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Father-Son Formal-Informal Employment Persistence in Pakistan

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Abstract

This paper analyses the intergenerational transmission of formal-informal employment. Using the data from the Household Integrated, Income and Consumption Survey (2015-16) and applying Probit and Multinomial Logit Model, it was manifested that intergenerational persistence is higher in informal employment. The transmission of informal employment from the father to the son is higher in rural regions as compared to the urban regions. Further, scrutinizing informal employment in different occupations revealed its higher persistence in elementary occupations. In the older cohort, the likelihood of the transfer of informal employment as compared to the younger cohort was found to be higher. Father's occupation remains the primary determinant of the sons' entry into the labor market. There are limited chances for the sons whose fathers are in low status occupations to move to high status occupations as compared to those sons whose fathers are already employed in high status occupations.

Keywords: elementary occupation, formal employment, informal employment, intergenerational change, labor market opportunities, occupational inequalities
JEL: D06, D67

Introduction

Informality[1] is an important element in the stratification of workers in the labour market. It excludes the majority of the workers from decent work conditions through limiting the opportunities of accessing better quality jobs. Exclusion from good jobs also means exclusion from good earnings. Employment in the informal sector

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[1]"total number of informal jobs, whether carried out in formal sector enterprises, informal sector enterprises, or households (unpaid family workers in formal and formal enterprises), or the total number of persons engaged in informal jobs during a given reference period"

act as an important channel through which endowments and opportunities are transmitted from generation to generation. Persistence in informal employment causes inequalities and misallocation of talent and skills. As a result, both the father's generation and the son's generation experience backwardness and the country experiences inequality, poverty and slow economic growth.

Intergenerational change or progress in income, wealth, and social status is a central part of the social discourse in the income inequality analysis (Atkinson, 1980; Siebert, 1987; Becker & Tomes, 1986). The association between intergenerational mobility and inequality widens over time because the opportunities and prospects of earning over the lifetime are less based on equality. This is also evident from the fact that the outcome for the next generation depends on the previous generations. Becker and Tomes (1986) suggest a two-dimensional link between the parents' and their offspring's achievements manifested through the level of endowments and inheritance and the inclination of the parents to invest in their offspring's development. However, the absence of the latter was observed to be a primary source of the transmission of inequality in the society because imperfections in the market compel the low-income sections of the population to invest less in their offspring's development. Consequently, the poor stay poor over the extended generations. Thus, long-run equalization in resource achievement becomes unlikely. The critical reason for low investment in human capital is the informal workers' low wage income, which allows them to send only a fraction of their children to school, which creates enormous inequality. Therefore, individuals born in low-income or disadvantaged families have fewer chances to gain a high socioeconomic position than individuals born in fortunate families (Murshed, 2012).

Many studies (Colombier & Masclet, 2008; Hout & Rosen, 1999; Pasquier-Doumer, 2013) have reported significantly higher chances of the son working informally or being self-employed if his father is an informal worker or self-employed. There is considerable debate among the researchers if informal employment is the outcome of an optimal choice. On the one hand, it was reported (Magnac, 1991; Maloney, 2004; Packard, 2007) that due to

expecting high welfare gains in the informal sector as compared to the formal sector, some workers choose informal employment over formal employment. On the other hand, some (Amuedo-Dorantes & Change, 2004; Pasquier-Doumer, 2013) argued about the involuntary nature of informality. The selection of the informal sector work acts as an important channel through which endowments and opportunities are transmitted from generation to generation. Therefore, measuring the persistence of employment between the father and son is crucial for analyzing the opportunities for social mobility.

Informal employment remains a major source of earning in Pakistan. As per the Labor Force Survey (2014-15), the informal sector accounts for almost 72.6% of employment outside the agriculture sector. Considering the low investment on their children by the informally employed parents and barriers on entry into the formal employment as possible causes of the high rate of informal employment, this study attempts to explore the intergenerational persistence of informal employment. Moreover, intergenerational persistence in different informal occupations and across different cohorts is also estimated.

Although different studies on intergenerational persistence are available, yet none of them focus on the informal sector. Understanding the intergenerational persistence in informal employment is, however, crucial for poverty alleviation. Recently, some attempts were made to study the intergenerational occupational mobility in Pakistan. Using Social and Living Standard Measurement (PSLM), a nationally representative cross-section data of Pakistan, Muhammad and Jamil (2017) measured the intergenerational transfer of occupation from the father to the son. Javed and Irfan (2014) reported transitional probabilities for different occupations by employing Pakistan Panel Household Survey (PPHS) data. Both studies concluded high intergenerational persistence across generations.

The remainder of the paper is organized as follows: Section 2 outlines the methodology and data used in the empirical analysis, Section 3 presents results and discussion and finally, Section 4 concludes the study.

Literature Review

Empirical analysis of occupational mobility has not been conducted specifically in the context of developing countries, even though it is considered a critical issue. A possible reason may be the unavailability of longitudinal data sets which provide better estimates of intergenerational mobility than the estimates obtained using the cross-sectional data sets.

Observing the trends of stability and mobility for the Canadian economy, De and Rocher (1957) asserted that the son's occupation is determined by the father's occupation. Constant and Zimmermann (2003) found education as one of the most important factors affecting the occupational choice of the immigrants and the natives of Germany, where native Germans are more likely to choose a profession similar to that of their father's profession. Knoll, Riedel, and Schlenker (2013) found a high persistence of occupational choice across fathers and sons in Germany. In the above study, a separate analysis was undertaken for those children who grew up with their biological fathers and those who did not, in order to examine the impact of the nature and nurture related factors on occupational choice. The results indicated that a significant fraction of correlation between the father's and the son's occupation is explained by the nurture related factors rather than the nature related factors.

Lindquist et al. (2015) found that the impact of adoptive parents, that is, post-birth factors is twice the impact of the biological parents, that is, pre-birth factors. For own-birth children, the individual impact of the biological parents for the intergenerational transmission of entrepreneurship is almost similar to the sum of the effects of biological parents and adoptive parent on adoptive children.

After analyzing the intergenerational persistence of self-employment for the informal sector, Pasquier-Doumer (2013) concluded that the children of self-employed may have a better outcome in terms of profit and sale only if they choose the familial tradition in the same sector. Otherwise, if their activity is different from that of their father's then there is no transmission of valuable skills and no better outcome.

Sørensen ([2007](#)), describing the mechanisms behind the transmission of self-employment across generations, stated that the children of self-employed have greater preferences for autonomy relative to other children. Moreover, their capacity for risk tolerance and willingness to accept greater uncertainty is higher. Furthermore, their occupational opportunities are determined by their parents' social status. So, the probability of following their father's profession is higher compared with other children.

Laferrere ([2001](#)) argued that liquidity constraints and family environment are crucial in determining self-employment. For children with an entrepreneurial background, liquidity constraints seem to be less stringent than for the children of wage workers. Successful entrepreneurs are capable of transferring financial wealth to their children, so these constraints are lessened by parental help. Informal transfer of human capital, including valuable work experience, reputation and other managerial human capital also seems important in terms of unpaid experience which, in turn, decreases liquidity constraints.

Parlevliet ([2008](#)) concluded that the persistence of formal employment across generations is highest for salaried / paid workers, as children following the foot prints of their parents prefer to work as salaried workers. The probability of the above is about 63%. On the other hand, the contribution of paid informal workers is higher in the persistence of informal employment and its probability is almost 48%. Family, friends and colleagues are the main channels through which people find their jobs and its probability is about 60%. Di Pietro and Urwin ([2003](#)) showed that the probability of following their father's occupation is higher for the sons of mangers, professionals and entrepreneurs as compared to the sons of manual workers.

Brunetti and Fiaschi ([2015](#)) stated that the interaction between income incentives, opportunities and occupational structure results in the varied occupational status of an individual. Baron ([1980](#)) analyzed the mobility trends through the intergenerational mobility matrix and confirmed the invariant mobility trends. Nicoletti ([2008](#)), considering the issue of employment and co-residence selection,

claimed that at the top of the occupational prestige distribution intergenerational transmission is weaker than at the bottom.

Data Explanation and Empirical Methodology

Data

We used data from the Household Integrated Income and Consumption Survey (HIICS) 2015-16, which is a nationally representative survey of households conducted by the Pakistan Bureau of Statistics (PBS). It covered 24,238 households located in 1503 villages and 971 urban neighborhoods throughout Pakistan. It provides a wealth of information regarding income, consumption, education, health, employment, and the geographical location of the household.

Data on employed persons in this research was extracted from the employment and income section of the above mentioned survey. This section provides the information of 115,910 individuals. Among these individuals, only employed persons (43,480) were selected for the purpose of this research. For the identification of the father-son pair, information from the roster was used. The roster contains a variable "Relation to Head" for the identification of the household members[2] living together. This variable was extracted from the roster and merged with the variables of employment and income section on the basis of the identification code.

Among 43,480 employed individuals, 19,314 were identified as household head, 15,319 as son / daughter, while the remaining 8,847 were identified as other household members (Table I). After excluding the employees of the agriculture sector[3] from the 43,480 employed persons there remained 30,497 individuals and from these employed individuals, employment / income information was not reported for 38 individuals (0.12%). After excluding these 38 individuals, there remained 30,459 individuals. Of these 30,459

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[2] Either they are head's son / daughter, grandchild, spouse, father / mother, brother / sister etc.

[3] For measuring the informal employment at national level from the labour force survey, in Pakistan, agriculture sector is also excluded when measuring the informal sector employment at the official level but paid domestic workers are included. Additionally, activities performed as secondary jobs were not considered.

employed individuals, the total number of head and children working was 25,802. Within this sample, the percentage of daughters was 5.1% (1317). Data on females was excluded from the intergenerational mobility analysis because of the smaller number of observations for working daughters. Hence, 24,485 working heads of families and their sons were identified. For doing the analysis of intergenerational mobility, from 24,485 employed heads and sons, 15,066 were identified as fathers and 9,419 as sons. Two separate files were prepared; one comprising fathers' information and the other sons' information. Afterwards, each employed head against each employed son was merged. In this way, father and son pairs, who were employed at the same time, were obtained.

In general, the existing surveys do not provide information on whether the individual is employed in the informal or the formal sector. The surveys lack questions that directly broach this point. Furthermore, production units are not classified as formal or informal. Moreover, job activities performed by an individual are also not classified as formal or informal. This is among the limitations of the HIICS (2015-16) data set. Therefore, based on the literature (Burki & Ghayur, 1989; Guisinger & Irfan, 1980; Nasir, 1999) multiple criteria were employed in this paper for the construction of the variable 'informal employment'. In the current study, informal workers are defined as the workers of the firms which employ less than 10 workers, paid employees who are not entitled to pension, self-employed (excluding those in the agriculture sector), paid domestic workers and own-account workers. These informally employed persons are further divided into 5 occupational categories. The sons are divided into two cohorts for measuring over time the transmission of occupation. The two cohorts considered include less than 25 years of sons and more than or equal to 25 years of sons.

Regression analysis was performed with the sons more than 20 years of age, thus further reducing 1,404 observations and leaving 3,156 father-son pairs for estimation. This age limit was set to avoid the biased estimates which may arise due to the inclusion of individuals who have not completed their education. The cut-off point of 20 years was imposed to preclude the potential inclusion of

sons involved in their studies. There are many explanatory variables affecting informality. According to Jamal (2016) the formal sector of the Pakistani labour market can be differentiated from the informal sector on the basis of social security coverage and the provision of old age benefits such as pension. Sons' individual characteristics as well as household characteristics were found to affect informal employment.

Although a lot of information was provided in the data, we faced certain limitations in analyzing intergenerational mobility. For carrying out such analysis, panel data is the most suitable. However, there is a lack of longitudinal data specifically for the developing countries. Pakistan is no exception and this problem is exacerbated by collecting the information only for those individuals who live and eat together. It excludes the information of sons and daughters who are married and live separately, leading to the problem of selection bias. For obtaining the best estimates, this type of analysis also requires the information about the occupation of the father and children at the same age. Unfortunately, no such information is available. Moreover, unlike education, the identification of the father's occupation is problematic because this information was collected only for those individuals employed at the time of the survey.

The details of the variables used in the analysis are provided in Table 1 below.

Table 1

Variables for Occupational Mobility Model

Variable Name	Definition
Dependent Variables	
Occupation of son	Dummy =1 if son is employed informally and residing with his father, 0 otherwise
Explanatory Variables (Occupational Mobility)	
Father's employment	Dummy =1 if father is employed informally, 0 otherwise
Age of son	Age of informally employed son
Age square of son	----
Education of son	Completed years of schooling

Methodology and Empirical Model

Literature manifests that discrete choice models have been used to study the intergenerational employment relationship. The most commonly used models are binary and multinomial logit models. When the variable of interest has two choices then binary models are applied, whereas for more than two choices multinomial logit model is the most suitable.

Binary outcome models estimate the probability of y=1 as a function of the independent variable.

$$p = pr[y = 1|x] = F(x'\beta)$$

For the probit model, $F(x'\beta)$ is the cumulative density function of the normal distribution.

$$F(x'\beta) = \emptyset F(x'\beta) = \int_{-\infty}^{x'\beta} \emptyset(z)dz$$

The predicted probabilities lay between 0 and 1.

For the multinomial logit model, the likelihood that j[th] occupation is to be selected by the ith individual is

$$P_{ij} = p(y_i = j) = \frac{EXP\ (W_i'\ \gamma_j)}{\sum_{k=1}^{m} EXP\ (W_i'\ \gamma_k)}$$

In fact, the above given model is the expansion of the common logit model. In this scenario, the chances of selecting any of the alternative sums to unity are expressed by the equation $\sum_{j=1}^{m} P_{ij} = 1$

In order to estimate the model, one set of coefficients must be normalized to zero. For this purpose, γ_1 is put on zero ($\gamma_1 = 0$). So, the coefficients $j - 1$ are estimated. Moreover, the coefficients of the variables are interpreted with reference to the base category. For the alternative j coefficient interpretation in relation to the base alternative, a rise in the magnitude of the regressors or independent variables makes the selection of j alternative less or more likely.

The marginal effects of an increase in the value of the explanatory variable on the probability of selecting j is given as follows:

$$\partial p_{ij}/\partial w_i = p_{ij}(\gamma_j - \overline{\gamma_i})$$

Firstly, we applied the probit model for measuring the transfer of informal employment to the next generation. For this purpose, the dependent variable was assigned the value of 1 if the son was in informal employment and 0 if the son was in formal employment. The empirical equation is specified as follows:

$$emp_i^s = \alpha_0 emp_i^f + \alpha_1' controls + \varepsilon_i \tag{1}$$

Here, emp_i^c is the employment of the ^{it}h son and emp_i^f is the employment of the ^{it}h father. The error term ε_i captures the effect of the omitted variables.

Secondly, multinomial logit model (MNLM) was applied keeping in view the different informal occupations which provide informal employment. For this purpose, the empirical MNLM is stipulated as follows:

$$OCC_{ij}^s = \alpha_0 OCC_{ij}^f + \alpha_1' control\ variables + \varepsilon_i \tag{2}$$

where OCC_{ij}^s is the dependent variable which represents the son's formal and informal employment in different occupations. We assigned the value 1 for formal employment, 2 for informal clerks, 3 for informal sales workers, 4 for informal craft and related workers, 5 for informal machine operators and 6 for elementary workers. The main variable of interest was OCC_{ij}^f, which represents the father's employment in the formal sector and also in different informal occupations. This variable was also assigned the values ranging from 1 to 6. Control variables included age, age square of son, education of son and regional and provincial dummies.

This method is based on the assumption of the Independence of Irrelevant Alternatives (IIA). Therefore, it requires that the relative probability of selecting an occupation remains unaffected by the presence of another alternative. It provides different slope coefficients of the independent variables for each outcome of the dependent variable. Keeping one set of coefficients as the base model, other sets of coefficients are interpreted relative to this base model. So, if the dependent variable has J-outcomes, then J-1 sets of coefficients have to be interpreted. To check for this assumption, the Hausman-McFadden test is applied.

Results

Percentage distribution of fathers and sons in informal employment shows that compared to 80.0% fathers[4], 83.0% sons work in the informal sector indicating that the ratio of working in the informal sector has increased over the course of time. The sons whose fathers are informal employment are more likely to join the informal sector as compared to the formal sector (Table 2). The remaining 10.05% sons join the formal sector as compared to 89.95% sons who join the informal sector. Moreover, 39.75% sons having formally employed fathers tend to join the formal sector. While 60.25% sons of formally employed fathers join the informal sector. It represents that sons with informally employed fathers have lower chances of joining the formal sector.

In urban areas the rate of the transfer of informality to the next generation is lower as compared to the rural areas. In rural areas, only 7.51% sons have the opportunity to join formal employment as compared to 10.55% sons in the urban areas joining formal employment even if their fathers are informal workers.

Table 3 details the probability of foraying into formal and informal employment (occupation wise) by the sons given their fathers' occupation, firstly at national level and then for rural and urban regions. The informal categories of occupations are ranked in a decreasing order starting with the informal clerical occupation being the most preferred occupation and elementary occupation the least preferred over other occupations.

It is evident that the diagonal terms mostly dominate the off-diagonal terms, suggesting an inequitable distribution of the opportunities of occupational choice. Father's occupation remains the primary determinant of the son's entry into the labor market. The persistence is highest in low status occupations and workers, specifically informal craft related and elementary workers. The probability of sons following their fathers in these sectors is 52% and 49%, respectively.

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[4]In the fathers' generation, 20.56% (649) were found to be employed formally, whereas 16.16% (510) work as informal workers in the sons' generation.

Table 2

Son's Employment VS Father's Employment (%)

Father's sector	Son's sector		
	Formal employment	Informal employment	%(N)
Formal employment	39.75	60.25	100(649)
Informal employment	10.05	89.95	100(2507)
Rural			
Formal employment	38.54	61.46	100(96)
Informal employment	7.51	92.49	100(413)
Urban			
Formal employment	39.96	60.04	100(553)
Informal employment	10.55	89.45	100(2094)

Source: Author's own calculation

Moreover, the likelihood of sons joining the formal sector declines with the order of occupation. Sons whose fathers are informal clerical workers have the highest chances of joining the formal sector of the economy. On the contrary, sons of fathers who are in an elementary occupation have the lowest chances of foraying into the formal sector of the economy. Transition matrix also points towards upward mobility in two occupations (informal clerical workers and informal machine operators) and downward mobility only in informal clerical workers. Our results contradict the findings of (Javed & Irfan, 2014; Muhammad & Jamil, 2017), who found a high downward mobility in all occupations in Pakistan. This may be due to the analysis is performed with two different data sets.

Table 3

Son's Occupation VS Father's Occupation (%)

Occupation of Fathers	Occupation of Sons						
	Formal employment	Informal clerical workers	Informal sales workers	Informal craft workers	Informal machine operators	Informal elementary occupation	% (N)
Formal employment	33.8	7.4	24.6	16.0	6.7	11.4	100(780)
Informal clerical workers	25.0	24.2	29.5	11.4	2.3	7.6	100(132)
Informal sales workers	8.7	3.3	40.7	19.5	9.2	18.5	100(1198)
Informal craft workers	7.0	3.0	19.6	49.0	7.7	13.7	100(810)
Informal machine operators	8.1	3.7	24.8	24.4	22.2	16.7	100(616)
Elementary occupation	3.3	1.0	18.6	17.8	7.3	52.1	100(1024)
Urban							
Formal employment	34.49	8.1	25.0	16.3	7.2	9.1	100(657)
Informal clerical workers	25.0	25.0	28.6	13.4	0.9	7.1	100(112)
Informal sales workers	9.2	3.6	40.3	20.9	9.0	17	100(1027)
Informal craft workers	7.2	3.2	19.2	50.7	7.4	12.3	100(691)
Informal machine operators	8.5	4.1	24.1	25.5	23.0	14.9	100(518)
Elementary occupation	3.7	1.0	21.2	21.2	7.5	45.4	100(731)
Rural							
Formal employment	30.9	4.1	22.8	14.6	4.1	23.6	100(123)
Informal clerical workers	25.0	20.0	35.0	0.0	10.0	10.0	100(20)
Informal sales workers	5.8	1.8	43.3	11.1	10.5	27.5	100(171)
Informal craft workers	5.9	1.7	21.8	39.5	9.2	21.8	100(119)

| Informal machine operators | 6.1 | 2.0 | 28.6 | 18.4 | 18.4 | 26.5 | 100(98) |
| Elementary occupation | 2.4 | 1.0 | 11.9 | 9.2 | 6.8 | 68.6 | 100(293) |

Source: Author's own calculation

Table 4

Son's Occupation VS Father's Occupation by Cohort (%)

	Occupation of Son (Aged less than 25)						
Occupation of Father	Formal employment	Informal clerical workers	Informal sales workers	Informal craft workers	Informal machine operators	Elementary occupation	% (N)
Formal employment	69.0	6.4	28.8	22.8	4.8	9.6	100(250)
Informal clerical workers	25.58	25.58	25.58	11.63	4.65	6.98	100(43)
Informal sales workers	6.85	3.05	42.13	19.04	8.88	20.05	100(394)
Informal craft workers	7.58	3.97	20.94	46.21	7.58	13.72	100(277)
Informal machine operators	6.31	3.88	24.76	22.33	21.84	20.87	100(206)
Elementary occupation	3.79	1.17	15.16	16.62	6.71	56.56	100(343)
	Occupation of Son (Aged more than or equal to 25)						
Formal employment	47.37	9.77	18.55	9.52	7.27	7.52	100(399)
Informal clerical workers	30.0	28.57	28.57	5.71	0.00	7.14	100(70)
Informal sales workers	16.34	5.66	39.65	14.16	11.11	13.07	100(459)
Informal craft workers	10.33	4.13	15.29	52.89	7.44	9.92	100(242)
Informal machine operators	15.12	6.83	18.05	20.49	27.8	11.71	100(205)
Elementary occupation	5.6	2.24	17.91	18.28	10.82	45.15	100(267)

Occupational Mobility Regression Analysis

Findings from the transition matrix analysis clearly confirm a higher intergenerational association between the fathers' and the sons' occupational choices. This section extends the above analysis using regressions analysis. Table 5 below reports the probit regression results for the rural and urban samples, respectively. Columns 1, 3, 5, 7, and 9 present the probabilities obtained from probit regressions, while columns 2, 4, 6, 8 and 10 present the marginal impacts.

The results show that the son's employment is positively and significantly associated with the father's employment for all the specifications. The coefficient of the father's employment is positive and significant, indicating the intergenerational persistence in the choice of employment across the two generations. Sons whose fathers have informal employment are more likely to be employed informally than the sons of fathers who have formal employment. The results are robust for both rural and urban samples.

Probit regression coefficients do not depict the variation in the son's employment brought about by the variation in the father's employment. Therefore, marginal impacts were calculated. The most important result is that if the father is employed in the informal sector, it significantly and positively increases the probability that his son will work in the same sector. The size of the impact, however, decreases when regression is controlled for age, education and other characteristics of the household.

It is evident that with the father being informally employed, it raises the probability of the son to be employed informally by 29.7%, as compared to the sons of formally employed fathers. The probability, however, falls to more than half (12.4%) when estimates are controlled for age, age square and the education of the son along with the regional and provincial dummies.

Disaggregating the analysis for the urban and rural samples revealed a positive and significant association between the father's and the son's occupation, which is higher for the rural sample. Following the literature in labor economics, the age of sons is added as a proxy of human capital. With the increase in age work

experience also increases[5] showing the accumulation of human capital. The coefficient of the age of the son is negative and statistically significant for both the full sample and the urban sample. This may be due to the fact that in the early stages of life individuals prefer formal employment as compared to informal employment. However, after a certain age, preferences change and the likelihood of working in the informal sector increases. This effect is captured by the square terms of the age.

The results of the multinomial logit model are reported in Table 6. The first five rows of the table provide the probability and the marginal impact of the father's occupation on the son's occupation. It is evident from the table that the coefficient of the father's occupation against the same occupation of the son in each case is positive and significant, indicating a higher intergenerational occupational persistence. The likelihood is higher for occupations which require low skills and lower for highly skilled occupations. For example, the likelihood of the son to fall in the occupation of his father is highest for the elementary occupations (2.857), whereas it is lowest for the informal sales workers (1.386). In terms of the marginal impact, the probability of the son joining an elementary occupation is 34% if the father works in an elementary occupation. The probability is 13.4% if the father works as an informal sales worker.

Alarmingly, downward mobility is documented for some occupations. In the case of father being an informal clerical worker, the probability of the son to be employed as an informal sales worker is 10.4%. A similar situation was found for the sons whose fathers are informal sales workers. Their probability to work in an elementary occupation is 3.8%. The fact of a father being an informal machine operator and working in an elementary occupation is associated with the negative probability of his son working as a sales and a clerical worker.

As experiences increases with the age therefore, the likelihood of sons to work as craft workers, machine operators and elementary

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[5]The cohort effect can also be captured by age and its square

Table 5

Probability and Marginal Impact (Probit Model)

	Full Sample				Urban Sample				Rural Sample			
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
	M-1		M-2		M-1		M-2		M-1		M-2	
Informal father	1.018***	0.297***	0.687***	0.124***	0.996***	0.294***	0.692***	0.127***	1.147***	0.310***	0.712***	0.111***
	(0.0630)	(0.0201)	(0.0676)	(0.0114)	(0.0652)	(0.0157)	(0.0729)	(0.0126)	(0.158)	(0.0355)	(0.186)	(0.0276)
Control	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Constant	0.259***		3.742***		0.254***		4.113***		0.291***		1.922	
	(0.0555)		(0.713)		(0.0596)		(0.748)		(0.152)		(2.097)	
Prob > chi2	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.1017		0.2749		0.0972		0.2765		0.1301		0.3004	
Observations	3,156	3156	3,156	3,156	2,647	2,647	2,647	2,647	509	509	509	509

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively.

   Regression results are controlled for age, age square, education of son, regional and provincial dummies.

Table 6

Multinomial Logit Model Results (Full Sample)

	Informal clerks_C		Informal sales workers_C		Informal craft workers_C		Informal machine_C		Elementary occupations_C	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal clerks	1.470***	0.0733***	0.583**	0.104*	-0.122	-0.0807	-0.708	-0.0584**	0.402	0.0118
	(0.297)	(0.0246)	(0.293)	(0.0613)	(0.417)	(0.0496)	(0.762)	(0.0268)	(0.446)	(0.0480)
Informal sales workers	0.554**	-0.0131**	1.386***	0.134***	0.795***	-0.0514**	1.182***	0.0130	1.311***	0.0380*
	(0.245)	(0.00651)	(0.168)	(0.0287)	(0.197)	(0.0249)	(0.240)	(0.0176)	(0.220)	(0.0212)
Informal craft workers	0.758**	-0.0112	0.689***	-0.126***	1.988***	0.294***	0.994***	-0.0142	1.032***	-0.0155
	(0.310)	(0.00760)	(0.222)	(0.0296)	(0.220)	(0.0309)	(0.292)	(0.0184)	(0.267)	(0.0215)
Informal machine operators	0.827***	-0.00221	0.629***	-0.0779**	0.888***	-0.00161	1.923***	0.164***	1.089***	0.0271
	(0.306)	(0.00885)	(0.231)	(0.0326)	(0.246)	(0.0302)	(0.271)	(0.0270)	(0.273)	(0.0246)
Elementary occupations	0.557	-0.0212***	1.064***	-0.129***	1.376***	-0.0370	1.471***	-0.00710	2.857***	0.340***
	(0.404)	(0.00737)	(0.253)	(0.0293)	(0.265)	(0.0271)	(0.309)	(0.0181)	(0.270)	(0.0277)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.880		6.854***		6.565***		3.050		8.583***	
	(2.185)		(1.455)		(1.608)		(1.892)		(1.755)	
LR chi2(60)	1974.62									
Prob > chi2	0.000									

	Informal clerks_C		Informal sales workers_C		Informal craft workers_C		Informal machine_C		Elementary occupations_C	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Pseudo R2	0.1845									
Observations	3,156									

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively.

Regression results are controlled for age, age square, education of son, regional and provincial dummies.

Table 7

Multinomial Logit Model (Urban Sample)

VARIABLES	Informal clerks		Informal sales workers		Informal craft workers		Informal machine operators		Elementary occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal clerks	1.430***	0.0751***	0.567*	0.0961	0.00183	-0.0633	-1.315	-0.0749***	0.531	0.0219
	(0.315)	(0.0272)	(0.316)	(0.0657)	(0.429)	(0.0552)	(1.046)	(0.0234)	(0.510)	(0.0467)
Informal sales workers	0.589**	-0.0147**	1.406***	0.125***	0.877***	-0.0458*	1.149***	0.00495	1.618***	0.0640***
	(0.255)	(0.00748)	(0.181)	(0.0311)	(0.211)	(0.0270)	(0.257)	(0.0186)	(0.253)	(0.0208)
Informal craft workers	0.713**	-0.0134	0.647***	-0.14***	1.981***	0.294***	0.960***	-0.0170	1.290***	0.0128
	(0.326)	(0.00867)	(0.238)	(0.0322)	(0.236)	(0.0335)	(0.313)	(0.0197)	(0.302)	(0.0214)

VARIABLES	Informal clerks		Informal sales workers		Informal craft workers		Informal machine operators		Elementary occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal machine operators	0.762**	-0.00368	0.613**	-0.077**	0.855***	-0.00277	1.826***	0.150***	1.293***	0.0497**
	(0.321)	(0.0100)	(0.244)	(0.0354)	(0.260)	(0.0325)	(0.286)	(0.0283)	(0.304)	(0.0244)
Elementary occupations	0.432	-0.0259***	1.163***	-0.13***	1.534***	-0.0225	1.531***	-0.00929	3.190***	0.349***
	(0.470)	(0.00843)	(0.288)	(0.0327)	(0.299)	(0.0303)	(0.346)	(0.0198)	(0.318)	(0.0296)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.054		8.167***		8.045***		4.685**		7.151***	
	(2.239)		(1.514)		(1.681)		(1.940)		(1.904)	
LR chi2(55)	1605.60									
Prob > chi2	0.0000									
Pseudo R2	0.1786									
Observations	2,647									

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively.

Regression results are controlled for age, age square, education of son, regional and provincial dummies.

Table 8

Multinomial Logit Model (Rural Sample)

VARIABLES	Informal clerks		Informal sales workers		Informal craft workers		Informal machine operators		Elementary occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal	2.212**	0.0688	1.006	0.147	-24.41	-0.193***	1.460	0.0846	0.355	-0.0571
	(1.004)	(0.0667)	(0.818)	(0.168)	(209,233)	(0.0524)	(1.300)	(0.132)	(1.007)	(0.192)
Informal sales workers	0.141	-0.00697	1.425***	0.233***	0.280	-0.0709	1.625**	0.0774*	0.152	-0.167**
	(0.954)	(0.0110)	(0.470)	(0.0739)	(0.583)	(0.0630)	(0.707)	(0.0444)	(0.537)	(0.0826)
Informal craft workers	1.545	0.00426	1.265**	-0.00869	2.224***	0.293***	1.783**	0.0334	0.357	-0.231***
	(1.070)	(0.0171)	(0.633)	(0.0743)	(0.635)	(0.0806)	(0.862)	(0.0447)	(0.670)	(0.0809)
Informal machine	1.763	0.00803	1.130	-0.0457	1.642**	0.0665	2.906***	0.203***	0.882	-0.140
	(1.110)	(0.0199)	(0.792)	(0.0812)	(0.803)	(0.0871)	(0.910)	(0.0732)	(0.803)	(0.0958)
Elementary	1.529	0.000255	1.061*	-0.0855	0.974	-0.0805	1.841**	0.0210	2.009***	0.242***
	(0.940)	(0.0132)	(0.567)	(0.0624)	(0.614)	(0.0600)	(0.771)	(0.0360)	(0.544)	(0.0824)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-7.399		0.0407		2.220		-8.987		8.705*	
	(9.100)		(4.661)		(4.992)		(6.769)		(4.839)	
LR chi2(55)	355.89									
Prob > chi2	0.000									

VARIABLES	Informal clerks		Informal sales workers		Informal craft workers		Informal machine operators		Elementary occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Pseudo R2	0.2188									
Observations	509									

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively.

Table 9

Probit Model (Cohort Analysis)

	Age>=25				Age<25			
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal_F	1.040***	0.339***	0.744***	0.162***	0.901***	0.208***	0.596***	0.0817***
	(0.0770)	(0.0184)	(0.0853)	(0.0170)	(0.110)	(0.0242)	(0.113)	(0.0151)
Control	No	No	Yes	Yes	No	No	Yes	Yes
Constant	0.066***		2.348		0.594***		10.93	
	(0.0627)		(1.476)		(0.101)		(14.35)	
Prob > chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.1073		0.2616		0.0784		0.2498	
Observations	1,643	1,643	1,643	1,643	1,513	1,513	1,513	1,513

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively. Regression results are controlled for age, age square, education of son, regional and provincial dummies.

Regression results are controlled for age, age square, education of son, regional and provincial dummies.

Table 10

Multinomial Logit Model (Cohort Analysis: Age>=25)

VARIABLES	Informal Clerks		Informal Sales workers		Informal Craft workers		Informal Machine operators		Elementary Occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal Clerks	1.467***	0.0836**	1.017***	0.182**	0.119	-0.0486	-12.74	-0.106***	0.595	0.00944
	(0.368)	(0.0379)	(0.370)	(0.0765)	(0.605)	(0.0526)	(372.3)	(0.0193)	(0.569)	(0.0555)
Informal Sales workers	0.500*	-0.0197	1.481***	0.187***	0.950***	-0.00288	1.030***	0.00660	1.096***	0.0153
	(0.293)	(0.0120)	(0.212)	(0.0367)	(0.270)	(0.0284)	(0.294)	(0.0244)	(0.289)	(0.0258)
Informal Craft workers	0.651	-0.0235*	0.795**	-0.101***	2.527***	0.387***	0.914**	-0.0298	1.058***	-0.0193
	(0.424)	(0.0143)	(0.311)	(0.0386)	(0.309)	(0.0407)	(0.392)	(0.0259)	(0.373)	(0.0275)
Informal Machine operators	0.755**	-0.00494	0.630**	-0.0560	1.192***	0.0600	1.829***	0.175***	0.833**	-0.00227
	(0.376)	(0.0166)	(0.304)	(0.0425)	(0.331)	(0.0375)	(0.336)	(0.0389)	(0.371)	(0.0300)
Elementary Occupations	0.714	-0.0311**	1.395***	-0.0540	1.846***	0.0398	1.590***	-0.00198	2.869***	0.287***
	(0.524)	(0.0142)	(0.346)	(0.0402)	(0.373)	(0.0342)	(0.405)	(0.0270)	(0.366)	(0.0385)

VARIABLES	Informal Clerks		Informal Sales workers		Informal Craft workers		Informal Machine operators		Elementary Occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-7.230		4.711		5.042		4.940		2.120	
	(4.649)		(3.003)		(3.503)		(3.783)		(4.224)	
Prob > chi2	0.0000									
Pseudo R2	0.1952									
Observations	1,643									

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively.

Regression results are controlled for age, age square, education of son, regional and provincial dummies.

Table 11

Multinomial Logit Model (Cohort Analysis: Age<25)

VARIABLES	Informal clerks		Informal sales workers		Informal craft workers		Informal machine operators		Elementary Occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal clerks	1.495***	0.0503*	0.0848	0.0169	-0.325	-0.0966	0.315	0.0200	0.132	0.0131
	(0.520)	(0.0270)	(0.481)	(0.0997)	(0.594)	(0.0917)	(0.854)	(0.0595)	(0.719)	(0.0831)

VARIABLES	Informal clerks		Informal sales workers		Informal craft workers		Informal machine operators		Elementary Occupations	
	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx	Coeff.	dy/dx
Informal sales workers	0.664	-0.00547	1.290***	0.0764*	0.679**	-0.110***	1.473***	0.0281	1.525***	0.0716**
	(0.455)	(0.00562)	(0.289)	(0.0442)	(0.314)	(0.0408)	(0.426)	(0.0234)	(0.355)	(0.0342)
Informal craft workers	0.872*	-0.00174	0.517	-0.143***	1.473***	0.194***	1.191***	0.0139	0.949**	-0.00599
	(0.473)	(0.00619)	(0.326)	(0.0448)	(0.324)	(0.0469)	(0.462)	(0.0244)	(0.392)	(0.0335)
Informal machine operators	1.013*	0.00125	0.640*	-0.0963**	0.672*	-0.0727	2.163***	0.153***	1.345***	0.0698*
	(0.540)	(0.00759)	(0.379)	(0.0491)	(0.394)	(0.0471)	(0.473)	(0.0354)	(0.432)	(0.0397)
Elementary Occupations	0.382	-0.00982	0.675*	-0.196***	0.882**	-0.129***	1.408***	8.53e-05	2.777***	0.403***
	(0.647)	(0.00613)	(0.376)	(0.0428)	(0.385)	(0.0418)	(0.494)	(0.0224)	(0.403)	(0.0397)
	(0.585)	(0.00613)	(0.385)	(0.0505)	(0.406)	(0.0487)	(0.558)	(0.0267)	(0.423)	(0.0437)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	27.14		23.15		30.49		-8.200		22.38	
	(43.27)		(29.50)		(30.59)		(36.46)		(31.97)	
Prob > chi2	0.0000									
Pseudo R2	0.1660									
Observations	1,513									

Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1 shows significance at 1%, 5% and 10%, respectively.

Regression results are controlled for age, age square, education of son, regional and provincial dummies.

workers decreases compared to those sons whose fathers are in formal employment. With the increase in age, people get more experience of the labour market; therefore, they prefer to work formally. Muhammad and Jamil (2017) concluded the same. Similar results were found for education. The increase in education decreases the likelihood of choosing informal occupations.

We also estimated the equations for both urban and rural regions separately and the results are given in Table 7 and Table 8, respectively. A strong persistence in the occupational status of the father and son was observed for both the regions. Further, there was a decrease in the probability of the son foraying into a high status occupation as compared to the father's occupation, except for the informal clerks in the urban sample. No upward trend was observed in both the regions. Overall, the results revealed that the son either achieves the same occupational status as the father did or on average, he falls behind the status of the father.

Occupational mobility analysis was also performed for two cohorts (age>=25 and age <25) and the results are reported in Table 9.

One can notice the higher chances of the older cohort (1.040) to be in informal employment as compared to the younger cohort (0.744), if the father is in informal employment. In other words, occupational mobility has increased over time. The probability of the sons from the older cohort to be employed in informal employment is 33.9% if the father is in informal employment as compared to the sons whose fathers are in formal employment. While in the younger cohort the probability is 20.8%, which points out a declining trend in the association between the father's and the son's employment. Mobility is 13.9 percentage points higher in the younger cohort.

The results of the multinomial logit model for the two cohorts are reported in Table 10 and Table 11, respectively. The probability of the son joining the occupation of his father is lower in the younger cohort as compared to the older cohort, except for the informal clerks and the informal machine operators. In other words, the persistence is lower for the younger cohort.

Discussion and Conclusion

The current study analyses the transfer of informality to the next generation. It was found that the choice of informal employment by the son is influenced by his father's sector of employment. The percentage of the sons joining the informal sector is higher as compared to their fathers', indicating the increase over time in informal employment.

The high transmission of informal employment across generations is confirmed by this study. The persistence was found to be highest in the elementary occupations. This result contradicts the findings of Parlevliet (2008), who reported a higher persistence in formal employment. Low chances to end up with formal employment were found for the sons having fathers in elementary occupations. In contrast to our findings, some studies found upward mobility (Girdwood & Leibbrandt, 2009; Nguyen & Getinet, 2003).

From the cohort analysis, it was identified that the transmission of occupation from father to son has declined. This decline is highest in formal employment. There is also a decline in the transmission of the elementary occupations in the younger cohort. Further, an increase in the probability of joining formal employment in the younger cohort whose fathers are in elementary occupations was also observed. This result contradicts the findings of (Azam, 2015). In the younger cohort, a higher probability of movement from the informal clerical workers to the elementary occupations was observed. The study by Biblarz et al. (1996) reported similar results.

We not only found a strong persistence in different informal occupations but also established movement from the higher to the lower informal occupations. Moreover, for the fathers who are in elementary occupations the probability of their sons reaching the formal sector is relatively lower in the rural areas as compared to the urban areas. In urban areas, there is relatively equitable access to education and job opportunities as compared to the rural areas. On the contrary, in rural areas the occupational attainment of the children mainly depends upon the father's socioeconomic status because of the lack of supporting infrastructure.

The results of the regression analysis showed that the relationship between the father's occupation and the son's occupation is positively and significantly associated. The analysis suggests that the existence of an informally employed father raises the probability of the son's employment in the informal sector as opposed to the sons of the formally employed fathers. It was also argued by Parlevliet (2008) that the son's propensity to work in the informal sector is significantly and highly associated with the father's sector of employment. Disaggregating the analysis based on the urban and rural samples revealed a positive and significant association between the father's and the son's occupation, which was higher for the rural sample. The empirical results of various informal occupations revealed that the coefficient of the father's occupation against the same occupation of the son is positive and significant in each case, indicating a higher intergenerational occupational persistence. The strong persistence in different occupations is also confirmed by (Muhammad & Jamil, 2017). The likelihood of the son to fall into the same occupation as his father is highest for the elementary occupations, whereas it is lowest for the informal sales workers. There are higher chances of the older cohort to be in informal employment as compared to the younger cohort, if the father is in informal employment.

High intergenerational persistence in occupation might be due to the presence of different types of barriers in the labour market. This implies that the allocation of workers in different jobs is not based on their skills and qualification (Bello & Morchio, 2017). The results may also reflect a lower access to opportunities in the formal sector, specifically for those in lower status occupations. This could be due to the transmission of economic and cultural resources from father to son, considering the father as a role model and discrimination by the society (Biblarz & Raftery, 1993; Kalmijn, 1994). It is argued by (Becker, 1964; Becker & Tomes, 1986) that the occupational destination of the children depends on the amount of investment that their parents' make in enhancing their human capital. The direct transfer of property from father to son such as farms may also cause intergenerational transmission of occupation (Eder, 1982). Moreover, if the children from low socioeconomic background are not provided the same opportunities as those from

high socioeconomic background, then this may cause high intergeneration transmission (Eder, 1982; Lareau, 2000). Some institutional arrangements were also found to be important in determining the intergenerational persistence (Bowles & Gintis, 2002). Parental networks also account for occupational persistence (Bello & Morchio, 2017).

Previously, intergenerational persistence with a special focus on the informal sector and the informal occupations was not analyzed. Although the informal sector provides jobs to the poor segments of the society and lessens the intensity of poverty, still if there exist wage inequalities across the two sectors of employment then it tends to decrease the accumulation of the human capital among the children of the informally employed persons (Docquier et al., 2017). This causes high intergenerational occupational persistence specifically in low skilled occupations (elementary). Therefore, it does not reduce poverty. Instead, it creates structural poverty.

In the transmission of informality, education was found to be an important determinant. Therefore, for improving the socioeconomic status of the population the enforcement and implementation of the minimum education laws should be ensured. It is believed that the elimination of imperfections in the capital market can encourage investment into the development of individuals among the lower-income sections of the society and promote social mobility. However, the analysis suggests that the country requires additional measures in this regard. More precisely, the role of social networks in determining the outcomes of the labour market was observed as a potential hurdle to intergenerational mobility. Considering this dimension, various reforms were recommended by (Faini et al., 1997). The authors discussed that the agencies responsible for employment information could minimize the reliability of the informal sources such as friends and relatives which are effectively used as sources of employment information. Additionally, the adaptability and formation of effective personnel policies is considered as a sufficient tool in minimizing the role of the informal channels in hiring employees.

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