, Straub 2005). Our work adds to this strand of literature by considering informality and formality not as a firm-level dichotomy based on whether or not the firm is registered, but rather as a continuum from the worker's perspective, in terms of the types of employment benefits he or she receives.

The rest of this paper is organized as follows. Section 2 provides a brief overview of the survey methods, while Section 3 describes the choice experiment design. Section 4 presents results, and Section 5 concludes.

2. Survey Methods

We conducted a survey of approximately 2,000 workers in the two major administrative divisions of Bangladesh.[4] We used a two-stage sampling design to select workers to interview in four districts: Dhaka, Gazipur, and Narayanganj districts in the Dhaka metropolitan area, and Chittagong district in the Chittagong metropolitan area. As we were unable to obtain a recent sampling frame for households, we began with a list of the number of households in each of 1,971 *mouzas* (the lowest administrative level at which national surveys are conducted in Bangladesh and for which such data were available) in the four targeted districts. Thus we used the *mouza* as our primary sampling unit (PSU) and selected 80 *mouzas* with probability proportional to size (PPS) where size was the number of households.[5] Within each *mouza*, we selected 30 households for first-stage sampling, using a random walk method, as follows. Three enumerators, plus a supervisor, would arrive at the selected *mouza*. The supervisor first reviewed the general layout of households in the *mouza*, and then directed each enumerator to start at a different point, typically along the outside border of the *mouza*. The enumerator was instructed to visit each 10th household.[6] At each selected household, we used a screener

to collect basic information about all household members, including age, gender, employment status and type of employment.

The screener resulted in a roster of approximately 3,800 working adults. Since one of the key aims was to understand transitions between employment types, we stratified the roster by gender as well as by the following employment types: Paid employee in government; Paid employee in a private entity; Apprentice/Intern/Trainee; Seasonal worker; Day laborer / casual worker; Domestic worker in a private household; Self-employed / business owner with no employees; Self-employed / business owner employing only paid or unpaid family members; Self-employed / business owner employing some non-family members; and Paid or unpaid family member working in a household business.

Our target sample size was 2,000 workers. Within the smaller gender-employment type strata, we selected all workers.[7] Within the larger strata, we randomly selected 40 percent of the workers. Of the target sample, we successfully completed 1,966 interviews (98.3 percent completion rate).

3. Choice Experiment Design

3.1 Random Utility Model

We can model an individual's choice among alternatives in terms of a random utility approach (McFadden, 1974), in which utility is consists of both observable and unobservable (stochastic) components. Suppose that the utility an individual receives

---

unsuccessful, the enumerator would select the household next door to that one. If the second replacement was also unsuccessful, the enumerator would go on to the next original household (i.e., 10th household).
[7] These were: all employment type cells for women, and seasonal worker, domestic servant, and apprentice/intern/trainee employment type cells for men.

from a particular alternative *j* depends on the attributes x_j associated with that alternative. In the case of a choice between two alternative jobs, the individual also faces the monthly income w_j associated with each job:

$$U_j = v(x_j, w_j; \beta) + \varepsilon_j$$

Utility-maximizing behavior is modeled as deterministic from the individual's point of view, but includes a stochastic term ε_j that reflects individual characteristics that are unobserved by the researcher. Each individual chooses the alternative that provides the maximum utility, and the probability that the individual selects alternative *i* from choice set *C* is given by:

$$Pr(i|C) = Pr(U_i > U_j) = \text{Pr}(v_i + \varepsilon_i > v_j + \varepsilon_j) = \text{Pr}(v_i - v_j > \varepsilon_j - \varepsilon_i), \forall j \in C$$

Assuming a linear-in-parameters utility function, and a Type 1 extreme value distribution for the unobserved errors, yields a conditional logit model and allows us to write the probability of choosing alternative *i* from choice set *C* in terms of the *k=1,...,l* attributes x_k and monthly income *w*:

$$Pr_n(i) = \frac{\exp\left(\sum_{k=1}^{l} \beta_k x_{ik} + \beta_w w_i\right)}{\sum_{j \in C} \exp\left(\sum_{k=1}^{l} \beta_k x_{jk} + \beta_w w_j\right)}$$

The parameters β_k can then be estimated using a standard maximum likelihood model for *N* observations, $L = \prod_{n=1}^{N} \prod_{j \in C} Pr_n(j)^{y_{jn}}$ where y_{jn} is equal to 1 if the respondent selects alternative *j*, 0 otherwise.

The conditional logit model rests on a number of critical assumptions, including that the relative probability of choosing between any two alternatives does not depend on any other alternatives (independence from irrelevant alternatives, IIA), and that the unobserved errors are not correlated over time.

To mitigate these challenges, we also estimated a latent class model, which assumes that the coefficients β vary across classes of individuals. It thus assumes that IIA holds *within* classes, but not *across* classes. The probability of observing a sequence of choices by individual *n* in class *c* is:

$$\sum_c H_{nc} \prod_t \prod_j \frac{exp(x'_{njt}\beta_c)}{\Sigma_j \, exp(x'_{njt}\beta_c)}^{y_{njt}}$$

where H_{nc} indicates the class share and is given by:

$$H_{nc} = \frac{exp(z'_n\delta_c)}{\Sigma_c exp(z'_n\delta_c)}$$

Once the parameters have been estimated, the ratio between the parameter estimates for any two attributes *k* and *m* yields the marginal rate of substitution(MRS) between them. Since one of the attributes is monthly income, the marginal value of any other attribute can be estimated by taking the ratio of the parameter on that coefficient β_k and the parameter on income β_w:

$$WTP_k = \frac{\partial U / \partial x_k}{\partial U / \partial x_w} = \frac{\beta_k}{\beta_w}$$

3.2 Selection of Attributes and Levels

In the choice experiment, we told respondents that we would present them with two hypothetical employment opportunities, each with different levels of the following attributes: a written contract, termination notice, paid leave, working hours, a retirement fund (Provident Fund), and monthly income. We asked them to assume that all other attributes not presented in the scenario were identical between the two jobs. The

alternatives were unlabeled; that is, we did not identify jobs as "formal" or "informal", as doing so may have caused respondents to make assumptions about other aspects associated with the jobs, rather than focusing on the attributes listed above. The respondents were then asked to indicate which of the two jobs they would select if given a choice.

Table 1 shows an example of a choice set. This could reflect a real-world situation in which a worker has to choose between two different job offers. Job A offers a 6-month written contract, 15 days of termination notice, working hours in the range of 30-45 hours / week, and 14 days of paid leave, but no Provident Fund. The respondent is told that Job A would pay a monthly salary 20% above his or her current monthly income. Job B offers the same attributes in terms of termination notice, paid leave, and Provident Fund. However, this job offers a longer contract (1 year), longer working hours (45-60/week), and lower income (10% increase over current income).

Table 1. Example Choice

	JOB A	JOB B
Written Contract	6 months initially	1 year initially
Termination Notice	15 days	15 days
Working hours	30-45 hours per week	45-60 hours per week
Amount of paid leave (not including major government holidays / festival leave)	14 days	14 days
Provident Fund	No	No
Monthly income	20% higher than your current monthly income from main economic activity	10% higher than your current monthly income from main economic activity

The full set of attributes and levels that we included is shown in Table 2. The specific attributes and their levels were refined through a series of focus groups and a

pilot survey. Since our survey included respondents who were self-employed or working

for family businesses, and also included respondents with a wide range of current

incomes, we framed the monetary variable relative to current monthly income, rather than

a fixed wage. In addition, the levels for income included only increases rather than

decreases because based on our focus groups, we found that offering a lower income was

likely to result in immediate rejection of the choice scenario. To make the options more

realistic, access to a Provident Fund only offered for jobs that also included permanent

contracts.

Table 2. Full Set of Attributes and Levels

Attribute	Levels
Written Contract	None 6 months initially 1 year initially Permanent or open contract
Termination Notice	None 15 days 30 days 60 days
Working hours	30-45 hours per week 45-60 hours per week 60-75 hours per week
Amount of paid leave (excluding government holidays and festival leave)	None 7 days 14 days 21 days
Provident Fund	Yes No
Monthly income	Same as now 10% increase over current income 20% increase over current income 30% increase over current income 40% increase over current income 50% increase over current income

The experimental design involves creating the choice sets in an efficient way by combining attribute levels into alternatives to create choice sets. We designed the specific choices offered to respondents in order to allow identification of all main effects using an efficient design in Choice Metrics (NGene). The attributes were combined to create 48 choice sets in 8 blocks, each with 6 choice situations. To mitigate fatigue and cognitive burden, each respondent was presented with one block of 6 choice sets. The choice sets were randomly assigned to respondents to rule out the possibility of any ordering effects on choices.

Appendix A contains the portion of the survey instrument that included the choice questions.

4. Results

4.1 Respondent Demographics

Table 3 shows basic demographics for the 1,966 individuals who completed the survey. Sampling weights are applied in this table. Approximately 35 percent of respondents were women, but because we oversampled women, these respondents represent only 17.8 percent of the underlying population. The mean age of respondents was approximately 36. Most workers had some schooling, typically at the primary or secondary level. Because of our focus on the Dhaka and Chittagong areas, about 20 percent of the (weighted) sample were workers in the garments industry, and another 15 percent were in other types of manufacturing industries.

Panel (b) shows the distribution of respondents by gender and type of employment. About 40 percent of men, and 50 percent of women, were private sector employees. About 45 percent of men, and 25 percent of women, were either self-

employed or family members working in a household business. About one-third of the self-employed men, but only about 7 percent of self-employed women, reported having non-family member employees in their businesses.[8]

In Panel (c), we show some basic summary statistics for the types of benefits reported by workers in their current jobs. We only report benefits for wage workers (that is, we exclude workers who are self-employed or are family members working in household businesses). We also group workers into three categories: government employees (including workers in government and semi-government entities), private employees (paid employees in private entities), and casual workers (apprentices, seasonal workers, day laborers/casual workers, and domestic workers in private households).

As we would expect, benefits were most prevalent among government employees. Written contracts, sick leave, casual leave (that is, paid vacation), maternity leave (for women), and access to a Provident Fund were nearly ubiquitous among government workers. About 75 percent of all respondents reported that they would receive termination notice if they were let go from their jobs.

Private sector employees were also more likely to receive benefits than casual workers, with 25 percent reporting written contracts, and another 48 percent reporting verbal contracts. Sick leave, casual leave, and maternity leave were also fairly common. Termination notice was less common, only being reported by 45 percent of workers, and only around 12 percent reported having access to a Provident Fund.

Not surprisingly almost none of the casual workers reported written contracts, but half did report verbal contracts, and over 60 percent reported sick leave. Casual leave was only reported by about 25 percent of casual workers; similarly, only about 25 percent of

_____

[8] We asked workers who had multiple jobs to focus on the job in which they spent the most hours.

female casual workers reported that they would have access to maternity leave if needed. Nearly 15 percent of casual workers reported that they would receive termination notice if they were let go from their jobs; most of these were domestic workers.

In Panel (d), we report the 25th, 50th, and 75th percentiles of monthly income reported by individuals.[9] We break out wage workers into the three categories discussed above, and non-wage workers into three additional categories: self-employed workers who either do not have any employees or only have family employees, self-employed workers who have at least one non-family employee, and family members working in household businesses.

As we would expect, median monthly income is highest for government workers, at about 25,000 Taka. Interestingly, self-employed workers report the next highest monthly income, with those who have non-family employees reporting about 20,000 Taka, and those who do not reporting about 15,000 Taka.[10] Private employees report a median monthly income of 9,500 Taka, while casual and family workers report only 7,500 Taka. We also show estimated hourly earnings, which are calculated by dividing monthly earnings by estimated number of hours worked in a month. The ranking of income estimates remains largely stable, although family workers have a higher median hourly income than casual workers.

---

[9] Most individuals provided an estimate of their monthly income; among the 69 individuals who did not, 57 selected a range into which their monthly income fell. For these 57 individuals, we assumed that their income was equal to the median amount in the selected range.

[10] As a comparison, the World Bank estimates that annual per-capita income in Bangladesh was about $1,212 USD (97,600 Taka) in 2015, or about $101 USD (8,100 Taka) per month.

Table 3. Summary Statistics for Respondents

Panel (a): Basic Demographics		
Female		17.8%
Age	0-25	21.9%
	26-35	35.6%
	36-45	22.8%
	46-55	12.7%
	56+	7.1%
Education	Less than primary	16.6%
	Some primary	22.7%
	Some secondary	19.6%
	Some high school	15.9%
	High school degree	9.5%
	Bachelors degree or higher	15.4%
	Missing	0.3%
Industry	Garments	20.5%
	Other Manufacturing	15.5%
	Trade/Transportation	27.8%
	Other services	36.3%

Panel (b): Type of Employment			
	Male %	Female %	Total %
Paid employee in government	4.3	5.7	4.5
Paid employee in semi government entity	1.5	3	1.8
Paid employee in a private entity	38.2	50.1	40.3
Apprentice/Intern/Trainee	0.1	0.3	0.1
Seasonal worker	0.2	0.7	0.3
Day laborer / casual worker	10.4	3.2	9.1
Domestic worker in a private household	0.3	10.6	2.1
Self-employed / business owner with no employees	20.1	16.1	19.4
Self-employed / business owner employing only paid or unpaid family members	6.9	4.5	6.5
Self-employed / business owner employing some non-family members	15.1	1.7	12.7
Paid or unpaid family member working in a household business	2.9	4.1	3.1
Total	100	100	100

15

	Government employees %	Private employees %	Casual workers %
Panel (c): Benefits by Employment Type			
Written contract	91.9	25.0	1.6
Verbal Contract	5.0	48.1	51.3
Sick leave	98.5	87.8	63.7
Casual leave	96.6	61.2	26.0
Holiday leave	87.9	83.0	17.0
Maternity leave	93.8	85.1	27.0
Paid overtime	19.3	33.5	7.3
Bonus	95.8	86.1	26.1
Provident Fund	93.5	12.6	0.6
Gratuity	72.6	6.4	0.6
Pension	82.8	0.7	0.8
Termination notice	73.6	45.2	14.4

Panel (d): Monthly Income

Monthly Earnings (2016 Taka)

Employment Type	25% percentile	50% percentile	75% percentile
Government employee	15,200	25,000	35,000
Private employee	7,000	9,500	15,000
Casual worker	6,000	7,500	12,000
Self-employed alone/with family	7,500	15,000	20,000
Self-employed (with non family)	15,000	20,000	35,000
Family worker	2,500	7,500	15,000

Hourly Earnings (2016 Taka)

	25% percentile	50% percentile	75% percentile
Government employee	303	480	837
Private employee	114	166	267
Casual worker	111	143	222
Self-employed alone/with family	111	222	370
Self-employed (with non family)	222	370	519
Family worker	91	178	286

Note: Summary statistics for individuals in survey. Sampling weights are applied. In Panel ©, we only include wage workers who were able to provide an answer; maternity leave is limited to women who were able to provide an answer. In Panel (d), if respondents did not provide an exact monthly income, but did indicate the bin into which their income fell, we used the median value from the bin for their income.

4.2 Choice experiment tradeoffs

The attributes and levels were developed with the aim of asking individuals to make relatively difficult tradeoffs. In other words, if the tradeoff was too easy to make, then we would gain little information about how much people value each attribute. If the tradeoffs were not easy, then we would expect to see individuals often making different choices – that is, we would not expect to see every respondent choosing the same job when faced with the same choice scenario, except in the case where one choice strictly dominates the other.

For each of the 48 choice scenarios, we calculated the percent of respondents who chose Job A and the percent who chose Job B, and then identified the minimum (for example, if 45 percent chose Job A and 55 percent chose Job B, we identified the minimum as 45 percent). Figure 2 shows the empirical CDF of these minima. In general, it appears that there was a substantial amount of heterogeneity in choices, with many scenarios in which about one-third of respondents selected one job but the other two-thirds selected the other.

We included three scenarios in which one of the alternatives was strictly dominated. These three scenarios appear as triangles, and are all in the left tail of the CDF – in other words, the strictly dominated jobs were selected by very few individuals, far fewer than typically selected one of the jobs that was not strictly dominated. This evidence suggests that individuals understood the choice scenarios and made choices in a coherent manner.

Figure 2. Empirical CDF of Minimum Percent Selecting One Scenario
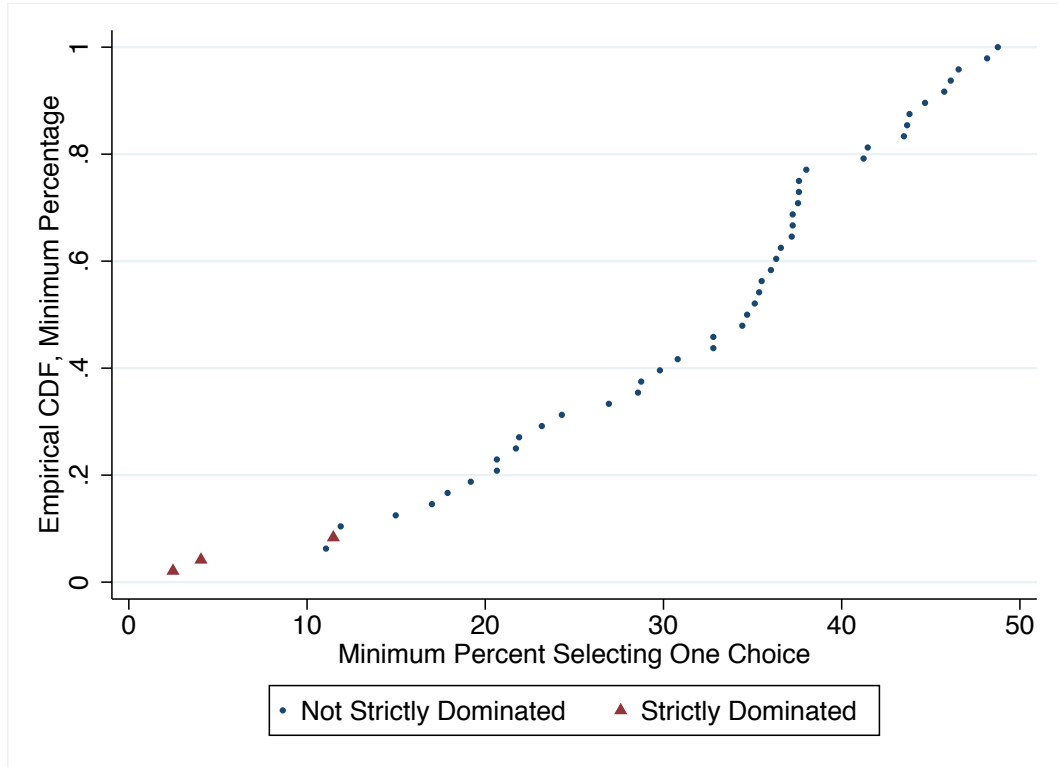
4.3 Conditional logit results

Table 4 presents results from the conditional logit model. We begin with a specification in which all attribute levels are included as dummy variables. The excluded levels are: contract (none), termination notice (none), hours (30-45), paid leave (none), Provident Fund (none), and income (no change). Sampling weights are applied, and standard errors are clustered at the level of the respondent. In Column (2), we enter the percent change in income as a linear variable rather than as a set of dummies. A small number of respondents indicated that they did not receive a wage in their current jobs; since the percent change in income may have been meaningless for these respondents, we

18

therefore excluded them in Column (3). [11] In Column (4), we enter notice, work hours, and leave linearly (where hours are set equal to the median number in each bin). Column (5), like Column (3), excludes those with zero reported income from their current jobs, using the linear specification of Column (4). In Column (6), we re-estimate the model in Column (5), without applying sampling weights, and confirm that results are similar.

All of the coefficients are highly significant across specifications, and the signs of the coefficients are consistent with economic theory. Longer contracts are valued more highly, as are longer durations of termination notice and greater amounts of paid leave. Respondents prefer fewer working hours (conditional on receiving the same income), and prefer having a Provident Fund. The coefficients on greater monthly income are also positive, as we would expect.

---

[11] Among the 65 respondents in our sample who indicated that they were household members working in a family business, 6 reported earning no income. 11 self-employed respondents also reported zero income, as did 1 domestic worker, 1 day laborer, and 2 paid employees. In the case of the 4 wage workers who reported zero income, it is not clear if this reflected a failure to be paid by their employers recently, or a refusal to respond to the income question. In addition, income information was missing for 8 respondents.

Table 4: Conditional Logit Coefficient Estimates

	(1) All	(2) All	(3) Pos. Income	(4) All	(5) Pos. Income	(6) Pos. Income, No Weights
Contract - 6 months	0.830***	0.805***	0.788***	0.961***	0.961***	0.948***
	(0.0619)	(0.0611)	(0.0618)	(0.0551)	(0.0555)	(0.0518)
Contract - 1 year	1.332***	1.370***	1.354***	1.364***	1.377***	1.313***
	(0.0652)	(0.0649)	(0.0651)	(0.0594)	(0.0594)	(0.0555)
Contract - long-term	2.372***	2.341***	2.348***	2.210***	2.231***	2.139***
	(0.0966)	(0.0952)	(0.0965)	(0.0918)	(0.0925)	(0.0863)
Notice - 15 days	1.084***	1.158***	1.153***			
	(0.0547)	(0.0538)	(0.0542)			
Notice - 30 days	0.930***	1.043***	1.035***			
	(0.0550)	(0.0491)	(0.0492)			
Notice - 60 days	1.438***	1.464***	1.449***			
	(0.0673)	(0.0648)	(0.0651)			
Notice				0.0197***	0.0198***	0.0193***
				(0.000896)	(0.000902)	(0.000847)
Hours - 45-60	-0.198***	-0.159***	-0.143***			
	(0.0389)	(0.0379)	(0.0379)			
Hours - 60-75	-0.575***	-0.488***	-0.466***			
	(0.0436)	(0.0403)	(0.0405)			
Hours				-0.0211***	-0.0214***	-0.0227***
				(0.00130)	(0.00131)	(0.00125)
Leave - 5 Days	0.266***	0.251***	0.241***			
	(0.0560)	(0.0559)	(0.0566)			
Leave - 10 Days	0.274***	0.304***	0.295***			
	(0.0508)	(0.0482)	(0.0489)			
Leave - 15 Days	0.378***	0.433***	0.437***			
	(0.0447)	(0.0422)	(0.0426)			
Leave				0.0263***	0.0264***	0.0251***
				(0.00251)	(0.00252)	(0.00237)
Provident Fund	0.870***	0.879***	0.852***	0.905***	0.904***	0.863***
	(0.0600)	(0.0584)	(0.0588)	(0.0539)	(0.0543)	(0.0520)
Income - 10 Perc. Inc.	0.355***					
	(0.0655)					
Income - 20 Perc. Inc.	0.989***					
	(0.0846)					
Income - 30 Perc. Inc.	1.773***					
	(0.102)					
Income - 40 Perc. Inc.	2.007***					
	(0.100)					
Income - 50 Perc. Inc.	2.576***					
	(0.0992)					
Perc. Change Income		0.0538***		0.0509***	0.0510***	0.0496***
		(0.00194)		(0.00181)	(0.00181)	(0.00170)
Ln(Income)			6.615***			
			(0.242)			
Observations	23,564	23,564	23,216	23,564	23,216	23,216

Standard errors clustered at the individual level. Sampling weights are applied. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Where applicable, excluded levels are: contract (none), notice (none), hours (30-45), leave (none), Provident Fund (none), and income (no change).

In Table 5, we use the coefficients from Column (4) of Table 4 to calculate the marginal value of each attribute (i.e. the marginal rate of substitution between the attribute and a one percent change in income, which is calculated by dividing the coefficient on each attribute by the coefficient on the percent change in income). The results suggest that the average worker would be willing to give up 19 percent of monthly income for a 6-month contract (relative to no contract). This amount rises to 27 percent for a 1-year contract and 44 percent for a long-term contract. Workers' preferences for job stability are also illustrated by the marginal value of termination notice. Since we modeled notice in terms of number of days, the value in Column (2) of Table 5 suggests that the average worker would be willing to give up 0.4 percent of monthly income for each additional day of notice. The typical requirement for notice in the Bangladesh Labour Law is 30 days; if we extrapolate the marginal value we estimate that 30 days of notice would be valued at about 12 percent of monthly income.

The coefficient on Provident Fund indicates that workers value this benefit at around 18 percent of monthly income. Paid leave of 10 days – a standard level required by the Bangladesh Labour Law – is valued at around 5 percent of monthly income.

Table 5: Marginal Values of Attributes

	Coefficient (1)	Marginal value in terms of % income (β_k / β_w) (2)	Labour Law Requirement (3)	Marginal value x Labour Law Requirement (4)
Contract - 6 months	0.961	18.9		
Contract - 1 year	1.36	26.7		
Contract - long-term	2.21	43.4		
Notice (days)	0.0197	0.39	30 days	11.7
Hours (median)	-0.0211	-0.41		
Leave (days)	0.0263	0.52	10 days	5.2
Provident Fund (Yes)	0.905	17.8		
Percent change in income	0.0509	1.0		

Coefficients and associated marginal values of each attribute relative to income. Marginal value is calculated by dividing coefficient on attribute by coefficient on percent change in income. Labour law is based on requirement for typical workers given in the 2006 Bangladesh Labour Law.

4.4 Exploring heterogeneity in preferences

While the conditional logit analysis can shed light on overall preferences for attributes, it has several key drawbacks. First, the analysis above assumes that preferences for specific attributes are the same across all individuals. Second, the conditional logit framework assumes an independence of irrelevant alternatives (IIA).

We performed several extensions to address these concerns. First, we examined whether the valuation of benefits differed by gender or education level of the worker. To do so, we interacted each attribute with a dummy equal to one for a female worker. Separately, we also interacted each attribute with a dummy equal to one for workers who had at least some secondary level education. The WTP for each attribute for women is calculated by summing the coefficients on the baseline attribute plus the interaction term

(attribute x female dummy), and dividing by the sum of the coefficient on salary in the baseline plus the interaction term (salary x female dummy). A similar calculation is used for those with at least some secondary education.

Table 6 shows the coefficients and marginal values of each attribute (relative to a percent change in income) across these different groups. Columns (1) and (2) show the baseline coefficient (for men) and the related WTP. Column (3) shows the interaction terms for women, while Column (4) shows the estimated WTP for women. Women appear to place a somewhat smaller value on relatively long contracts and on access to a Provident Fund. Their WTP for shorter hours is almost twice the magnitude as for men – to work 10 fewer hours in a week, for example, men would be willing to give up 3.8 percent of monthly income, whereas women would be willing to give up 6.2 percent.

Columns (5) through (8) show results by education level, and suggest that contracts are substantially more highly valued by those with higher levels of education. The WTP for the other attributes is fairly similar between those with and without at least some secondary education.

Similarly, Table 7 shows the coefficients and WTP of each type of benefit for private employees. It also shows the interaction terms and WTP for government employees, casual workers and the self-employed (including family members). Government employees place a much higher value on long-term contracts than do other types of employees. The interaction terms on 1-year and long-term contracts are negative and significant for the self-employed; however, the interaction term on salary is also negative, so the overall WTP for contracts is only slightly lower among the self-employed than among private employees.

Table 6: Choice experiment results by gender

	Male Coefficient (se) (1)	WTP (2)	Female Interaction (se) (3)	WTP (4)	Less than Primary Coefficient (se) (5)	WTP (6)	Secondary Interaction (se) (7)	WTP (8)
Contract - 6 months	.977*** (.0646)	18.7	-.0801 (.107)	19.7	.858*** (.0848)	16.6	.18 (.112)	20.5
Contract - 1 year	1.42*** (.0706)	27.2	**-.306*** (.114)**	**24.4**	1.16*** (.0899)	22.4	**.349*** (.12)**	**29.7**
Contract - long-term	2.29*** (.108)	43.9	**-.435** (.178)**	**40.7**	1.81*** (.14)	35.0	**.66*** (.185)**	**48.7**
Notice	.0201*** (.00105)	0.39	-.00209 (.00176)	0.40	.0183*** (.00139)	0.35	.00234 (.00182)	0.41
Hours	-.0196*** (.00151)	-0.38	**-.0086*** (.00267)**	**-0.62**	-.0196*** (.00206)	-0.38	-.0026 (.00266)	-0.44
Leave	.0274*** (.00293)	0.52	-.00556 (.00497)	0.48	.0284*** (.00397)	0.55	-.00337 (.00515)	0.49
Provident Fund	.943*** (.0626)	18.1	**-.211* (.111)**	**16.1**	.932*** (.0909)	18.0	-.0315 (.113)	17.7
Perc. Change Income	.0522*** (.00214)	1.0	**-.00662* (.00353)**	**1.0**	.0517*** (.00289)	1.0	-.000943 (.00372)	1.0

Columns (1) and (5) show the baseline coefficients for men and for workers with less a primary or lower education, while Columns (3) and (7) show interactions for women and for workers with a secondary or higher education, respectively. The WTP for each attribute for women is calculated by summing the coefficients on that attribute in Columns (1) and (3), respectively, and dividing by the sum of the coefficients on salary in Columns (1) and (3). A similar calculation is used for those with a secondary or higher education level. Omitted level for contract is none. Omitted level for Provident Fund is none. Standard errors are clustered at the employee level. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table 7: Choice experiment results by employment type

	Private employee Coefficient (se) (1)	WTP (2)	Govt employee Interaction (se) (3)	WTP (4)	Casual worker Coefficient (se) (5)	WTP (6)	Self-employed Interaction (se) (7)	WTP (8)
Contract - 6 months	.98*** (0.085)	18.6	0.195 (0.239)	23.9	-0.00796 (0.180)	16.1	-0.0691 (0.122)	19.2
Contract - 1 year	1.46*** (0.090)	27.7	0.338 (0.272)	36.5	-0.0253 (0.184)	23.8	**-.25*** **(0.132)**	**25.6**
Contract - long-term	2.29*** (0.144)	43.4	**.877**** **(0.412)**	**64.3**	0.138 (0.311)	40.3	**-.344*** **(0.202)**	**41.1**
Notice	.0203*** (0.001)	0.38	0.00313 (0.004)	0.48	0.00153 (0.003)	0.36	-0.00219 (0.002)	0.38
Hours	-.0222*** (0.002)	-0.42	-0.00672 (0.006)	-0.59	-0.00494 (0.005)	-0.45	0.00403 (0.003)	-0.38
Leave	.0279*** (0.004)	0.53	-0.00381 (0.011)	0.49	-0.00383 (0.009)	0.4	-0.00212 (0.006)	0.54
Provident Fund	.983*** (0.085)	18.6	-0.115 (0.231)	17.6	-0.0177 (0.184)	16	-0.14 (0.119)	17.8
Perc. Change Income	.0528*** (0.003)	1.0	-0.00358 (0.008)	1.0	0.00743 (0.006)	1.0	-0.00548 (0.004)	1.0

Column (1) shows the baseline coefficients for private employees, while Columns (3), (5) and (7) show interactions for government employees, casual workers, and self-employed workers, respectively. The WTP for each attribute for government employees is calculated by summing the coefficients on that attribute in Columns (1) and (3), respectively, and dividing by the sum of the coefficients on salary in Columns (1) and (3). A similar calculation is used for casual workers and self-employed. Omitted level for contract is none. Omitted level for Provident Fund is none. Standard errors are clustered at the employee level. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

We also estimated a latent class model with three classes.[12] Sampling weights are not applied in this case. We used gender, age, education, and the size of the enterprise in which the individual was working at the time of the survey, in estimating class membership. Table 8 shows the share equation results. Class 3 is the omitted class; education levels, as well as enterprise size, play a role in determining class membership.

Table 8: Class membership results

	Class 1	Class 2
Female	0.054	-0.235
	(0.006)	(0.205)
Age	-0.001	0.009
	(0.006)	(0.007)
Some Primary	0.002	0.255
	(0.207)	(0.331)
Some Secondary	0.214	0.489
	(0.222)	(0.346)
Some High School	0.312	1.395***
	(0.253)	(0.319)
High School	0.842***	1.158***
	(0.275)	(0.375)
Bachelors	0.789***	1.563***
	(0.240)	(0.317)
Missing	0.607	1.36
	(1.239)	(1.4)
6-10 employees	-0.467*	0.44
	(0.275)	(0.268)
11+ employees	-0.218	0.41**
	(0.150)	(0.191)
Missing	-0.188	1.524*
	(1.289)	(0.845)
Constant	-0.459***	-2.137***
	(0.319)	(0.466)

Note: Share equations from the latent class model. Class 3 is the omitted class. Sampling weights are not applied. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

---

[12] We experimented with different numbers of classes and found that three classes produced reasonable results.

How well does the latent class model explain observed choices? We assign each worker to the class to which he or she has the highest probability of belonging. We then predict the unconditional probability of the worker making each observed choice, as well as the conditional probability of the worker making each observed choice, given that he or she is in the assigned class.

Since there are two alternatives per choice occasion, random choice would mean that the unconditional probability would be 0.5. We find that the average, unconditional probabilities range from 0.56 to 0.6, and that the average, conditional probabilities range from 0.66 to 0.78, suggesting that the latent class model has substantial predictive power.

Table 9: Latent class probabilities

Class	Number of Workers (1)	Choice Occasions (2)	Unconditional Probability (3)	Conditional Probability (4)
1	662	3,972	0.56	0.66
2	357	2,142	0.59	0.78
3	945	5,670	0.60	0.74

Column (1) shows the number of workers assigned to each class in the latent class model, based on the class to which the worker has the highest probability of belonging. Column (2) shows the number of choice occasions observed for workers in each class. Column (3) shows the unconditional probability of observing each sequence of choices, while Column (4) shows the conditional probability of observing each sequence of choices, conditional on being assigned to the class.

Table 10 shows results from the latent class model. Columns (1), (3) and (5) show the coefficients on each attribute for the three classes, while Columns (2), (4) and (6) show the associated, average WTP for workers in each class. The last row of the table shows the number of workers assigned to that class based on having the highest probability of belonging to that class. Nearly half of the workers in the sample are in

Class 3, while another one-third are in Class 1, and the remaining 18 percent are in Class 2.[13]

Class 2 is characterized by a particularly high WTP for contracts. Compared with workers in the most common class (Class 3), Class 2 workers also have a somewhat higher valuation of access to a Provident Fund. The coefficient on leave for these workers is not significantly different from zero, suggesting that they do not place a high value on paid vacation.

Workers assigned to Class 1 also have a higher WTP for contracts than workers in Class 3. Although the coefficients on contracts for Class 1 workers are not always larger than the coefficients for Class 3 workers, the coefficient on salary is substantially smaller, indicating that Class 1 workers are less sensitive to increases in salary. They also value termination notice and access to a Provident Fund more highly than workers in Classes 2 and 3, and are more averse to working longer hours.

---

[13] Note that we do not apply sampling weights in this case, so the shares should not be taken to represent the underlying population.

Table 10: Latent class results

	Class 1		Class 2		Class 3	
	Coeff (se) (1)	WTP (2)	Coeff (se) (3)	WTP (4)	Coeff (se) (5)	WTP (6)
Contract - 6 months	0.845*** (0.142)	29.1	2.632*** (0.331)	46.2	0.58*** (0.114)	5.9
Contract - 1 year	1.014*** (0.129)	35.0	3.906*** (0.383)	68.5	1.257*** (0.108)	12.8
Contract - long-term	2.149*** (0.219)	74.1	6.27*** (0.571)	110.0	1.892*** (0.196)	19.3
Notice	0.033*** (0.002)	1.14	0.017*** (0.004)	0.30	0.018*** (0.002)	0.18
Hours	-0.027*** (0.003)	-0.93	-0.025*** (0.006)	-0.44	-0.042*** (0.004)	-0.43
Leave	0.017** (0.007)	0.59	0.002 (0.011)	0.04	0.056*** (0.006)	0.57
Provident Fund	1.611*** (0.176)	55.6	0.724** (0.288)	12.7	0.716*** (0.13)	7.3
Perc. Change Income	0.029*** (0.004)	1.0	0.057*** (0.008)	1.0	0.098*** (0.005)	1.0
Class share	0.34		0.196		0.464	
# (%) workers w/highest probability of being in class	662 (33.7%)		357 (18.2%)		945 (48.1%)	

Results from a latent class analysis. Sampling weights are not applied. Omitted level for contract is none. Omitted level for Provident Fund is none. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

In Figures 3 and 4, we explore whether class assignment is associated with gender or employment type. Figure 3 shows that women are approximately as likely as men to be in Class 3, but are somewhat less likely to be assigned to Class 2 (characterized by a very strong preference for contracts) than men. They are more likely to be in Class 1 (with a

stronger preference for a number of benefits - including contracts - than those in Class 3, as well as an aversion to longer working hours).

Figure 3: Latent class results – assigned class by gender
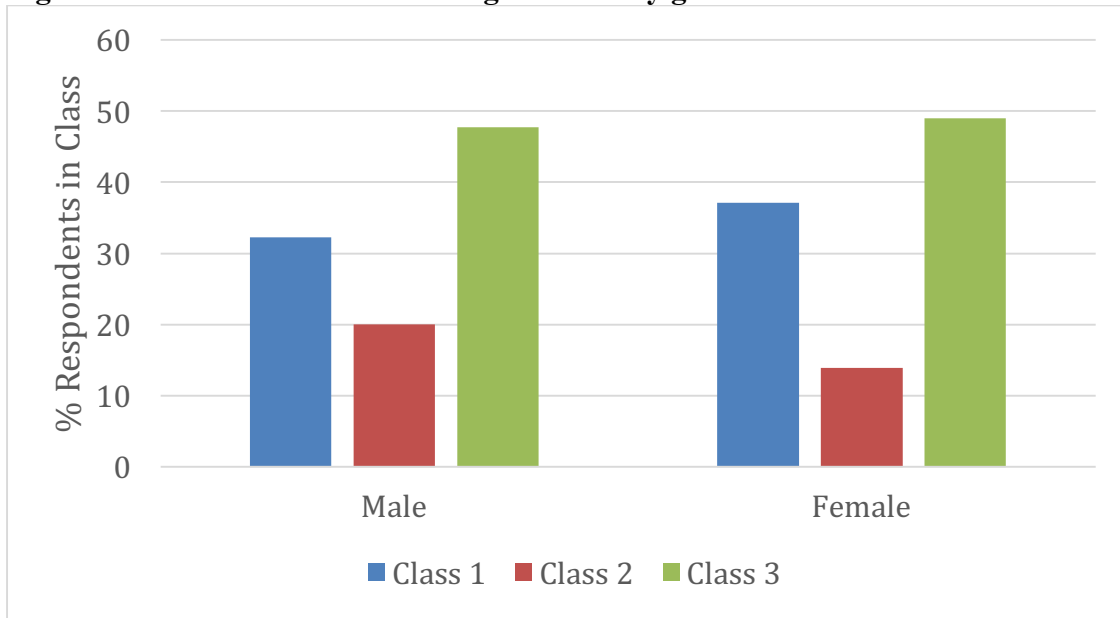
Figure 4 breaks down assigned class by broad worker type. Government employees are much more likely than private sector workers to be assigned to the class that exhibits a very strong preference for contracts (Class 2). In contrast, casual workers are much more likely to be in Class 3, which exhibits the highest preference for higher salary. The self-employed are approximately as likely as private employees to be in Class 3, but are less likely to value contracts in particular (Class 2) and more likely to value a broad range of benefits (Class 1).

Figure 4: Latent class results – assigned class by worker type

5. Conclusion

What specific aspects of formal jobs do workers value the most? In this paper, we used a choice experiment to elicit workers' WTP for contracts, termination notice, paid leave, preferred working hours, and access to a retirement account. Our results suggest that among these attributes, workers most value job stability – that is, the guarantee of longer-term employment ensured by a contract. Our baseline results show that the average worker would be willing to give up 19 percent of monthly income for a 6-month contract, 27 percent for a 1-year contract and 44 percent for a permanent contract (relative to no contract). Thirty days' of termination notice would also be valued at about 12 percent of monthly income.

These averages mask substantial heterogeneity among workers. Using a latent class model, we find that government workers are more likely to place a higher value on

long-term contracts than private sector employees. Casual workers are substantially more likely than private employees to have a particularly strong preference for higher salary, and a relatively low WTP for various benefits. These findings may suggest sorting in the labor market – that is, employees with stronger preferences for certain types of benefits are more likely to take jobs that offer those benefits. They may also, however, point to loss aversion – workers who are in jobs that have certain types of benefits may seek to avoid losing those benefits.

This study also lends support to the use of choice experiments to overcome the challenge of estimating WTP for specific job benefits from hedonic wage regressions or from observed job durations. The results from the choice experiment are consistent with economic theory, and the use of a stated preference method allows us to gauge the valuation of specific attributes by a wide range of workers – including casual workers and the self-employed, who may never have received some of those benefits. Despite the heterogeneity in observed preferences, we find a substantial amount of WTP for contracts and termination notice among all of the groups of workers we examine. To the extent that the capacity for enforcement of existing labor regulations is limited, it may therefore be valuable for policymakers to focus on aspects that improve job stability.

References

Brown, Charles (1980), Equalizing Differences in the Labor Market, *Quarterly Journal of Economics* 94(1): 113-134.

de Mel, Suresh, David McKenzie and Christopher Woodruff (2011), What is the Cost of Formality? Experimentally Estimating the Demand for Formalization, Working Paper.

De Soto, Hernando (1989), <u>The Other Path: The Invisible Revolution in the Third World</u>, New York: Harper and Row.

Duncan, Greg J. and Bertil Holmlund (1983), Was Adam Smith Right After All? Another Test of the Theory of Compensating Wage Differentials, *Journal of Labor Economics* 1(4): 366-379.

Gronberg, Timothy J. and W. Robert Reed (1994), Estimating Workers' Marginal Willingness to Pay for Job Attributes Using Duration Data, *Journal of Human Resources* 29(3): 911-931.

International Labour Organization (ILO, 2014). Global Employment Trends 2014: The Risk of a Jobless Recovery. http://www.ilo.org/global/research/global-reports/global-employment-trends/2014/lang--en/index.htm

La Porta, Rafael and Andrei Shleifer (2008), The Unofficial Economy and Economic Development, *Brookings Papers on Economic Activity*, Fall 2008, pp. 275-352.

McFadden, D. (1974), Conditional Logit Analysis of Qualitative Choice Behavior in P. Zarambka (ed.), <u>Frontiers in Econometrics</u>, New York: Academy Press.

Rauch, James E. (1999), Networks Versus Markets in International Trade, *Journal of International Economics* 48: 7-35.

Reed, W. Robert and Julie Dahlquist (1994), Do Women Prefer Women's Work?, *Applied Economics* 26: 1133-1144.

Straub, Stephane, 2005, Informal sector: the Credit Market Channel, *Journal of Development Economics* 78: 299-321.

Train, Kennth (2009). Discrete Choice Methods with Simulation, second edition. New York: Cambridge University Press.

Tybout, James. R. (2000), Manufacturing Firms in Developing Countries: How Well Do They Do, and Why?, *Journal of Economic Literature* 38(1), 11-44.

Appendix A: Choice Experiment Module of Survey Instrument

E. CHOICE EXPERIMENT

[EXAMPLE CHOICE]

	JOB A	JOB B
Written Contract	3 months	1 year
Termination Notice	15 days	15 days
Working hours	30-40 hours per week	40-50 hours per week
Amount of paid leave (not including major government holidays / festival leave)	14 days	14 days
Provident Fund	No	No
Monthly salary	20% higher than your current monthly income from main economic activity	10% higher than your current monthly income from main economic activity

E0_choicetest
If you are given the opportunity to choose from these two different jobs that differ in the levels of some or all benefit types, which job would you choose?

1. Job A

2. Job B

[E1-E6: CHOICES FOR 5 MORE SETS OF ALTERNATIVES]

FULL SET OF ATTRIBUTES AND LEVELS. SPECIFIC COMBINATIONS CHOSEN USING A FRACTIONAL FACTORIAL DESIGN. EACH RESPONDENT WILL BE ASKED A MAXIMUM OF 6 CHOICES.]

Written Contract	None 6 months 1 year Permanent
Termination Notice	None 15 days 30 days 60 days
Working hours	30-45 hours per week 45-60 hours per week 60-75 hours per week
Amount of paid leave (excluding government holidays and festival leave)	None 7 days 14 days 21 days
Provident Fund	Yes No
Monthly income	Same as now 10% increase over current income 20% increase over current income 30% increase over current income 40% increase over current income 50% increase over current income