Wages and Informal Labour Markets in India: Whither premiums on human capital investments?

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Research Questions

- Does the premium on wages associated with educational investments vary by informality?

- To what extent it is influenced by gender, occupation and the share of the informal sector in cities?

Literature : returns to human capital

- In India, a positive relationship between earnings and levels of education (Kingdon and Unni, 2001) is noted.
- The traditional literature observed a decreasing returns to education and higher returns to female education (Psacharapoulos, 1994).
- To study segmentation within the wage employed market, separate earnings functions were fitted to the casual and regular workers (Kingdon and Knight, 2004).
- Heterogeneity in labour market (Fields, 2005).

Literature : returns to human capital in Formal and Informal sector

- A number of studies have examined wage differentials in the formal and informal sectors in terms of human capital, job characteristics (Schumann et.al.1994; Tansel, 2000; Pratap and Quintin, 2006)

- There are very few studies about whether the returns vary by informality and within segments of the informal labour market

- Gunthar (2011) tested segmentation in informal sector.

Data Description

- Primary data collected in two cities of India, Delhi and Ranchi, for the period 2009-10.
    - Covers 2,998 households from Delhi and Ranchi
    - 14,750 persons.

Summary statistics for workers

Weekly Status	Sample	Percentage	Weighted Percentage
Formal Sector	1245	30.17	32.71
Informal sector	2881	69.83	67.29
Total	**4126**	**100.00**	**100.00**
Formal employment	554	13.43	13.84
Informal employment	3572	86.57	86.16
Total	**4126**	**100.00**	**100.00**
Own Account worker	1,048	25.40	26.51
Employer	44	1.07	0.9
Regular Salaried Workers	2,082	50.46	51.21
Casual wage labour	952	23.07	21.38
Total	**4,126**	**100**	**100**

Methodology

- We estimate Mincerian earnings equation only for workers,

$$Log\ (hourly\ wage)_i = X_i B + e_i \text{ ----------(1)}$$

Which may give bias and inconsistent results.

- To correct the selectivity problem we estimate Heckman selectivity correction model

$$W^* = Q_i B + £_I \text{ ----------(2)}$$

$$Log(hourly\ wage)_i = X_i B + \lambda_i + €_i \text{ ----------(3)}$$

Equation (2) is the workforce participation equation from which we calculate inverse Mills Ratio and include in equation(1)

W* = any unobservable aspect of being a worker

B is the vector of coefficients of interest

Methodology (contd..)

- To estimate sector wise returns we run switching regression
- The switching regression model consists of three equations

$$FS^* = X_i \alpha + \beta Z_i + U_i \text{---------(4)}$$

$$Log\ (hourly\ wage)F_i = X_1 i A_1 + U_{1i} \text{ ---------(5)}$$

$$Log\ (hourly\ wage)_{Ii} = X_{2i} A_2 + U_{2i} \text{ ---------(6)}$$

Eq. (4) : Sector choice equation

Eq.(5) : Mincerian wage equation of Formal sector

Eq.(6) : Mincerian wage equation of Infromal sector

Methodology (contd..)

- Quantile regression, to estimate returns to education across the earning distribution

- Inter quantile regression to test whether the returns in different quantile are significantly different from each other.

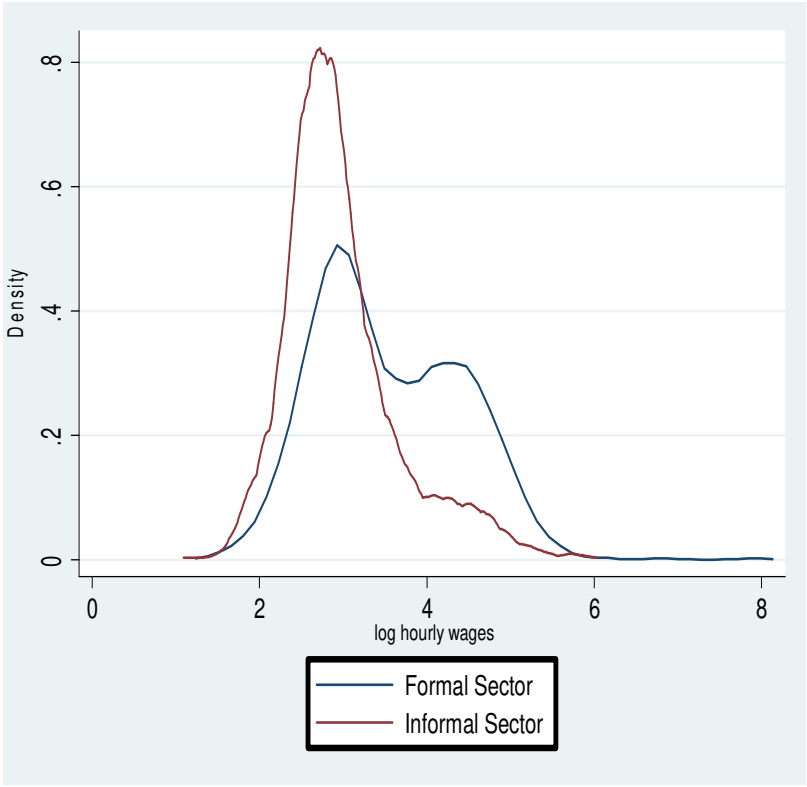
Result 1: Heckman selectivity corrected estimates (14-60 all workers)

	Pure Mincer	With other controls	Adding informal sector city share and its interaction with education
years of education	0.084 [0.000]***	0.080 [0.000]***	0.328 (0.080) [0.000]***
experience	0.027 [0.000]***	0.028 [0.000]***	0.027 [0.000]***
Exp. squared	0 [0.090]*	0 [0.073]*	0 [0.094]*
Female dummy		0.073 [0.020]**	0.05 [0.112]
SC/ST		-0.163 [0.000]***	-0.154 [0.000]***
Delhi dummy		0.15 [0.000]***	
IFsec city share			0.012 (-0.016) [0.004]***
IFsec_cityshare*education			-0.004 [0.000]***
Constant	2.191 [0.000]***	2.088 [0.000]***	1.383 [0.000]***
lambda	-0.064 [0.14]	-0.046 [0.303]	-0.05 [0.258]
Observations	10175/4126	10175/4126	10175/4127

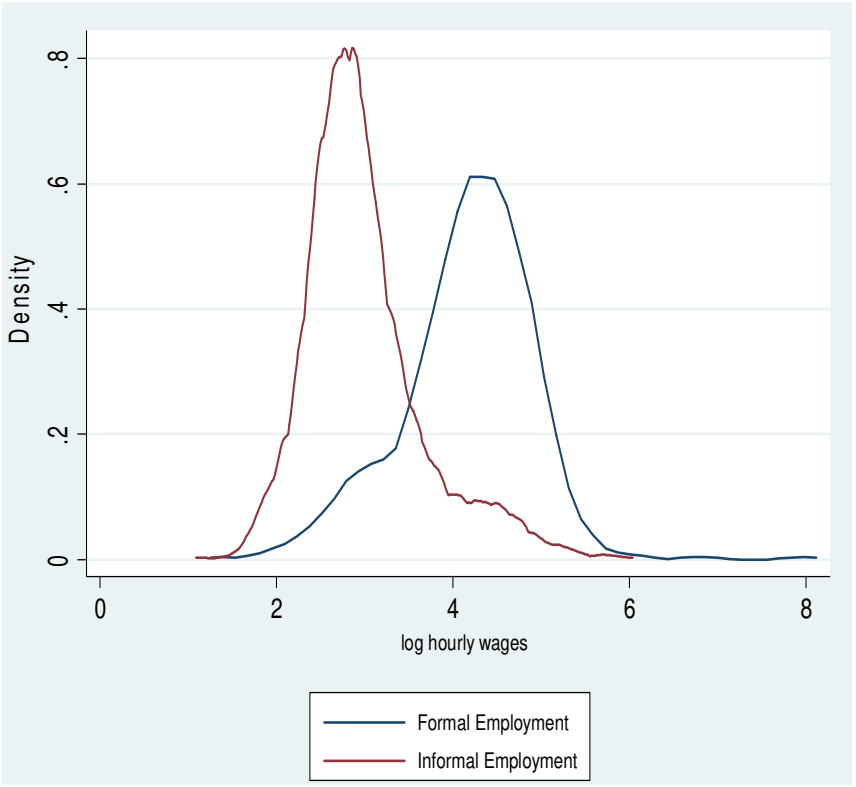
*** significant at 10%; ** significant at 5%; *** significant at 1%**

Kernel density Curves

In Formal and Informal Sector



For Formal and Informal Employment



Result 2A: Estimates from switching regression – Formal Sector

Formal Sector						
	without any control (Col. 1)	**with sex (Col. 2)**	**Adding Caste dummy (Col. 3)**	**Adding City dummy (Col. 4)**	**Adding Occupation (Col. 5)**	**Adding Occupation and Female interaction (Col. 6)**
years of schooling	0.103 [0.000]***	0.103 [0.000]***	0.099 [0.000]***	0.100 [0.000]***	0.059 [0.000]***	0.060 [0.000]***
experience	0.024 [0.001]***	0.025 [0.000]***	0.026 [0.000]***	0.025 [0.000]***	0.021 [0.001]***	0.021 [0.001]***
Exp. squared	0.000 [0.836]	0.000 [0.910]	0.000 [0.909]	0.000 [0.859]	0.000 [0.730]	0.000 [0.660]
Male reference						
Female dummy		0.138 [0.015]**	0.154 [0.006]***	0.161 [0.004]***	0.020 [0.698]	0.173 [0.032]**
SC/ST			-0.196 [0.000]***	-0.18 [0.000]***	-0.098 [0.014]**	-0.101 [0.012]**
Ranchi reference city						
Delhi				0.086 [0.062]*	0.124 [0.003]***	0.133 [0.002]***
Professional=1, Others=0						
occupation dummy					0.705 [0.000]***	0.701 [0.000]***
Professional*Female						-0.259 [0.014]**
_cons	2.124 [0.000]***	1.941 [0.000]***	2.031 [0.000]***	1.941 [0.000]***	2.193 [0.000]***	2.189 [0.000]***
Number of obs.	4126	4126	4126	4126	4126	4126

Result 2B: Estimates from switching regression – Informal Sector

Informal Sector						
	without any control (Col. 1)	with sex (Col. 2)	Adding Caste dummy (Col. 3)	Adding City dummy (Col. 4)	Adding Occupation (Col. 5)	Adding Occupation and Female interaction (Col 6)
years of schooling	0.06 [0.000]***	0.058 [0.000]***	0.054 [0.000]***	0.053 [0.000]***	0.043 [0.000]***	0.043 [0.000]***
experience	0.04 [0.000]***	0.039 [0.000]***	0.037 [0.000]***	0.036 [0.000]***	0.035 [0.000]***	0.035 [0.000]***
Exp. squared	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***
Male reference						
Female dummy		-0.106 [0.002]***	-0.086 [0.011]**	-0.064 [0.063]*	-0.100 [0.002]***	-0.093 [0.002]***
SC/ST			-0.17 [0.000]***	-0.168 [0.000]***	-0.141 [0.000]***	-0.141 [0.000]***
Ranchi reference city						
Delhi				0.146 [0.000]***	0.114 [0.000]***	0.114 [0.000]***
Professional=1, Others=0						
occupation dummy					0.504 [0.000]***	0.511 [0.000]***
Professional*Female						-0.065 [0.519]
_cons	2.165 [0.000]***	2.308 [0.000]***	2.396 [0.000]***	2.288 [0.000]***	2.379 [0.000]***	2.277 [0.000]***
Number of obs.	4126	4126	4126	4126	4126	4126

Result 3: Returns to levels of education (Switching reg.)

	Formal	Informal	Selection probit Pr(Formal sector)
Level of education (reference group: Middle school)			
Illiterate	-0.198 [0.016]**	-0.099 [0.006]***	-0.322 [0.000]***
Primary	-0.059 [0.452]	-0.036 [0.310]	-0.128 [0.128]
Secondary & Higher Secondary	0.357 [0.000]***	0.213 [0.000]***	0.314 [0.000]***
Diploma	**0.717** **[0.000]***	0.502 [0.000]***	1.037 [0.000]***
Graduate & above	**1.145** **[0.000]***	0.977 [0.000]***	1.377 [0.000]***
Professional/Technical Degree	**1.582** [0.000]***	1.599 [0.000]***	0.163 [0.001]***
experience	0.026 [0.000]***	0.032 [0.000]***	0.026 [0.003]***

*** significant at 10%; ** significant at 5%; *** significant at 1%**

Other Explanatory Variables: Sex, Experience, experience squared, caste (dummy), City (dummy),

Result 4: Returns to years of education, quantile regression estimates in Formal and Informal Sector

Estimated wage return for years of Eeducation	10% quantile	25% quantile	50% quantile	75% quantile	90% quantile
Formal Sector					
Quantile regression	0.062 [0.000]***	0.089 [0.000]***	0.102 [0.000]***	0.105 [0.000]***	0.097 [0.000]***
Inter quantile		0.028 [0.000]***	0.012 [0.041]**	0.003 [0.565]	-0.008 [0.430]
Informal Sector					
Quantile regression	0.020 [0.000]***	0.030 [0.000]***	0.041 [0.000]***	0.068 [0.000]***	0.080 [0.000]***
Inter quantile		0.010 [0.005]***	0.011 [0.002]***	0.027 [0.000]***	0.012 [0.002]***

*** significant at 10%; ** significant at 5%; *** significant at 1%**

Other Explanatory Variables: Sex, Experience, experience squared, caste (dummy), City (dummy),

Conclusion

- Returns to education are significantly different across the earnings distribution in the informal sector.
- Workers with better quality, but similar level of education, entered the higher earning formal sector or jobs in the upper segment of the earnings distribution in the informal sector.
- The quality of education may be affecting entry into the formal sector
- The quality of higher education has to be improved
- Girls' education needs special attention.

Thank You