



RESEARCH PAPER

Measurement and Determinants of Informal Employment: Evidence from Pakistan

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This article estimates the size and determinants of informal employment in Pakistan by applying four empirical measures using data from Pakistan Labor Force Survey (2017-18). The recent debate on informality in the labor market has led to a renewal of informal employment measures. Regression analysis is used to shed light on the differences between these measures. We show that the incidence of informal employment varies across different measures. According to at least one measure, 94.53 percent of employment is informal, but 71.4 percent of workers are informal according to the all four measures. However, the determinants of informal employment are roughly stable across the different measures. The paper concludes by suggesting that an appropriate measure is therefore of great importance for policy analysis and the design of appropriate strategies to reduce informality.

Introduction

The Informality in the labour market is usually refers to describe the economic activities which are not registered under law and the jobs that do not provide any protection against hazards. Self-employment, own account works, small scale and family run business and non-contractual jobs as well as employment where the employer fails to provide appropriate access to social protection, can be considered as informal employment. It attracts the attention of researchers around the world due to its persistence especially in developing countries. The literature on the labour informality has made several attempts to measure the extent, causes and consequences of informality to establish improved economic models (Batini et al., 2010). Workers move from one sector to another and choose the informal sector as the only alternative to unemployment (Fields, 1975). In the beginning, when informal sector was recognized, it was assumed that it was a temporary phenomenon that will disappear with the growth of modern industrial sector. Over time, the evidence clearly shows that informality has important employment relationships and that it is important to

have a clear understanding of it. Perry(2007) tried to elaborate this ambiguous concept referring to different economic and social phenomena, in his opinion informality refers to different but almost bad things for different people, like lack of worker protection, excessive regulations and evasion of tax laws, unfair competition, low productivity of workers, non-payment of taxes and underground work.

In a developing country like Pakistan a large share of output comes from informal sector and this large informal sector has influential role in the economies of developing countries. In Pakistan, according to labour force survey 2017-18, Informal sector is about 72 percent, informality is more in rural areas as 76 percent and 68 percent in urban areas. In urban areas formal sector account for more than 31 percent than 24 percent in rural areas. These figures demands for a detailed discussion of informality in Pakistan. Pakistan has a large informal sector and also provides evidences for informal labour market. Comparable analysis of informality in employment are missing in Pakistan. So this study makes a contribution to the literature by examining the informality in Pakistan labour market by defining and measuring the labour informality and analyzing its determinants using multiple criterion which are consistent with the guidelines of ILO.

Literature Review

Literature on informality highlighted different measures of informality which can be categorized into four main measures as enterprise, social security, legal and pension based measures. The definition of informal sector is as old as the theory of dual economy which consists of a traditional agriculture sector and a modern manufacturing sector (Harris & Todaro, 1970). This term of dual economy was extended further by classifying self-employment and small scale activities to generate income as informal (Hart, 1973). Hart (1973) decomposed the economy into formal and informal sectors. The early studies on informality assumes own-account workers and small scale enterprises are informal. The scale of enterprise (small or large) is depends on the number of workers employed in the enterprise. The studies adopted different number of workers to measure informality according to availability of data. For example, Rani (2008) used this measure of small scale enterprise as informal for Mexico. Measure of informality as less than six worker is used for Mexico by Maloney (1999). Marcoullier et al. (1997) used this measure for Mexico and Peru. Pradhan and Van Soest (1995, 1997) uses measure of less than six workers for Bolivia. In another study Livingstone (1991) used the data of fewer than ten employees for Kenya. Cohen and House (1996) increased the number to fewer than twenty for Sudan.

Some authors have introduced a further distinction into the measurement of the informal sector because this measure of informality was criticized for being ambiguous and incomplete. Chen (2007) referring to the informal jobs that are not entitled to social or legal protection. In simple words, informal employment means the employment that is not entitled to any labour law, social security and taxation or other employment benefits. It also includes workers, employers and small business owners, own account workers and unpaid family workers (self-employed in informal enterprises) and employees in informal enterprises, casual and domestic workers

(wage employment in informal sector). Combination of both enterprises and job characteristics in informality is used in many empirical and theoretical researches. Pradhan and Van Soest (1995) uses the data of the work in small firms with fewer than 6 workers, self-employment and unprofessional as informal for Bolivia. Funkhouser (1996) describes unprofessional, non-technical and non-administrative workers of small firms with four or fewer employees as informal for a study of Central American countries. Gasparini and Tornarolli (2007) classified the unskilled self-employed, workers without income or with salary in a firm with up to five employees as informal workers for a study of Latin American and Caribbean. In another study, Galli and Kucera (2004) described the informality with different number of workers in firms varying in different countries, less than five or ten, domestic workers, self-employed and unpaid family workers, non-administrative, technical and professional workers of Latin America for a comparative study. Henley et al. (2009) describes informal workers as those who work in firms with fewer than 5 employees, self-employed and employers, nonprofessionals and domestic workers, unpaid and temporary workers in a study for Brazil. Khamis (2009) considers self-employed and bosses to be informal workers who work in firm with five or fewer workers for Mexican economy.

Many studies used different criterion to determine the most appropriate specification and analyzed the consistency between different measures. In a study for Colombia, Bernal (2009) listed 27 measures of informality to explore the differences and implications. By using pairwise correlation between different measures, it is found that the social security measure is a preferred one. It was highly correlated with other measures such as having written contract, entitlement to social security and firm size etc. It also identifies vulnerable workers, easy measurement and comparability with other countries. Henley et al. (2009), used three measures of informality by using Brazilian household survey. These measures are based on contract status, entitlement to social protection and the nature of employment and employer. Nature of employment and the employer is defined as informal if the worker is unpaid, domestic, temporary, self-employed or non-professional employer. The author used the probit model to analyze the informality. It is found that three different measures show significant variation with certain characteristics. Contract based measure is much less strongly associated with lower level of education as compare to other measure especially third one. Only the measure based on social protection captures the rural/urban situation and the lack of social security seems to be a rural phenomenon. The main conclusion of their study is the need of a precise measure of informality because any analysis will be robust to the choice of measure. Marcoullier et al. (1997) and Saavedra and Chong (1999) found the legalistic measure more appropriate as compare to firm size. Gong et al. (2004) compare the three measures according to the type of job, the size of the firm and social protection.

Pisani and Pagan (2003, 2004) used two different measures of informality for Nicaragua, employer size (5 employees or less) and social security registration. The results show that informality increases if the measure is changed from employer size to measure of social security registration. This suggest that different measures may

behave differently. Gasparini and Tornarolli (2007) used two measures of informality for Latin America and Caribbean. According to productive measure a worker is informal if he belongs to any one category, unskilled self-employed worker, salaried worker in small private firms or zero income worker. The second measure is legalistic or social protection measure which defines informal worker those who have not entitled to pension after retirement. They found that a large portion of formal worker turned to informal when defined according to social protection measure but informal worker according to productive based measure remains also informal in legalistic sense.

Khamis (2009) used the Mexican survey data to study the labour informality for Mexico. The author classified the informality on lack of written contract for main job, lack of social security benefits for main job, illegal immigration to United States, small business employers counting up to five workers or self-employed. Under these four measures, a probit model was used to examine the effects of individual and household characteristics on informality. Focusing on the implication of each definition rather than comparing their relevance, the study found individual characteristics such as age, education, marital status, and scores to be significant determinants of informality for different measures, although there is some degree of variation.

Gillani (2013) used data of 506 participants from District Bahawalpur of the Punjab province. The results of the study indicate that education, gender, marital status, skill training, parental education, household size and rural-urban migration are the main factors influencing employment in the urban informal sector in Bahawalpur district. Parajuli (2014) used NLFS data set produced by UNDP/CBS/ILO 2008 for Nepal. A probit regression model is employed to estimate the determinants of informality. The study found that the employee's gender, education, geography, age of the employee, marital status, and ethnicity of the employee determines whether an employee works in formal or informal sector. Karabchuk & Zabirowa (2018) used national Labour Force Survey (LFS) data of Russian Federation. Probit regression modelling technique is used to determine the determinants of informality. The results revealed that in the services, gender, age education and area are main determinants. Hernández, et al. (2019) used National Survey of Occupation and Employment, 2010-2017 for Mexico. Applying logistic regression method, the authors found that a higher level of informal employment is associated with lower levels of education, living in a rural area and low incomes. Annicet and Ayekeh (2019) collected data from the second Cameroon Labour Force Survey for Cameroon. The results of the probit model show that gender, religion, age, education, marital status and urban area of residence significantly influencing informal labour force participation.

Material and Methods

Data and Descriptive Statistics

The data of Labour Force Survey (LFS) 2017-18 is used in the analyses, which has been conducted by the Pakistan Bureau of Statistics (PBS). Panel on Labour Statistics has revised its questionnaire and methodology many times to incorporate new improvements. The sample size of LFS 2017-18 comprises 43,361 households disaggregated at gender, rural/urban and provincial levels. All four provinces of Pakistan and Islamabad are the universe of LFS where FATA and restricted areas by military are not included in it. These areas accounts for around 2 percent of total population. The whole sample of households (SSUs) is drawn from 3032 (1772 rural and 1260 urban) Primary Sampling Units (PSUs). The analysis focuses on people of working age (15 or more years) living in both rural and urban areas. The sample for analysis consists of 44606 observations, of both genders employed in non-agriculture activities.

The LFS includes all the important information of the population on main key variables such as; personal and regional characteristics (i.e. gender, age, marital status, household size, acquired education and current enrolment and region), main activities (employed, unemployed and underemployed), main occupations, employment status (i.e. own account workers, contributing family workers, paid employees or employers), wages of paid employees and pension and health benefits.

In order to distinguish the formal and informal employment and to estimate the possible size of the informal employment, four different measures are adopted in this study. Measure 1 (informal sector job): Household enterprises (regardless of size) operated and owned by own-account workers, enterprises (with less than ten workers) operated and owned by employers, and exclude all enterprises involved non-market production or agricultural activities. Measure 2 (no written contract): All workers who do not have a permanent job or who do not have a written contract are classified as informal. Measure 3 (no pension): All the workers who are not entitled to pension are defined as informal. Measure 4 (no social protection): All the workers who are not entitled to any form of social security (such as old age pensions, family support in case of death of bread winner, educational stipend for children, disability insurance/ social insurance, medical facilities) are defined as informal.

Construction of Variables

Variables are selected on the basis of economic theory and existing literature on informal employment. The following table shows the construction of main variables, including dependent variable.

Table 1
Variables and Description

Variables	Description of variables
Sector of employment	Categorical variable for employment where 1= Informal employment and 0= Otherwise
Personal Demographic Characteristics	
Gender	1= If responded is male and 0= Female
Marital status	1= If responded is married and 0= Otherwise
Current enrolment	1= If responded is currently enrolled and 0 = Not enrolled
Training	1= If responded possess vocational training and 0= Otherwise
Education	1= Primary; 2= Middle; 3= Matric; 4= Intermediate; 5= Bachelor; 6 = Professional education; 7= Graduation; and 8= Masters and above (Below primary is reference category)
Household characteristics	
Household Size	Total number of household members
Household Head	1= If individual is head of household 0= otherwise
Family Type	1= Nuclear family 0= otherwise
Employed Persons	Number of household members employed
Child	Number of children up to 14 years in household
Location-Specific Characteristics	
Urban	1= rural and 0= urban
Work-related Characteristics	
Work Hours	Total hours worked a day
Industry	1= Construction; 2= Wholesale and retail trade, hotel and restaurant, transport storage and communication; 3= Transportation; 4= Accommodation and food; 5= Community and other services.(Manufacturing is reference category)
Occupations	1= Professionals; 2= Technicians; 3= Clerks; 4= Services Work 5= Skilled Agriculture; 6= Craft and Related;7= Plant and Machinery operator; 8= Elementary Occupations (Managers is reference category)

Method of Estimation

In order to find out the determinants of informality we use the following model.

$$L_i = \ln \left[\frac{P_i}{(1 - P_i)} \right] = \beta_0 + \sum_{i=1}^n \beta_i X_i + \mu_i \quad (1)$$

Where L_i stands for logistic regression which is estimated for the informality sample against formality sample and P_i is the probability of informal employment. The dependent variable is informal employment, X_i are set of explanatory variables (i.e. personal demographic, household, location and work-related characteristics) defined above, β_0 and β_i is being constant parameters and μ_i is individually and identically distributed error term.

The above equation (1) is estimated for different measures of informality such as informal sector job, no written contract, no pension and no social protection, separately.

Results and Discussion

Before starting the discussion on multivariate analysis, it is necessary to shed light on bivariate analysis. If we look at gender wise distribution in Table 2, among female workers, by measure of informal sector job, more than 69 percent women are employed informally. This figure increases if we move on to other measures because over 79 percent have informal employment according to the measure of no written contract, 83.99 percent are employed informally according to no pension measure and 93.19 percent women are informal under the measure of no social protection coverage. The figure differ for male workers, as 71.69 percent of male workers are informal according to the measure of Informal Sector Job, 81.85 percent do not have written employment contract, 86.75 percent do not have pension facility and 94.69 percent have no social security coverage.

Table 2
Gender Wise Formal and Informal Sectors-Percentage Distribution

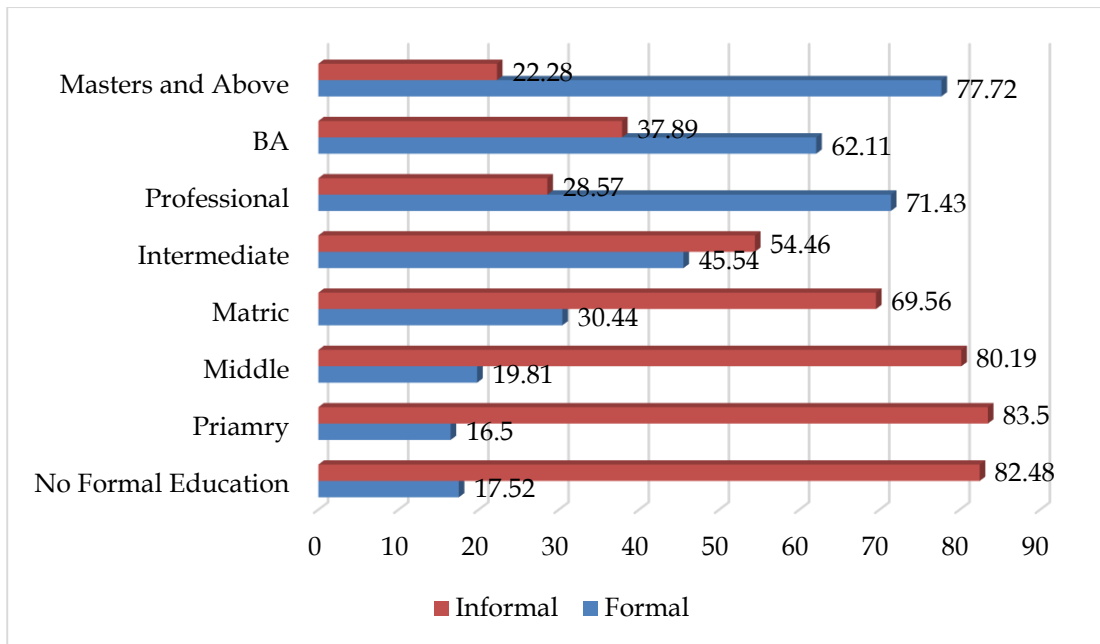
	Informal Sector Job		No Written Contract		No Pension		No Social Protection	
	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal
Female	30.99	69.01	20.99	79.01	16.01	83.99	6.81	93.19
Male	28.31	71.69	18.15	81.85	13.25	86.75	5.31	94.69
Total	28.6	71.4	18.46	81.54	13.55	86.45	5.47	94.53

Source: - Author's Calculations from Labour Force Survey 2017-18

Note: Percentages are row-wise separately for each measure.

As the level of education increases, formal employment also increases. Figure 1 shows that a large proportion of informal workers do not belong to any formal education category. Up to intermediate level of education, the percentage of informal employment for a specific educational category is high while it is reversed at higher education level. Very fewer workers are employed informally who have a professional degree or master's degree and higher level of education.

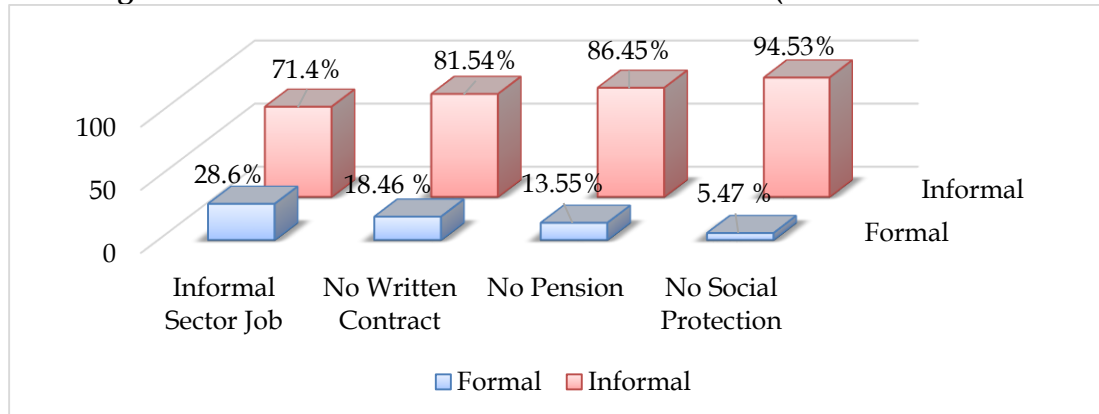
Figure 1.
Percentage Distribution of Educational Attainment of Formal and Informal Workers



Source: - Author's Calculations from Labour Force Survey 2017-18

The level of informality increases if the measure is modified from the measure of informal sector job. 71.4 percent workers are informal according to informal sector job measure, 81.54 percent are informal by measure of no written contract, and 86.45 percent are informal because they do not have pension (no pension) and 94.53 percent are informal according to the social security protection (no social protection) measure.

Figure 2.
Percentage Distribution of Formal and Informal Workers (Different Measure Wise)



Source: - Author's Calculations from Labour Force Survey 2017-18

The pairwise correlation coefficients for the four measures are shown in Table 3. The measures without pension and without a written contract have a correlation of around 0.78, suggesting a high, although far from complete, correspondence between

the two measures. The other two measures have a weaker correlation with any of the measures, and in particular among the lack of social protection and employment in the informal sector.

Table 3
Correlations of Informality Measures

	Informal Sector Job	No Written Contract	No Pension	No Social Protection
Informal Sector Job	1			
No Written Contract	0.6127	1		
No Pension	0.5563	0.7833	1	
No Social Protection	0.3469	0.5034	0.619	1

Source: - Author's Calculations from Labour Force Survey 2017-18

The informal employment probability estimates are shown in Table 4. Men are less likely to work in the informal sector than their female counterparts, which means that the women participate in informal labour market to support their families, especially during financial crises. This may be due to discrimination as formal sector hires and prefers male or may be due to inflexibility of working hours where female cannot adjust their schedules and work informally to cope with household chores and in the care of children. According to Ercan (2010, p.83) due to "added worker effect" women increase self-employment during crises in order to substitute for their husbands who lost jobs.

Workers of age group 26-40 and 41-60 are both significantly less likely to be employed as informal as compare to the workers of 15-25 age group. Young workers have less experience and skills, so they face barriers to accessing formal sector jobs and are more inclined to work informally. The over 60 age group is also more inclined to work informally. These results corroborate the findings of Funkhouser (1996) that young and old age workers were more likely to work in the informal employment sector.

Vocational Training has a positive impact on informal employment. If an individual acquires vocational training, his probability of working as an informal employee increase compared to those without any vocational training. Because a large number of worker who have received training in electrical and auto mechanical work, welding, carpentry, garment making, embroidery and driving, join the informal sector. After acquiring skills and training in this particular job, these semi-skilled workers are easily absorbed in to the informal sector. Vocational and technical can increase the informality for both genders when they start working at home or at the roadside. House (1984) found that a low level of qualification encouraged workers to work in the informal sector.

Current enrolment has a negative impact on informal employment and decreases the likelihood of informal employment. Workers who are currently enrolled in an educational program are less likely to join informal employment. As the level of

education increases, it decreases the chances of informal employment, the negative association for all the categories of education show that if individual has some level of education, he is more inclined to join formal employment than those who has no formal education. Odd ratios for education categories show that as the level of education increases, the likelihood of informal employment decreases relative to no formal education. This result is also consistent with the findings of Funkhouser (1996) study for Central America, according to which workers with a low level of education were more involved in informal sector employment.

The coefficient on marital status is positive, showing that unmarried people are more likely to work informally than those who are married. As married workers are more responsible for their families, they may therefore be more likely to accept formal jobs as a coping strategy given the scarcity of better employment opportunities in the informal sector in developing countries.

The position of head in a household hurts to work informally. The nuclear family increases the chances of informal employment and the large family decreases the probability of informal employment, as an increase in the number of family members will decrease the chances of informal employment. Household size is negatively associated with informal employment. Workers with large families compete for formal jobs to feed their large families. If a household has a large number of employed people and children, they are less conscious about formal jobs.

In the informal labor market, workers work longer hours than formal employment. Workers who work longer hours can earn more income in the labor market. In the informal sector, workers spend more time earning more income by engaging in informal activities. A strong income effect will force them to work long hours to get more income. The results are consistent with this stylized fact that an extra hour of work will increase the likelihood of being in informal employment.

Table 4
Determinants of Informal Employment According to Different Measures

Variables	Sub Group	Informal Sector Job	No Social Protection	No Written Contract	No Pension
		Odds Ratio <i>Std. Err.</i>	Odds Ratio <i>Std. Err.</i>	Odds Ratio <i>Std. Err.</i>	Odds Ratio <i>Std. Err.</i>
Personal Demographic Characteristics					
Gender	Male	0.428*** 0.022	0.637*** 0.053	0.474*** 0.027	0.575*** 0.036
	26-40	0.784*** 0.035	0.562*** 0.048	0.686*** 0.036	0.639*** 0.040
Age (15-25 Base Category)	41-60	0.697*** 0.038	0.386*** 0.037	0.499*** 0.031	0.439*** 0.031
	61 Above	2.360*** 0.274	2.015** 0.587	3.471*** 0.569	3.654*** 0.755
Vocational Training	Trained	1.544*** 0.056	0.710*** 0.040	1.599*** 0.067	1.434*** 0.068
Current Enrollment	Enrolled	0.589***	0.527**	0.474***	0.316***

		0.090	0.170	0.085	0.077
Education	Primary	0.839***	0.673***	0.691***	0.689***
		0.039	0.078	0.042	0.053
	Middle	0.637***	0.404***	0.476***	0.422***
		0.033	0.046	0.031	0.033
	Matric	0.415***	0.270***	0.296***	0.252***
		0.020	0.027	0.017	0.017
	Intermediate	0.279***	0.251***	0.202***	0.170***
		0.016	0.027	0.013	0.013
Professional	0.103***	0.133***	0.080***	0.076***	
	0.014	0.021	0.010	0.010	
Graduation	0.179***	0.208***	0.146***	0.129***	
	0.012	0.023	0.010	0.011	
Master & Above	0.105***	0.124***	0.096***	0.080***	
	0.008	0.014	0.008	0.007	
Marital Status	Unmarried	1.139***	1.333***	1.317***	1.545***
		0.051	0.101	0.068	0.091
Household characteristics					
Household Head	Head	0.943	1.027	0.896**	0.799***
		0.044	0.076	0.047	0.047
Family Type	Nuclear	1.176***	0.943	1.142***	1.146***
		0.042	0.055	0.047	0.053
Household Size		0.958***	0.966**	0.951***	0.925***
		0.010	0.015	0.011	0.012
No. of Employed Person In Household		1.052***	1.024	1.136***	1.185***
		0.016	0.026	0.020	0.024
Number of Child in Household		1.102***	1.091***	1.085***	1.094***
		0.015	0.023	0.017	0.019
Job Related characteristics					
Working Hours		1.048***	1.188***	1.215***	1.298***
		0.010	0.020	0.013	0.017
Place of Work	Urban	0.871***	0.690***	0.842***	0.849***
		0.027	0.038	0.031	0.035
Occupations	Professionals	0.895	1.230*	0.940	0.832**
		0.077	0.131	0.080	0.076
	Technicians	0.698***	0.705***	0.508***	0.429***
		0.063	0.081	0.046	0.042
	Clerks	0.157***	0.533***	0.225***	0.240***
		0.021	0.067	0.025	0.027
	Services Work	0.668***	0.489***	0.356***	0.225***
		0.059	0.060	0.033	0.023
	Skill Agriculture	0.183***	0.228***	0.181***	0.130***
		0.048	0.056	0.041	0.029
Craft and Related	5.855***	1.783***	1.595***	1.053	
	0.526	0.268	0.155	0.120	
Plant and Machinery Operator	0.753***	0.841	0.714***	0.571***	
	0.070	0.129	0.072	0.068	
Elementary Occupations	0.451***	0.459***	0.461***	0.272***	
	0.040	0.059	0.042	0.029	
Industry	Construction	25.780***	21.946***	6.269***	7.791***

	<i>1.671</i>	<i>8.498</i>	<i>0.561</i>	<i>1.027</i>
Whole Sale	100.934*** <i>8.102</i>	72.815*** <i>30.558</i>	23.350*** <i>2.272</i>	110.638*** <i>27.260</i>
Transportation	16.661*** <i>1.091</i>	1.719*** <i>0.266</i>	2.012*** <i>0.156</i>	1.514*** <i>0.147</i>
Accommodation and Food	22.829*** <i>2.564</i>	-	5.353*** <i>0.786</i>	30.399*** <i>13.822</i>
Community and Other Services	1.643*** <i>0.076</i>	0.234*** <i>0.020</i>	0.293*** <i>0.014</i>	0.211*** <i>0.012</i>
Number of Observations	44606	43234	44606	44606
LR chi ² (21)	22588.1	5963.39	18096.69	16202.76
Pseudo R ²	0.423	0.3177	0.4241	0.4579
Log likelihood	-15405.6	-6402.21	-12287.7	-9592.2

***Significant at 1%, **Significant at 5 %, *Significant at 10 %. Std. Err. are reported in *Italic*.

Dependent variable Informal Sector Job=1 if worker is informal 0 otherwise, No Social Protection=1 if worker is informal (having no social protection) 0 otherwise, No Written Contract=1 if worker is informal (having no job contract) 0 otherwise and No Pension=1 if worker is informal (having job without any entitlement to pension) 0 otherwise.

Cities have remained more attractive to people throughout history. Numerous studies indicate that the main flow of migration is from rural to urban areas, as urban centers offer better educational, health and sanitation opportunities, wider contacts and other benefits. Location can play an important role in employment. Basically, there are more informal jobs in rural areas of developing countries. One of the most salient features of the developing country's labor market is dualism with the small number of existing formal employment opportunities concentrated in large cities while rural areas are exclusively or predominantly informal. The results show that the location of the urban area will decrease informal employment.

Informality is lower in the professionals, technicians, services workers and clerk compared to managers, but it is higher in occupations related to craft. Compared to manufacturing industry, all other industries including construction, whole sale, transportation, accommodation & food, community and other services, there is a positive association between informality and industry. In addition, the results obtained from different criterion-based measures, reveal that the results are almost the same in all measures (informal sector, contract, pension and social security) but pension based measures seems most appropriate. It produces more significant and expected signs according to the theory of informal employment.

Conclusion

Informal employment is associated with bad working environment and poor conditions, low wages and inequality, absence of social security and poverty. In the developing countries, there is very limited consensus among the researchers on how to define labor market informality. Researchers have limited choice of measurement and to estimate the size of informality due to data limitations and unavailability. In this paper, we used four different measure of informality for Pakistan. We found a significant variation in the size of informal employment if the measure of informality is changed. 71.4 percent informal employment turns to more than 94 percent if we change our measurement criteria from informal sector job to no pension measure.

There are various socio-economic determinants of informal employment. Gender coefficient is negative showing that the female workers, as compare to male workers, are more likely to work in informal sector. Age has a positive impact on the decision of working as informal and as age increases the choice of informal employment also increase and it is high among very young and old age groups. Vocational training has positive impact on informal employment while, as the level of education increases, its decreases the chances of informal employment, the negative coefficients for all the categories of education show that if individual has some level of education, he is likely to join formal employment as compare to those who has no formal education. It is shown that the unmarried persons are more inclined to work as informal as compare to those who are married. Nuclear family, number of child in household and the number of employed persons has a positive impact on informal employment. We further obtained results from different criteria based definitions, and found that the results are same and consistent across all the measures (informal sector job, no written contract, no pension and no social protection based measures) but no pension measure seems most appropriate. All occupations and industries has significant and expected signs according to the theory of informal employment.

Policies should be made to extend the social security net and to legalize the employments of workers. This will reduce the size of informal employment and will provide the workers a social and legal protection. Worker under legal and social protection will pay taxes and contribute for social security which will enhance the revenue of government and the welfare by redistributing this revenue to the society.

REFERENCES

- Annicet, B. N. M., & Tachang, P. A. (2019). Gender Determinants of Informal Labour Force Participation in Cameroon: The Role of Education. *International Journal of African and Asian Studies*, 54.
- Batini, N., Levine, M. P., Kim, Y-B., & Lotti, E. (2010). *Informal labour and credit markets: a survey*. IMF Working Papers 10/42, International Monetary Fund.
- Bernal, R. S. (2009). The Informal Labor Market in Colombia: Identification and Characterization. *Revista Desarrollo y Sociedad*, (63), 145-208.
- Chen, M. A. (2007). *Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment*. DESA Working Papers 46, Department of Economic and Social Affairs, United Nations.
- Cohen, B., & House, W.J. (1996). Labor market choices, earnings and informal networks in Khartoum, Sudan. *Economic Development and Cultural Change*, 44 (3), 589-618.
- Ercan, H. (2010). The impact of the global financial crisis on employment in Turkey. *Crisis and Turkey: Impact Analysis of Crisis Response Measures*, Ankara: International Labour Organization Office For Turkey.
- Fields, G. S. (1975). Rural-urban migration, urban unemployment and underemployment, and job search activity in LDC's. *Journal of Development Economics*, 2 (2), 165-187.
- Funkhouser, E. (1996). The Urban Informal Sector in Central America: Household Survey Evidence. *World Development*, 24 (11), 1737-1751.
- Galli, R. & Kucera, D. (2004). Labor standards and informal employment in Latin America. *World Development*, 32 (5), 809-828.
- Gasparini, L., & Tornarolli, L. (2007). *Labor Informality in Latin America and the Caribbean: Patterns and Trends from Household Survey Microdata*. CEDLAS Working Papers 0046, CEDLAS, Universidad Nacional de La Plata.
- Gillani, D.Q., & Khan, R.E.A. (2013). Socio-Economic Determinants of Urban Informal Sector Employment: A Case Study of District Bahawalpur. *Pakistan Perspectives*. 18 (2), 133-149.
- Gong, X., van Soest A., & Villagomez, E. (2004). Mobility in the Urban Labor Market: A Panel Data Analysis for Mexico. *Economic Development and Cultural Change*, 53 (1), 1-36.
- Harris, J.R., & Todaro, M.P. (1970). Migration, Unemployment and Development: A Two-Sector Analysis. *The American Economic Review*, 60 (1), 126-142.

- Hart, K. (1973). Informal Income Opportunities and Urban Employment in Ghana. *The Journal of Modern African Studies*, 11 (1), 61-89.
- Henley, A., Arabsheibani, G.R., & Carneiro, F.G. (2009). On defining and measuring the informal sector: Evidence from Brazil. *World Development*, 37 (5), 992-1003.
- Hernández, J.S., Desidério, E.D.J., & Delgadillo, N.A. (2019). Exploratory Study on the Determinants of Informal Employment in the Current Mexican Return Migration. *American International Journal of Social Science*, 8 (1).
- House, W. J. (1984). Nairobi's Informal Sector: Dynamic Entrepreneurs or Surplus Labour? *Economic Development and Cultural Change*, 32(2), 277-302.
- Karabchuk, T., & Zabirowa, A. (2018). Informal employment in service industries: estimations from nationally representative Labour Force Survey data of Russian Federation. *The Service Industries Journal*, 38 (11-12), 742-771.
- Khamis, M. (2009). *A note on Informality in the Labor Market*. IZA Discussion Papers 4676, Institute for the Study of Labor (IZA).
- Livingstone, I. (1991). A reassessment of Kenya's rural and urban informal sector. *World Development*, 19 (6), 651-670.
- Maloney, W. (1999). Does Informality Imply Segmentation in Urban Labor Markets? Evidence from Sectoral Transitions in Mexico. *World Bank Economic Review*, 13 (2), 275-302.
- Marcoullier, D., de Casilla V.R., & Woodruff, C. (1997). Formal Measures of the Informal-Sector Wage Gap in Mexico, El Salvador, and Peru. *Economic Development and Cultural Change*, 45(2), 367-392.
- Parajuli, R.B.T. (2014). Determinants of Informal Employment and Wage Differential in Nepal. *The Journal of Development and Administrative Studies*, 22 (1-2), 37-50
- Perry, G. (Ed.). (2007). *Informality: Exit and exclusion*. World Bank Publications.
- Pisani, M. J., & Paga'n, J. A. (2003). Sectoral queuing in a transitional economy: the case of Nicaragua in the 1990s. *LABOUR: Review of Labour Economics and Industrial Relations*, 17 (4), 571-597.
- Pisani, M. J., & Paga'n, J. A. (2004). Sectoral selection and informality: A Nicaraguan case study. *Review of Development Economics*, 8 (4), 541-556.
- Pradhan, M. & van Soest, A. (1995). Formal and informal sector employment in urban areas of Bolivia. *Labour Economics*, 2 (3), 275-297.

Pradhan, M., & van Soest, A. (1997). Household labor supply in urban areas of Bolivia. *Review of Economics and Statistics*, 79 (2), 300–310.

Saavedra, J. & Chong, A. (1999). Structural reform, institutions, and earnings: evidence from the formal and informal sectors in urban Peru. *The Journal of Development Studies*, 35 (4), 95-116.