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## Revisiting Informality

### Evidence from Employment Characteristics and Job Satisfaction in Chile

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#### Abstract

We use data from a unique, nationally representative survey to investigate the relationship between job satisfaction and employment characteristics in Chile. Consistent with the dualistic models, job protection appears to be a positive determinant of job satisfaction rather than a cost to be avoided by engaging in informal activities. Further, we find self-employed workers to be penalized by the lack of valuable workplace facilities, such as decent toilets and clean water. However, being self-employed does not necessarily mean taking the 'bad' jobs. We show that self-employed workers in Chile, like their counterparts in industrialized countries, derive procedural utility from being independent.

Keywords: Job satisfaction, Self-employment, Job protection, Procedural utility, Developing countries

JEL classification: J81; L22; M54; O17; O54

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**Acronyms**

CASEN Encuesta de Caracterización Socioeconómica Nacional (National Socioeconomic Characterisation Survey)

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## I. Introduction

Employment is certainly one of the most important dimensions of life. Not only does it represent the primary source of income for most people in the world, but also a large part of our lifetime is spent working. Furthermore, employment can grant a sense of fulfillment and dignity (Sen and ILO, 1975). The economic research on happiness has shown that unemployed individuals are substantially less satisfied with their life than workers (Frey and Stutzer, 2002). Therefore, it is extremely important for policymakers to understand individuals' employment preferences in order to improve labor market conditions.

In this respect, traditional approaches to labor market indicators have two main weaknesses (Lugo, 2007). First, they mainly focus on quantitative, outcome-oriented aspects of employment, such as wages and hours of work. Thus, by disregarding the qualitative and procedural characteristics of working life, they fail to give a full representation of labor market conditions. Second, even when labor force data are collected at an individual level, they usually do not contain extensive information on household characteristics. These shortcomings are of particular relevance to developing countries, where informal employment and poverty are predominant. This raises the need to design and test alternative indicators of employment characteristics, which ought to be collected at an individual level and whose respective questions should be included in household questionnaires.

An emerging literature on industrial countries addresses some of these issues by analyzing subjective wellbeing data related to employment. Job satisfaction is indeed becoming an increasingly popular subject in the economic literature as it is found to be relevant to understanding individuals' behavior and to predict labor market mobility (Freeman, 1978; Clark, 2001).

Economists have been particularly interested in investigating the relationship of job satisfaction with other economic variables, including unionism (Borjas, 1979; Meng, 1990), income and education (Clark and Oswald, 1996), and job security (Blanchflower and Oswald, 1999; Clark, 2001).

Among the determinants of job satisfaction, self-employment stands out. There is consistent evidence within and across Western and Non-Western industrialized countries that self-employed workers are more satisfied with their jobs than employees, even after controlling for socio-demographic and economic characteristics (Blanchflower and Freeman, 1997; Blanchflower and Oswald, 1998; Blanchflower, 2000; Blanchflower et al., 2001).

Some studies go even further by identifying what the factors are behind the utility premium from self-employment. The results consistently show that the greater job satisfaction reported by the self-employed is due to procedural preferences for independence (Eden, 1975; Hamilton, 2000; Hundley, 2001; Benz and Frey, 2008a; 2008b). Workers attribute positive intrinsic value to independence as compared to hierarchy, at least in the employment sphere.<sup>1</sup> This finding raises the question of why the share of self-employment in industrial countries is still low. The mainstream literature suggests that credit constraints represent the major barrier of entry to self-employment for workers in industrial countries (Blanchflower and Oswald, 1998).

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<sup>1</sup> However, economists are just starting to study procedural utility. Given the studies available so far, it might be too soon for a generalization of the results to all individuals. For instance, Fuchs-Schündeln (2009) provides some evidence that procedural preferences for independence are heterogeneous across the population. This makes our study even more interesting because it might well be that workers from non-industrialized countries do not value procedural utility from independence.

Alas, because of data constraints, the existing literature on job satisfaction mainly focuses on the industrialized world.<sup>2</sup> There is no reason to believe that these findings should necessarily hold in the developing world. The traditional dualistic view of the labor market in developing countries suggests quite the opposite. Being self-employed implies having the ‘bad’ jobs, with a low wage and no job protection. Working in the self-employment sector is not seen as a voluntary choice but as the only option left to workers who are rationed out of salaried employment.<sup>3</sup> This view emphasizes the importance of income and job protection in increasing workers’ utility, but leaves no role for procedural utility from independence and empowerment at work.

Some recent studies have started to question this dualistic view of the relationship between formal and informal sectors in developing countries, with interesting results (Maloney, 1999; 2004; Fajnzylber et al., 2006; Falco et al., 2010). More specifically, Maloney (1999) identifies two factors that may deter workers from choosing formal wage work. First, labor protection laws usually have an implicit tax on workers, namely that non-wage benefits are compensated by a lower wage. It could well be that workers prefer to evade these implicit taxes by engaging in informal activities. Because of its rigidities and monetary costs, job protection is not necessarily seen as a positive determinant of job satisfaction. Second, consistent with the procedural utility argument, workers might be attracted by other characteristics of informal work, such as flexibility and independence. In contrast with the dualistic view, entering the informal sector is mainly seen as a voluntary choice of the worker. The study by Fajnzylber (2006) on Mexican workers’ mobility provides additional evidence in favor of this argument.

This paper uses a unique, nationally representative data set, designed and collected by the Oxford Poverty and Human Development Initiative (OPHI), to investigate the relationship between job satisfaction and employment characteristics in Chile. The data set is based on a multi-topic survey, and as such, it has a unique advantage: in addition to the standard demographic and socio-economic variables already present in the CASEN (*Encuesta de Caracterización Socioeconómica Nacional*), it contains detailed information on both the quantitative and qualitative aspects of employment (Lugo, 2007), agency and empowerment (Ibrahim and Alkire, 2007), physical safety (Diprose, 2007), and subjective wellbeing (Samman, 2007). This allows us to construct and test several indicators of quality of employment, including job protection, occupational hazard, and independence/empowerment at work.

The picture of informal employment that emerges from this analysis is somewhat of a compromise between the different theories just described. Consistent with the dualistic theory of labor markets, job protection appears to be a positive determinant of job satisfaction rather than a cost to be avoided by engaging in informal activities. Further, we find self-employed workers – especially those with own-account businesses – to be penalized by the lack of valuable workplace facilities, such as decent toilets and clean water.

On the other hand, working in the informal sector, and especially being self-employed, does not always mean taking the ‘bad’ jobs. We find that after controlling for either job protection or occupational hazard, self-employed workers are significantly more satisfied with their jobs than employees. The self-employment utility premium fully disappears once we control for self-determination/empowerment at work. This provides evidence that Chilean workers have procedural preferences for independence just as their counterparts in industrial countries do. Finally, if we account for heterogeneous self-employment, we find that the self-employed who are also ‘employers’ report a higher job satisfaction than employees

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<sup>2</sup> In the cross-countries study from Benz and Frey (2008b), the sample includes Bangladesh and the Philippines. However, they only have a limited number of control variables (age, gender, education, income, and hours of work). Hinks (2010) investigates some determinants of job satisfaction in South Africa; however, informal employment and self-employment are excluded from the analysis.

<sup>3</sup> See for instance Harris (1970), Tokman (1978), and more recently Chandra (1993).

regardless of income, job protection, and occupational hazard. Taken together, these results cannot exclude that some workers self-select into the informal sector.

The paper is structured as follows. In the next section, we describe the data. In section three, we define the indicators of quality of employment and provide the descriptive statistics. Section four focuses on the empirical results. Section five presents some robustness checks by addressing endogeneity issues and the problem of heterogeneity in the self-employment sector. Section six concludes.

## II. The Data

The empirical analysis is based on a national representative survey in Chile, which was designed and collected by OPHI in 2008–2009 with the intention of testing the missing dimensions modules on a national scale.<sup>4</sup> The data set is a sub-sample of 2,000 households from the 2006 CASEN survey. In addition to the standard demographic and socio-economic variables already present in the CASEN data set, the survey contains detailed information on qualitative employment, empowerment, subjective wellbeing, and physical safety.

All questions, except for those related to subjective wellbeing, are addressed to a single member of the household – the respondent – who answers for all the other members. For obvious reasons, the respondents only answer the questions related to subjective wellbeing for themselves.

The data set contains information on 7,952 individuals, of whom 3,161 are employed. Among those, 1,348 were asked about their job satisfaction. Only eight individuals out of 1,348 did not answer the question. We then need to exclude those individuals for whom we lack some information about their demographic or socio-economic characteristics. This leaves us with a sample of about 1,100 workers. As is the case for most developing countries, self-employment represents approximately 31 per cent of total employment, which is a large share compared to approximately 10 per cent in industrial countries. The self-employment dummy variable takes the value ‘one’ when workers state to be either self-employed or employers/bosses and ‘zero’ when workers are employed by an organization, whether public or private.<sup>5</sup>

Self-reported job satisfaction is the dependent variable of our empirical analysis. Individuals are asked the following question: ‘In general, how satisfied or unsatisfied are you with your job?’ Answers have to belong to one of the four categories: ‘Very satisfied’, ‘Fairly satisfied’, ‘Not very satisfied’, and ‘Not at all satisfied’. We recoded the answers so that ‘four’ reflects the highest job satisfaction category and ‘one’ the lowest job satisfaction category.

Unlike previous works on industrial countries, we have an exhaustive number of control variables. In addition to the standard controls – which include age, tenure, gender, size of the firm, hours of work, income, region, education, industry, occupation, and self-employment – we also have information on the qualitative characteristics of employment: job protection, occupational hazard, and direct measures of procedural utility.<sup>6</sup> These indicators of quality of employment, along with self-employment, represent the main explanatory variables of our model.

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<sup>4</sup> Detailed information on OPHI’s data set and survey modules can be found on the OPHI website.

<sup>5</sup> Individuals working as domestic servants are included among the employees. However, their exclusion from the sample does not affect the results. In contrast, unpaid relatives and armed/security forces are excluded from the analysis given their particular status. This choice does not affect the results, as only eight observations belong to these categories in total.

<sup>6</sup> Correlations among the explanatory variables are very low. None exceed 0.4. The correlation table is available upon request.

### III. Indicators of Quality of Employment and Descriptive Statistics

The purpose of this section is to explain how these indicators have been constructed and to provide some descriptive statistics.

#### Job Protection

Job protection refers to the formal arrangements that characterize an economic activity with the aim of protecting workers against negative shocks related to employment (Lugo, 2007). For instance, the retirement pension system protects workers against the consequences of age, whereas paid sick leave protects workers against the consequences of illness, and so on. Job protection is negatively related to job informality. By definition, informal jobs are the ones that lack job protection.<sup>7</sup>

In our data set, there are six dummy variables reflecting job protection. We constructed a dummy variable equal to one for each of the following situations:

- Individual has a work contract
- Contractual relation is permanent rather than temporary
- Individual (man or woman) is entitled to paid maternity leave
- Individual is entitled to paid sick leave
- Individual is entitled to paid holidays
- Individual contributes to retirement pension

By definition, self-employed individuals do not have any job protection except for voluntary contributions to retirement pensions. This means that most descriptive statistics about job protection refer to employees, whereas the comparison between the job protection of employees and the self-employed is based purely on the *contribution to retirement pension* dummy variable.

The descriptive statistics confirm that informal wage employment is a widespread phenomenon in Chile. Only 40 per cent of employees have full job protection (i.e., all six dummy variables equal one), and 11 per cent of employees have no job protection at all (i.e., all dummy variables equal zero). If we look at each dimension of job protection separately, we find that ‘maternity leave’ and ‘length of contract’ are the most frequent types of job informality. Thirty-three per cent of female employees are not entitled to a paid maternity leave and 34 per cent of employees have temporary contracts.

We now compare the share of individuals who contribute to a retirement pension in the self-employment and wage employment sector. It is worth mentioning that Chilean employees (in the formal sector) must contribute at least 10 per cent of their wages to a retirement pension, whereas contributing to a pension is voluntary for self-employed workers. Not surprisingly, descriptive statistics show that self-employed workers contribute significantly less to retirement pensions than employees. Only 30 per

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<sup>7</sup> Job protection must be distinguished from job security, which is typically used in the existing literature on industrial countries. Job security, at least as it is defined by Blanchflower (1999), refers to people’s perceptions about the probability of losing their job. One can expect job security and job protection to be positively correlated. However, the latter includes additional dimensions, and it is not a subjective, reported variable.

cent of the self-employed contribute to retirement pensions, compared to the 83 per cent of the employees (see Table 1 below). This difference is significant at the 99 per cent level.

**Table 1: Raw mean Differences between Employees and the Self-employed**

	Self-employed	Employees
Contribution to pension	0.297*** (0.017)	0.831 (0.007)
Lack of facilities	0.310*** (0.059)	-0.139 (0.282)
Heavy work	-0.0139 (0.052)	0.056*** (0.031)
Accident	0.030 (0.006)	0.062*** (0.005)
Job satisfaction	2.750 (0.048)	2.762 (0.029)
Autonomy	3.297*** (0.048)	2.753 (0.035)
Competence	3.104*** (0.062)	2.800 (0.041)
Relatedness	3.344** (0.029)	3.271 (0.020)

Note: Unweighted means Significance levels: 0.05<p<0.1, \*\*0.01<p<0.05, \*\*\*p<0.01  
Standard errors are in parentheses.

An important question is whether the observed lack of job protection represents a voluntary choice of the affected workers, or whether it has been imposed by some external constraints. It might well be that some employees prefer temporary jobs or that most self-employed individuals do not want to contribute to a retirement pension. However, it could also be that some employees have no other choice than to accept an informal job and that some external constraints prevent most self-employed from contributing to a retirement pension. We try to shed some light on this issue in the next section.

### Occupational Hazard

Occupational hazard refers to poor health and safety conditions in the workplace. As far as we know, no detailed economic study establishes a linkage between occupational hazards and job satisfaction. Furthermore, data information on occupational injuries is rather limited and usually restricted to ‘insured employees’ (Lugo, 2007).

In our data set, five dummy variables reflect occupational hazards. We constructed a dummy variable equal to one for each of the following situations.

- Individual suffered any accidental injury, illness, disability, or other mental health problem caused by work during the past twelve months
- Individual’s workplace does not have adequate toilets
- Individual’s workplace does not have clean water
- Individual has to work in uncomfortable postures or spend long hours standing
- Individual is exposed to cutting or grinding machines, loud noise, extreme temperatures, harmful chemicals, or heavy loads (workplace exposures)

The descriptive statistics suggest that 30 per cent of workers face no occupational hazards at all (that is, all dummy variables equal zero), and only 0.45 per cent of the workers face full occupational hazard (i.e.,

all dummy variables equal one). If we look at each variable separately, it is clear that the dimensions ‘exposures’ and ‘uncomfortable postures’ are very frequent in Chilean workplaces. Nearly 50 per cent of Chilean workers face such types of occupational hazards compared to nearly 12 per cent who do not have access to adequate toilets or clean water and compared to 5 per cent who had a work-related injury.

Next, we want to compare occupational hazards between self-employed workers and employees. In order to do that, we first run a factor analysis of the five dummy variables representing occupational hazards. The results suggest the existence of two factors. The dummy variables for lack of toilets and lack of clean water load most heavily on factor one. We call this factor ‘lack of facilities’. The dummy variables for uncomfortable postures and workplace exposures load higher on factor two. We call this factor ‘heavy work’. The dummy variable ‘work-related injury’ is kept separately because it is poorly correlated with the rest of the variables. These two factors explain 80 per cent of the four variables’ combined variance.<sup>8</sup>

**Table 2: Factor Analysis of Occupational Hazard**

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	1.85239	0.53612	0.4631	0.4631
Factor 2	1.31627	0.74222	0.3291	0.7922
Factor 3	0.57405	0.31677	0.1435	0.9357
Factor 4	0.25728	.	0.0643	1.0000

Note: Principal component factors. LR test: independent vs. saturated:  $\chi^2(6) = 1367.39$  Prob> $\chi^2 = 0.0000$

Factor loadings (pattern matrix) and unique variances:

Variable	Factor 1	Factor 2	Uniqueness
Exposures	0.4585	0.7061	0.2912
Lack of clean water	0.8487	-0.3896	0.1279
Lack of adequate toilets	0.8673	-0.3435	0.1298
Uncomfortable postures	0.4119	0.7401	0.2825

We now investigate whether there is any significant difference between the self-employed and employees (see Table 1 above). On the one hand, self-employed workers are on average more likely to lack workplace facilities compared to employees. This difference is significant at the 99 per cent level. On the other hand, employees are on average more likely to do heavy work and to have an accident, injury, or illness due to work. These differences are significant at the 99 per cent level. We conclude that the self-employed and employees are affected by different types of occupational hazards. Employees are more likely to do dangerous and heavy work, whereas the self-employed are more likely to lack decent workplace infrastructures.

### Procedural Utility from Independence

Utility can be derived not only from outcomes but also from the conditions and the processes which lead to outcomes (Frey et al., 2004). For instance, individuals attribute positive intrinsic value to independence as compared to hierarchy. They enjoy the freedom of doing what they like rather than being subject to decisions made by others. The mainstream economic literature has taken self-employment as an important case for independence in working life. Unlike employees, self-employed

<sup>8</sup> If we add the dummy variable for “work related injury” in the factor analysis, only 65% of the five combined variables’ is explained by the two factors.



workers are not subject to a hierarchy and thus do not have to obey orders given by their superiors. This ‘taste for independence’ seems to account for the higher job satisfaction reported by the self-employed compared to employees in industrialized countries. We test whether this is also true in Chile. Following Benz and Frey (2008a), we introduce direct measures of procedural utility from independence in the job satisfaction regression. If it is true that the self-employment utility premium – provided that it also exists in Chile – is due to procedural utility from independence, then the effect of self-employment on job satisfaction should disappear once we control for such procedural aspects of work.

Procedural utility is derived from the fulfillment of a psychological need for what psychologists call ‘self-determination’ (Deci and Ryan, 2000). According to psychological research, self-determination is strongly correlated with independence, and it is usually restricted under hierarchy. Within development-related social sciences, self-determination can be associated with ‘empowerment’. Ibrahim and Alkire (2007) underline the instrumental and intrinsic importance of empowerment for impoverished communities. This paper tests whether Chilean workers value empowerment at work.

OPHI’s modules contain extensive information on individuals’ empowerment and self-determination, both at the workplace and at home (Alkire, 2007; Ibrahim and Alkire, 2007; Samman, 2007). We derive our direct measures of procedural utility from independence through the three components of self-determination that have been found to be of crucial importance for human wellbeing (Deci and Ryan, 2000): *autonomy*, *competence*, and *relatedness*. In order to assess *autonomy*, individuals are asked to choose from one to four (where ‘one’ is ‘Not true at all’ and ‘four’ is ‘Completely true’) how true the following statement is: ‘At work I have a lot of autonomy and I can organize myself as I want.’ In order to assess *competence*, individuals are asked: ‘To what extent do you feel that you have the possibility to progress and improve at work?’ Answers must belong to one of the four following categories: ‘Always,’ ‘Frequently,’ ‘Occasionally,’ or ‘Never.’ We recoded the answers so that ‘four’ reflects the highest category and ‘one’ the lowest category. Finally, individuals are asked three questions about *relatedness*, namely, about their relationship with the people with whom they regularly interact. Again, the answers are ranked from one to four, where ‘four’ represents the highest degree of *relatedness*. Our *relatedness* variable is constructed as an average of the answers to the three questions just mentioned.

We now compare the reported job satisfaction and self-determination/empowerment at work between the self-employed and employees (see Table 1 above). Some interesting results arise. Unlike in industrialized countries, there is no significant positive difference in the mean of reported job satisfaction between the self-employed and employees. On average, self-employed workers report 0.012 index points (on a scale of one to four) lower satisfaction with their job than employees – although the difference is not significant. This seems to partly contradict the dualistic view of labor markets in developing countries. If self-employment is merely a sort of disguised unemployment, self-employed workers should be on average less satisfied with their jobs than employees.<sup>9</sup>

In contrast, the raw differences for each of the three components of self-determination show significantly higher self-determination for self-employed workers. On average, self-employed workers report 0.544 index points higher *autonomy*, 0.304 index points higher *competence*, and 0.073 higher *relatedness* than employees (on a scale of one to four). These differences are all very significant.

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<sup>9</sup> This is true unless the share of informal wage employment is so large as to significantly decrease the overall average job satisfaction of the employees. This would only imply that working in the informal wage employment sector is worse than self-employment.

To summarize, descriptive statistics suggest that self-employment work is associated with a higher level of workers' self-determination than wage work. However, this difference is not reflected in higher job satisfaction. Two explanations can be given to this evidence. Either Chilean workers have no procedural preferences for independence as their counterparts in industrial countries do, or the self-employment utility premium is offset by the lack of job protection and workplace facilities. In the latter case, the data should not reject the hypothesis that job protection and workplace facilities are positive determinants of job satisfaction. We investigate this issue in our regression analysis.

#### IV. Empirical Findings

Multivariate regressions are estimated using an ordered logit model (the results do not change if we use the stereotype logit model, Ordinary Least Squares (OLS), multinomial logit model or the logit model).

We start by running a standard regression in which we do not control for the qualitative characteristics of employment. The aim is to compare our results with the empirical evidence from industrialized countries. Findings are presented in Table 3, column 1.

**Table 3: Ordered Logit Regression Results**

	(1)	(2)	(3)
Dep. Variable: Job satisfaction	Ordered Logit	Ordered Logit	Ordered Logit
Self-employment	0.419* (1.73)	0.597** (2.37)	0.557** (2.15)
Lack of facilities	-	-0.308*** (-3.02)	-
Heavy work	-	0.037 (0.45)	-
Work-related injury	-	-0.321 (-0.97)	-
Contribution to pension	-	-	0.537 ** (2.35)
Size of the firm			
6–9 persons	0.693* (1.94)	0.688* (1.95)	0.587 (1.60)
10–49	0.193 (0.79)	0.262 (1.05)	0.085 (0.33)
50–199	0.275 (1.02)	0.337 (1.24)	0.139 (0.50)
>200	0.547** (2.02)	0.588** (2.19)	0.420 (1.45)
Log net income	0.824*** (6.32)	0.791*** (5.89)	0.750*** (5.48)
Hours of work	0.007 (1.50)	0.008* (1.655)	0.008 (1.55)
Gender (male)	-0.421** (-2.02)	-0.352* (-1.81)	-0.363* (-1.89)
Age	0.038 (1.01)	0.018 (0.52)	0.015 (0.38)
(Age) <sup>2</sup>	-0.0002 (-0.60)	-0.00005 (-0.15)	0.0003 (0.08)
Tenure	-0.040* (-1.84)	-0.035 (-1.62)	-0.036 (-1.60)

(Tenure) <sup>2</sup>	0.001** (2.01)	0.0009* (1.91)	0.0009 (1.61)
Region (urban)	-0.368* (-1.84)	-0.340* (-1.67)	-0.339* (-1.67)
Education dummies	5 categories	5 categories	5 categories
Industry dummies	7 categories	7 categories	7 categories
Occupation dummies	9 categories	9 categories	9 categories
Log pseudolikelihood	-144276.45	-141673.47	-141151.73
Observations	1107	1097	1095

Note: Weighted ordered logit regressions with robust standard errors. t-statistics in parentheses.  
Significance levels: \*0.05<p<0.1, \*\*0.01<p<0.05, \*\*\*p<0.01

Income is certainly a major determinant of job satisfaction ( $p$ -value=0.000), as it is in industrial countries. In contrast, Chilean workers do not seem to care about hours of work. The coefficient on the self-employment dummy variable is positive but only marginally significant ( $p$ -value=0.084).<sup>10</sup> This is not in line with the previous literature on industrial countries that consistently finds a highly significant utility premium from self-employment even after controlling for socio-demographic characteristics and quantitative economic aspects of employment. We think that this low statistical significance can be attributed to our choice of disregarding qualitative aspects of employment that may be relevant for Chilean workers.

The regression in Table 3, column 2, includes the three indicators for occupational hazard. The results suggest that the *lack of facilities* has a significant negative effect on job satisfaction ( $p$ -value=0.001). Surprisingly, *heavy work* and *work-related injury* do not seem to affect job satisfaction.<sup>11</sup> This might be the result of wage-compensating differentials. However, we find no evidence that heavy and dangerous work is compensated by a higher wage.

It stands out that after controlling for occupational hazards, the positive coefficient on the self-employment dummy variable has become very significant ( $p$ -value=0.018). This finding supports the argument that the self-employment utility premium also exists in developing countries, but it may be offset by the lack of decent infrastructures that characterizes self-employment activities.

We now look at the job protection indicator as measured by the *contribution to retirement pension* dummy variable.<sup>12</sup> Occupational hazard indicators are temporarily excluded from the regression. The regression in Table 3, column (3), shows that contributing to a retirement pension is a positive determinant of job satisfaction. The coefficient is positive and significant at the 95 per cent level ( $p$ -value=0.019). Chilean workers who contribute to retirement pensions are on average more satisfied with their job than those who do not, everything else being equal. Furthermore, after controlling for job protection, the self-employment utility premium emerges more strongly. The positive coefficient on the self-employment dummy variable increases in size and becomes significant at the 95 per cent level ( $p$ -value=0.032). This suggests that some external constraints are likely to prevent self-employed workers from contributing to a retirement pension. Under the assumption of full rationality, if the self-employed chose not to

<sup>10</sup> The result is not very robust, either, as in the OLS and logit regressions the coefficient is not significant.

<sup>11</sup> However, it is worth mentioning that in the OLS, logit, and multinomial logit regressions the coefficient on the 'work-related injury' dummy variable is negative and significant at the 95 per cent level.

<sup>12</sup> We do not use the other indicators of job protection in order to avoid multicollinearity problems. Indeed, by definition, self-employed individuals do not have an employment contract and are not entitled to the non wage benefits such as paid maternity leave, paid holiday, and paid sick leave.

contribute to a retirement pension because they did not value it, adding such an indicator in the job satisfaction regression should not have any effect on the self-employment dummy variable. Our results suggest, instead, that the lack of job protection that characterizes the self-employment sector reduces the job satisfaction of the self-employed.

In order to verify the effects of the remaining job protection variables on job satisfaction, we run a regression using only a sub-sample of employees. The factor analysis of the six variables reflecting job protection suggests the existence of only one factor composed of all variables but *length of contract*. This factor, which we call *job protection*, explains 70 per cent of the five variables' combined variance.<sup>13</sup>

**Table 4: Factor Analysis of Job Protection**

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	3.56689	2.97189	0.7134	0.7134
Factor 2	0.59500	0.19300	0.1190	0.8324
Factor 3	0.40199	0.15867	0.0804	0.9128
Factor 4	0.24332	0.05052	0.0487	0.9614
Factor 5	0.19280	.	0.0386	1.0000

Note: Principal component factors. LR test: independent vs. saturated:  $\chi^2(10)=4993.17$  Prob> $\chi^2 = .0000$

Factor loadings (pattern matrix) and unique variances:

Variable	Factor 1	Uniqueness
Having a contract	0.8739	0.2363
Paid sick leave	0.9107	0.1706
Paid holidays	0.8459	0.2845
Paid maternity leave	0.7578	0.4257
Contribution to pension	0.8271	0.3159

The regression results are reported in Table 5, column 1. The coefficient of the job protection indicator is positive and very significant ( $p$ -value=0.001). On the other hand, having a permanent rather than a temporary contract does not affect job satisfaction.

Taken together, these findings reject the argument that individuals choose to work in the informal sector to avoid labor protection laws. An exception can be made for the length of contract: according to the data, it might well be that some workers voluntarily choose temporary jobs because, for example, they offer greater flexibility.

**Table 5: Direct Test for Procedural Utility**

	Sample of employees	Sample of all workers	
	(1)	(2)	(3)
Dep. Variable: Job satisfaction	Ordered Logit	Ordered Logit	Ordered Logit
Self-employment	-	0.710*** (2.65)	0.361 (1.26)
Lack of facilities	-0.289* (-1.82)	-0.284*** (-2.91)	-0.239** (-2.16)

<sup>13</sup> If we also include *length of contract*, the explained combined variance drops to 63 per cent.

Heavy work	0.021 (0.18)	0.012 (0.14)	0.100 (1.15)
Work-related injury	-0.425 (-1.10)	-0.295 (-0.88)	-0.185 (-0.48)
Contribution pension	-	0.523** (2.30)	0.398* (1.70)
Job protection	0.450*** (3.44)	-	-
Length of contract (permanent)	0.196 (0.86)	-	-
Autonomy	-	-	0.177** (1.99)
Competence	-	-	0.281*** (3.79)
Relatedness	-	-	0.593*** (4.28)
Log net income	0.767*** (4.23)	0.743*** (5.35)	0.637*** (4.48)
Hours of work	0.011 (1.22)	0.0087 (1.62)	0.010 (1.61)
Gender (male)	-0.183 (-0.73)	-0.310 (-1.58)	-0.182 (-0.86)
Age	0.054 (1.27)	0.009 (0.22)	0.017 (0.38)
(Age) <sup>2</sup>	-0.0004 (-0.96)	0.0007 (0.16)	-0.0003 (0.08)
Tenure	-0.0795* (-2.02)	-0.034 (-1.50)	-0.041* (-1.72)
(Tenure) <sup>2</sup>	0.002* (1.66)	0.0009 (1.63)	0.0012** (2.01)
Region (urban)	-0.449* (-1.66)	-0.323 (-1.58)	-0.234 (-1.00)
Firms' size dummies	5 categories	5 categories	5 categories
Education dummies	5 categories	5 categories	5 categories
Industry dummies	7 categories	7 categories	7 categories
Occupation dummies	9 categories	9 categories	9 categories
Log pseudolikelihood	-87501.601	-138882.91	-120682.16
Observations	733	1082	981

Note: Weighted ordered logit regressions with robust standard errors. t-statistics in parentheses.  
Significance levels: \*0.05<p<0.1, \*\*0.01<p<0.05, \*\*\*p<0.01

In the next step, we include both the occupational hazard and job protection indicators in the full sample regression (see Table 5, column 2). Consistent with the previous regressions, the positive coefficient on *contribution to retirement pension* is still significant at the 95 per cent level ( $p$ -value=0.021) and the negative coefficient of *lack of facilities* is still significant at the 99 per cent level ( $p$ -value=0.004). As far as self-employment is concerned, when we control for both job protection and occupational hazards, the self-employment dummy variable coefficient increases and becomes significant at the 99 per cent level ( $p$ -value=0.008). This is consistent with hypothesis that the self-employment utility premium may not appear in the raw differences because it is offset by poor job protection and by the lack of facilities that characterize self-employment activities. Our final step is to investigate whether the observed positive relationship between self-employment and job satisfaction is due to procedural utility from independence.

We now run a direct test for procedural utility by including the indicators of the three components of self-determination in the job satisfaction regression. The results are reported in Table 5, column 3. It stands out that the coefficient on the self-employment dummy variable is no longer significant ( $p$ -value=0.209). This means that the self-determination or empowerment experienced at work explains the self-employment job satisfaction effect completely. Furthermore, the coefficients on *autonomy*, *competence*, and *relatedness* are positive and highly significant. This result is consistent with the hypothesis that, conditional on income, job protection, and workplace facilities, Chilean self-employed workers are more satisfied with their job than Chilean employees because they derive procedural utility from independence.

## V. Robustness Checks

### Heterogeneous Self-Employment

One could claim that self-employment in a developing country can be very heterogeneous. Employers – namely individuals who have their own firm and invest in external sources of labor – are expected to face different labor market conditions than self-employed individuals who only use their own labor to engage in professional activities or run small family businesses. To some extent, Chilean employers are more comparable to the self-employed from industrial countries, whereas self-employed workers with own-account businesses are more likely to live under very poor and precarious conditions. Therefore, the dualistic theory of labor market is more likely to apply. We address this issue in the following empirical analysis.

The design of the survey allows us to make the distinction between different types of self-employment. When asked about their main occupation, individuals have to choose between different categories: employer/boss, self-employed, and several types of dependent employment. Sixty-four workers selected employer/boss and 353 selected self-employed. In the previous regressions, these two types of workers were grouped together to form the self-employment category. We now use two distinct dummy variables: an *employer* dummy variable that takes the value ‘one’ when the workers select employer/boss, and an *own-account business* dummy variable taking the value ‘one’ if the workers select self-employed. Workers who are employed by an organization, either public or private, represent the reference group.

The raw mean differences of reported job satisfaction corroborate the hypothesis of large heterogeneity in the self-employment sector. Consistently with the dualistic models, self-employed workers with own-account businesses report 0.116 index points lower job satisfaction than employees (on a scale of one to four). On the other hand, consistently with the mainstream literature on industrialized countries, self-

employed workers who are also employers report 0.556 index points higher job satisfaction than employees. These differences are significant at the 95 per cent and 99 per cent level, respectively.

We investigate whether the observed discrepancy between the job satisfactions reported by different types of self-employed workers is due to the low income, lack of job protection, and large occupational hazard, which affect the own-account businesses in particular. Regression 1 in Table 6 suggests that this is indeed the case. Once we control for income, occupational hazards, and job protection, the positive coefficient on the *own-account business* dummy variable becomes almost significant at the 95 per cent level ( $p$ -value=0.053). Not surprisingly, the *employer* dummy variable is also positive and significant at the 99 per cent level.

Taken together, these results confirm that the utility premium from self-employment also exists in Chile, but it is offset by the lack of income, job protection, and workplace facilities that characterize own-account businesses.

**Table 6: Robustness Checks**

	(1)	(2)	(3)	(4)	(5)
Dep. Variable: Job satisfaction	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit
Self-employment	-	0.649** (2.46)	-	0.579** (2.23)	0.488* (1.85)
Own-account business	0.560* (1.93)	-	0.480* (1.69)	-	-
Employer	1.194*** (2.90)	-	1.225** (2.85)	-	-
Happiness	-	0.537*** (4.97)	0.545*** (5.04)	0.481*** (4.31)	0.525*** (4.80)
Savings	-	-	-	-0.062 (-0.45)	-
Financial insecurity	-	-	-	-	-0.820*** (-4.12)
Lack of facilities	-0.279*** (-2.85)	-0.286*** (0.004)	-0.278*** (-2.79)	-0.268*** (-2.70)	-0.297*** (-2.97)
Heavy work	-0.008 (0.09)	0.007 (0.08)	-0.153 (-0.18)	-0.057 (-0.66)	-0.005 (-0.06)
Work-related injury	-0.305 (-0.91)	-0.321 (-0.97)	-0.335 (-1.01)	-0.436 (-1.24)	-0.364 (-1.11)
Contribution to pension	0.495** (2.14)	0.510** (2.22)	0.478** (2.07)	0.565** (2.50)	0.439* (1.84)
Log net income	0.800*** (6.04)	0.666*** (4.87)	0.647*** (4.66)	0.689*** (5.14)	0.730*** (1.42)
Personal characteristics	controlled	controlled	controlled	controlled	controlled



Firms' size dummies	5 categories	5 categories	5 categories	5 categories	5 categories
Education dummies	5 categories	5 categories	5 categories	5 categories	5 categories
Industry dummies	7 categories	7 categories	7 categories	7 categories	7 categories
Occupation dummies	9 categories	9 categories	9 categories	9 categories	9 categories
Log pseudo likelihood	-143912.71	-136153.24	-135783.14	-126161.77	-130763.89
Observations	1107	1076	1076	1022	1051

Note: Weighted ordered logit regressions with robust standard errors. t-statistics in parentheses.  
Significance levels: \*0.05<p<0.1, \*\*0.01<p<0.05, \*\*\*p<0.01

## Endogeneity

In this section we ask to what extent our basic results are robust to endogeneity issues. The main concern is the potential endogeneity of the self-employment variable. We could have omitted some important characteristics of the workers that are correlated with being self-employed, in particular ‘happiness’. Self-employment is more risky than wage earning. This means that individuals decide to enter the self-employment sector based on the expected returns from being self-employed. The latter depend on the subjective probabilities that individuals assign to the different self-employment outcomes. Happier individuals are more likely to be (over-)optimistic and thus to attribute larger probabilities to better outcomes. As a result, happier people are more likely to choose self-employment. Not surprisingly, happier workers are also more likely to report a higher job satisfaction.

To address this issue, we run the same analysis as above, controlling for reported happiness. Individuals were asked ‘Taking all things together would you say you are: very happy, fairly happy, not very happy, or not at all happy?’ We recoded the data so that ‘four’ represents the larger degree of reported happiness. Regression 2 in Table 6 shows that self-employment remains very significant even after we control for happiness. This also holds if we account for heterogeneous self-employment (see regression 3 in Table 6).

We now explore whether other determinants of self-employment identified by the literature could potentially be correlated with job satisfaction.<sup>14</sup> The mainstream theories of self-employment view attitudes towards risks (Kihlstrom and Laffont, 1979), managerial skills (Jovanovic, 1982), and access to capital (Evans and Jovanovic, 1989), as being the primary factors in determining whether one chooses self-employment. The main reason to doubt that these factors are what drive our results is that they would all act through the happiness channel. Being skilled may raise happiness, which in turn increases job satisfaction. A similar argument applies to risk preferences and access to capital. In the regressions in Table 6, the effects that any other omitted variable could have on job satisfaction through the happiness channel are controlled for. As far as access to capital is concerned, we also address the issue by controlling for workers’ savings. We find no correlation with job satisfaction, and the self-employment variable remains very significant (regression 4 in Table 6).

Finally, it is worth mentioning that the endogeneity of the self-employment variable is inconsistent with the dualistic theory of labor markets. The fact that workers self-select in the self-employment sector according to some unobservable characteristics contradicts the view that self-employment is not a voluntary choice but the only option left to those who cannot obtain formal employment. Therefore, even if self-employment were somehow endogenous, this would not go against our findings.

We now turn our attention to the job protection indicator and in particular to the *contribution to retirement pension* variable. As we mentioned in section three, an important question is whether individuals voluntarily choose not to contribute to a retirement pension or whether they face some external constraints. Our empirical analysis reveals a strong positive correlation between job satisfaction and contributing to a retirement pension, which is inconsistent with the assumption that individuals prefer to engage in informal activities. However, this result is not sufficient to claim that contributing to a retirement pension has a direct causal effect on job satisfaction. There could be some relevant omitted variables that are correlated with contributing to a retirement pension. For instance, if workers’ incomes

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<sup>14</sup> Clearly, one of the best ways to address the endogeneity issue is to do an instrumental analysis. Alas, although we have information about family background, race, and religion – which Hout (2000) identifies as determinants of self-employment in the United States – the latter are found to be poorly correlated with the self-employment dummy variable in our Chilean sample.

are just enough to cover basic expenses, financial constraints could prevent workers from contributing to a retirement pension. In this case, what reduces job satisfaction might be the precarious financial situation, rather than the lack of job protection. In order to test whether this is the case, we add an additional variable to our regression which is a proxy for financial insecurity. Individuals were asked: 'If a household member lost their job, would your household have enough savings to go by three months without someone from the household getting a job?' We use a dummy variable equal to one if individuals' answer is no. Results from regression 5 in Table 8 show that financial insecurity does indeed reduce job satisfaction. However, the coefficient in the contribution to retirement pension variable is still significant.

A different explanation could be that workers who are engaged in criminal or illegal activities are less likely to contribute to a retirement pension and to report a high job satisfaction. We try to address this issue by looking at our data on physical security, but we find no correlation with a contribution to a retirement pension. Therefore, we cannot completely exclude this hypothesis. However, if there are any, workers engaged in criminal or illegal activities represent an extremely small minority. Therefore, it is very unlikely that they can account for the observed relationship between contributing to a retirement pension and job satisfaction.

Finally, one could be concerned that reverse causation accounts for the observed relationship between job satisfaction and empowerment/self-determination. In other words, workers who are more satisfied with their jobs tend to feel more empowered. While we cannot exclude that job satisfaction increases self-determination, the causal relationship must go in both directions. If empowerment were fully determined by job satisfaction, controlling for it should not have any effect on the self-employment dummy variable, whereas the significance level of the self-employment variable goes from the 99 per cent level to non-significant. From a theoretical point of view, this suggests that reported empowerment/self-determination is strongly linked with some job aspects which characterize the self-employment sector and which increase job satisfaction – such as independence and flexibility.

## V. Conclusions

This paper uses a unique, nationally representative data set to investigate the relationship between employment characteristics and job satisfaction in Chile. We find that in addition to income, Chilean workers have preferences for job protection, workplace facilities – such as adequate toilets and clean water – and independence/empowerment at work. The results satisfy many robustness checks. This suggests that qualitative and procedural characteristics of employment can be valuable to workers as quantitative, outcome-oriented indicators.

As far as the debate on the role of the informal sector in developing countries is concerned, workers' desire for independence can potentially deter them from entering the formal wage employment sector in favor of the self-employment sector. The picture of the self-employment sector that emerges from this empirical analysis is far from being as negative as the one depicted by the traditional dualistic view. The self-employment sector has both desirable (independence) and undesirable characteristics (lack of job protection and of decent infrastructures), which appear to compensate each other, so that overall, Chilean self-employed workers are as satisfied with their jobs as Chilean employees. Furthermore, we also find that having temporary rather than permanent working contracts does not affect job satisfaction. Thus, overall, we cannot exclude the possibility that at least some workers self-select into the formal and informal sector according to their respective preferences.

Nevertheless, this study also points out the large heterogeneity in the self-employment sector. Self-employed workers with their own businesses are the most penalized by the lack of job protection and of

workplace facilities, so their unconditional job satisfaction is lower than that of any other group. On the contrary, the findings relative to Chilean employers are consistent with the evidence from industrial countries: the utility premium from self-employment appears unconditionally of income, job protection, and occupational hazard. This suggests that some of the insights from the mainstream literature can also be applied to the developing world.

Important recommendations emerge from this study for both policymakers and future research. There is an urgent need to collect data on the qualitative and procedural dimensions of employment, which appear to be relevant for individuals. This is especially true for developing countries, where informal employment is predominant. This will not only increase our understanding of labor market conditions but will also facilitate comparisons among countries. Finally, qualitative employment characteristics such as job protection, workplace safety, and empowerment at work, should be taken into account when planning and evaluating policies against poverty.

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## Appendix: Variable Description

- *Age*: age of the individuals at the time of the interview.
- *Education*: dummy variable for level of education completed. Base category: primary education.
- *Employer*: dummy variable that takes a value of one if the individual's primary occupation is as the owner of a firm.
- *Financial insecurity*: dummy variable that takes a value of one if the individuals' households would not have enough savings if one of the members lost their job.
- *Happiness*: ordered variable that takes values from one to four, where four represents the highest happiness category and one the lowest happiness category.
- *Hours of work*: number of weekly working hours in the main occupation.
- *Job protection*: factor analysis, see section three.
- *Job satisfaction*: ordered variable that takes values from one to four, where four represent the highest job satisfaction category and one the lowest job satisfaction category.
- *Occupational hazard*: factor analysis, see section three.
- *Own-account business*: dummy variable that takes a value of one if the individual's primary occupation is self-employment.
- *Salaried wage (log)*: logarithm of the last net monthly income from main occupation.
- *Savings*: ordered variable that takes values from zero to two, where zero represents 'no savings', one represents 'savings below 750.000 pesos', and two represents 'savings above 750.000 pesos'.
- *Self-determination/empowerment at work*: see section three.
- *Self-employed earnings (log)*: logarithm of the sum of the last monthly income from main business and the market values of products from the main business which have been used for personal or household consumption.
- *Self-employment*: dummy variable that takes a value of one if the individual's primary occupation is self-employment or the individual is the owner of a firm.
- *Size of firm*: dummy variable for the number of people in Chile working in the firm which corresponds to the main occupation. Base category: from one to five individuals.
- *Tenure*: number of years the individuals had their current job at the time of the interview.
- *Type of industry*: dummy variable for type of industry based on the ISIC Rev.2 classification.
- *Type of occupation*: dummy variable for type of occupation based on the ISCO 88 classification.
- *Zone*: dummy variable that takes value one if the individual lives in an urban zone.