

Educational mismatch and earnings: Evidence from a developing economy

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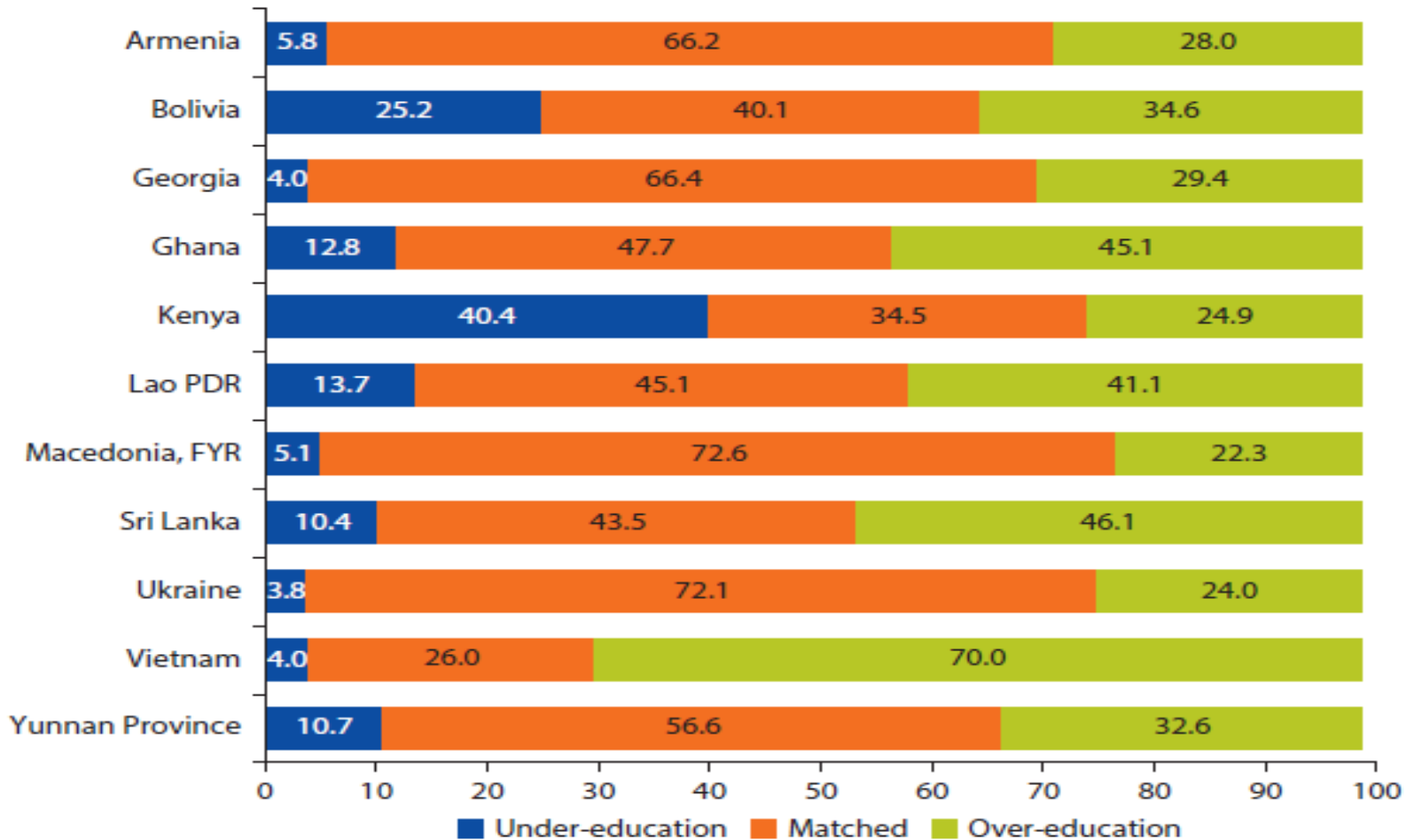
Outline

- Context/motivation
- Data
- Estimation
- Results
- Summary and conclusions

Context

- To stimulate economic advancement, developing countries need educated, well-trained workers to fill jobs that require highly skilled labour.
- Last few decades shows improvement in both enrolment and attainment across many developing countries, although sizeable share not enrolled in school.
- Recent evidence suggest many workers in low and middle-income countries are over(under)-qualified for their jobs
 - therefore unable to make full use of their skills.

Context



Source: World Bank STEP Skills Measurement Program.

Motivation

- Recent growth in educational enrolment and attainment
- Preference for wage jobs
 - Thinner labour market with intermediaries, thus difficult to access; better working conditions; higher wages.
 - Share of men and women in wage work with at least basic education increased from 48 and 29% in 2005 to 61 and 42% in 2013 respectively.
- Inability of labour market to absorb educated workforce
 - High informal sector as a result – accounts for almost 42% of total employment.
 - More people now stay longer in school than previous (substitute lack of experience with education).
- Limited evidence of educational mismatch for developing countries (Herrera & Maceron, 2013; Mehta et al., 2011; Quinn & Rubb, 2006)
 - Focus mainly on developed/advanced economies.

Why care about educational mismatch?

- Costly to the economy (McGuinness, 2006)
 - National welfare is lower than would be if skills of overeducated workers were fully utilized.
 - Possible that tax revenues are being wasted on equipping individuals with non-productive education.
- Costly to the firm
 - Lower productivity.
 - Overeducation affects labour turnover (Sicherman, 1991; Robst, 1995).
 - Job satisfaction.

Why care about educational mismatch?

- Costly to individuals
 - Imposes limitation to the utilisation of skills
 - Reduced earnings (Hartog, 2000; Rubb, 2003; Belfield, 2010; Leuven & Oosterbeek, 2011).
 - Overeducated workers could force out exactly educated workers, as overeducated workers move into lower level occupations (thus, raises mean educational level).

What we do

- How are dimensions of human capital such as experience and tenure related with education
- Do over(under)educated workers receive a wage premium or penalty
- How do the returns differ for men and women, location, occupation.

Data

- Sixth round of Ghana Living Standards Survey (2013)
 - Nationally representative (16,772 households enumerated).
- Sample consist of children 25 to 60 years in paid/wage work.
- Excludes self-employed and workers in agriculture
 - More heterogenous group; unreported earnings

Summary stats

Key variables	All	Men	Women
Required education	11.5	11.2	12.28
Overeducation	0.78	0.85	0.59
Undereducation	0.99	0.91	1.2
Exactly educated (%)	0.55	0.55	0.54
Overeducated (%)	0.23	0.25	0.19
Undereducated (%)	0.22	0.2	0.27

Summary stats

	Undereducated	Exactly educated	Overeducated
Managers	21.4	43.3	35.2
Professional	36.2	48.6	15.2
Technicians, Associate professionals	19.1	38.1	42.8
Clerks	32.3	39.1	28.6
Service and Sales	18.8	53.5	27.7
Skilled Agric, fisheries, forestry	29.6	62	8.4
Craft and Related workers	9.3	66.9	23.8
Plant and machine operators	8.2	70	21.8
Elementary Occupations	16.6	66.8	16.6

Estimation: ORU (Duncan and Hoffman)

$$\ln Y = \alpha + Z\beta + \varphi_r reqeduc + \varphi_o overeduc + \varphi_u undereduc + \varepsilon$$

ORU derived from modal value of completed years of education for each occupation.

Adequately educated workers are those whose level of education equals the modal value within their occupation.

$$overeduc = \begin{cases} educ - reqeduc, & \text{if } educ > reqeduc, \\ 0, & \text{otherwise} \end{cases}$$

$$undereduc = \begin{cases} reqeduc - educ, & \text{if } educ < reqeduc, \\ 0, & \text{otherwise} \end{cases}$$

$$Actual\ educ = reqeduc + overeduc - undereduc$$

(Possible) estimation issues

- Endogeneity
 - IV technique
 - Lack of retrospective data on family background/childhood circumstances (Korpi & Tahlin, 2009; Leuven & Oosterbeek, 2011).
 - OVB
 - Dearden (1999) – OVB (family background) biases OLS upwards. (Leuven & Oosterbeek, 2011).
- Selection
 - Employees may not be a random subset of total working population.

Results: Human capital compensation?

		Experience	
	All	Men	Women
Required education	-1.039*** (0.053)	-1.046*** (0.063)	-1.029*** (0.103)
Overeducation	-1.121*** (0.099)	-0.985*** (0.112)	-1.691*** (0.205)
Undereducation	1.121*** (0.068)	1.024*** (0.079)	1.311*** (0.125)
Females	-1.026*** (0.34)		
Observations	4,280	3,076	1,204
R-squared	0.16	0.15	0.19

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Tenure - surplus education increases tenure (but not for women). No sig. effect of undereducation.

Results: ORU and earnings

Log of weekly earnings	(1) All	(2) Men	(3) Women
Required education	0.128*** (0.011)	0.124*** (0.013)	0.129*** (0.018)
Overeducation	0.111*** (0.011)	0.102*** (0.012)	0.148*** (0.024)
Undereducation	-0.054*** (0.008)	-0.040*** (0.009)	-0.084*** (0.013)
Observations	3,459	2,496	963
R-squared	0.29	0.24	0.45

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

All regressions include experience and tenure (and its squared), hours of work, regional, location, occupation, gender, and marital status dummies

No evidence of selection

OVB: Family background (parents' educational attainment)

Results: By location

Log of weekly earnings	(1) Urban	(2) Rural	(3) Urban Men	(4) Urban Women
Required education	0.141*** (0.013)	0.0913*** (0.022)	0.139*** (0.015)	0.130*** (0.021)
Overeducation	0.115*** (0.012)	0.0891*** (0.030)	0.111*** (0.013)	0.133*** (0.027)
Undereducation	-0.045*** (0.009)	-0.076*** (0.014)	-0.022* (0.012)	-0.082*** (0.015)
Observations	2,575	884	1,799	776
R-squared	0.31	0.25	0.25	0.46

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

All regressions include experience and tenure (and its squared), hours of work, regional, location, occupation, gender, and marital status dummies

Results: By occupation

- Undereducation reduces earnings for individuals in top three occupations (not significant for clerks).
- Apart from professionals, effect of overeducation on earnings larger than for those with required years of education for top four occupations?

Summary of main findings

- Overeducation is associated with lower experience and deficit education is compensated for by higher years of experience.
- Positive returns to surplus education, but smaller than the return received by those exactly educated.
- Deficit education results in a wage penalty but the penalty is greater for women than men.
- Urban women with deficit education pay a larger penalty than their male counterparts.
- Effect of surplus education larger for those in top four occupations than those with required years of education.

Conclusions

- Future research - use cross-country data for low and middle-income countries.
 - Attempt to identify causal effects