



Exploring Competencies and wages for Higher Education Graduates: Evidence from Moroccan University

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Plan of Talk

- 1 Purpose of Research
- 2 Review of Literature
 - Modeling Earnings
- 3 Problem/Hypothesis
- 4 Model
- 5 Dataset
- 6 Results and Discussion
- 7 Conclusions

Motivation

- The main goal is to analyze the incidence of listed competencies in graduates payoff (wages).
- There is far less consensus on kinds of competencies most likely needed in the labour markets, especially, through the effect of technological change.
- We focus as well on the economics returns by personal, job and institutional characteristics of higher education graduates related to their competencies.

What we do in this Paper

- We estimate the effects of competencies on wages of higher education graduates with experience work using conventional earnings regressions methods (Mincer equation).
- We attempt to adapt Mincer equation to the Green model, which provides an estimation of the average earning returns of two categories of competencies through wages.

Review of Literature

- Modeling Earnings and competencies by Mincer equation (1974)

$$\ln(w_i) = \alpha_0 + \beta_1 \text{edu}_i + \beta_2 \text{exp}_i + \beta_3 \text{exp}_i^2 + \epsilon_i \quad (1)$$

- The empirical relation between competencies and wages

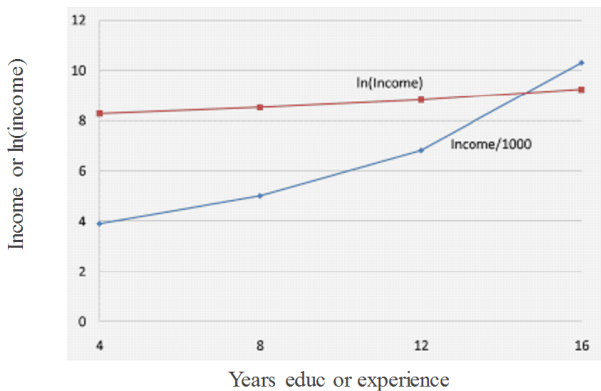
$$\ln(w_i) = \alpha_0 + \beta_1 \text{edu}_i + \beta_2 \text{exp}_i + \beta_3 \text{exp}_i^2 + \beta_n \sum_{i=1}^n \text{comp}_i + \epsilon_i \quad (2)$$

Years of education and wages

Income increasing non-linearly.

Using Logarithm, $\ln(w)$ appears to increase linearly

Mincer earning data



How competencies are classified in literature

- In theory, there is no an overall consensus on classification of competencies
- Becker's classification (1964): Classified competencies into specific to generic required from the firm
- Our analysis is on how the human capital skills and competencies are rewarded in the labour market.
- In general, literature review shows four types of competencies

How competencies are classified in literature

Table 1. Classification of competencies

Categories	List of Competencies
Generic	<i>Knowledge Cross fields and discipline</i> <i>Critical and reflective thinking</i> <i>Communication skills</i> <i>Coordinating and planning</i> <i>Written communications skills</i>
Methodological skills	<i>Adaptability</i> <i>Perform well under pressure</i> <i>Time management</i> <i>Computers skills</i> <i>Problem-solving ability</i> <i>Documenting ideas or report to an audience</i> <i>Foreign language proficiency</i>
Social skills	<i>Leadership</i> <i>Ability to negotiate</i> <i>Working in a team</i> <i>Ability to mobilise the capacities of others</i>
Specialized	<i>Own field or discipline (theoretical knowledge)</i> <i>Own field or discipline (knowledge of methods)</i> <i>Learning abilities- Methods</i>

Problem

- **Problem:** We ignore how competencies of higher education graduates are reward in labour market, or which competencies are most important to explain income differences in labour market ?

Hypothesis

We assume the following hypothesis

- **H1:** Wages are partly explained by the higher proficiency in specified competencies of higher-educated compared to generic competencies.
- **H2:** Sector differences in wages are partly explained by differences in labour market institutions: wages are higher in public than private sector.
- **H3:** Wages are partly explained by the Personnel characteristics and the kind of institutions of graduation (limited tend to have higher wages for their graduates than open institutions).

Expected sings

Expected responses: We expect the responses from the coefficients of the remain variables to be those shown in Table 2

Variable	Expected responses
Competencies	(+)
Education	(+)
Field (Social vs science)	?
Experience	(+)
Female	(-)
Private vs Public	(-)
Open vs limited institutions	(-)
Married	?
Age	(+)
City (big vs small)	(+)

Expected sings

Estimated responses

Variable	Expected responses	Estimated responses
Competencies	(+)	(+)
Education	(+)	(+)
Field (Social vs science)	?	(+)
Experience	(+)	(+)
Female	(-)	(-)
Private vs Public	(-)	(-)
Open vs limited institutions	(-)	(-)
Married	?	No effect
Age	(+)	No effect
City (big vs small)	(+)	No effect

Model

Multiple regression with dummy variables, we adopt an extended version of the Mincer equation

$$\ln(w_i) = \alpha_0 + \beta_1 edu_i + \beta_2 exp_i + \beta_n \sum_{i=1}^n comp_i + \beta_3 pel_i \quad (3)$$
$$+ \beta_4 job_i + \beta_5 field_i + \beta_6 insti_i + \epsilon_i$$

- This model suffer from a multicollinearity problem among competencies
- Therefore, we applied a Principal Components Analysis for listed competencies, and we use the orthogonal factor scores which are uncorrelated

Dataset

- Using individual level data
- Our data source: Longitudinal Graduates' Employability Survey carried out each year by the University Hassan 1st in partnership with the Moroccan Superior Council of Education.
- Figure 1 and Table 3 provide summary statistics of competencies and control variables.

Dataset

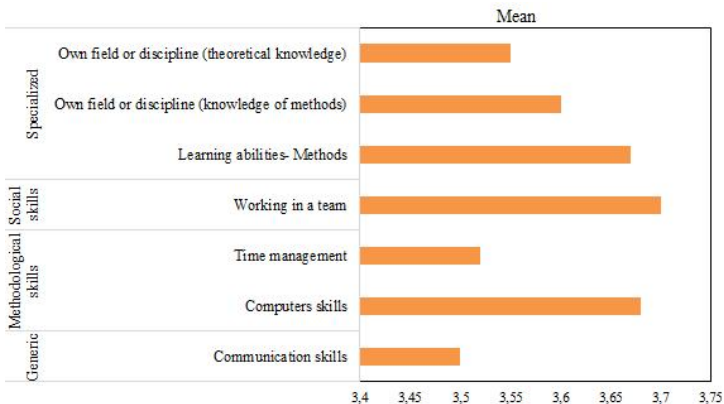


Fig 1. Competencies classification by mean score

Dataset

Table 3. Summary statistics of variables and dummies

Variables	Description	Mean	St. Dev
Wages	Logarithm of salary	5891.84	85.27
<i>Personal characteristics</i>			
Female	1: if female, and 0 otherwise	44.01%	—
Married	1: if married, and 0 otherwise	23.36%	—
Age	In years	29.91	0.19
Education	Number of years in higher education	3.86	1.11
<i>Job characteristics</i>			
Experience work	Job experience in years	2.14	1.12
Private sector	1: employed in the private sector	65.25%	—
Public sector	1: employed public sector	34.75%	—
City	1: big city, and 0 otherwise	78.75%	—
<i>Major field</i>			
Social science, business and law	1: graduate in the field, and 0 otherwise	58.62%	—
Science & engineering	1: graduate in field, and 0 otherwise	41.37%	—
<i>Institutions characteristics</i>			
Open institutions	1: open access, and 0 otherwise	48.08%	—
Limited entry institution	1: limited access, and 0 otherwise	51.91%	—
Observations	1,177 with work experience	—	—

Main results

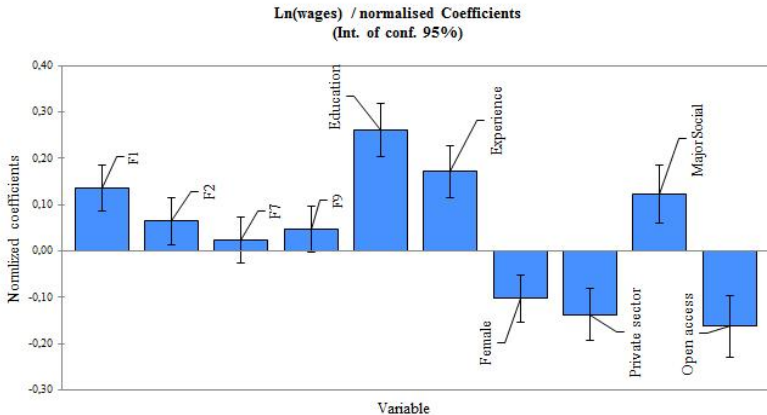


Fig 2. Estimated coefficients of the model

Main results

The model shows that generic, methodological and social competencies seemed to be much important than other competencies for variance of wages.

Categories	Competencies	Model II	P-values
Specialized	Learning abilities- Methods	0.03073**	(0.0001)
Generic	Critical and reflective thinking	0.03073**	(0.0001)
	Coordinating and planning	0.03073**	(0.0001)
	Written communications skills	0.030**	(0.0115)
Methodological skills	Adaptability	0.03073**	(0.0001)
	Documenting ideas	0.030**	(0.0115)
	Foreign language proficiency	0.030**	(0.0115)
	Computers skills	0.01570*	(0.0830)
	Perform well under pressure	0.030***	(0.054)
Social skills	Ability to negotiate	0.01570*	(0.0830)
	Leadership	0.030***	(0.054)
	Ability to mobilise capacities of others	0.030***	(0.054)
Observations			1,177
R-squared			0.2675

The dependent variable is the log of month salary including bonuses. The first Model I contain all listed explanatory variables. The second Model II contains only significant variables from the first model I. P-values are in parentheses.

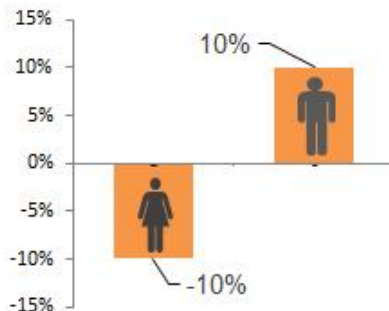
* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

Discussion results

- We cannot confirm H1, thus, all generic competencies are more important to explain the wages variance in our sample.
- The H2 is valid, graduates working in private sector are less rewarded compared to the public sector.
- The estimations show a good validation of H3. As the outcomes, we can highlight that our results show a similar negative effect for female graduates as other results (García-Aracil and Velden 2008; Koshy et al., 2016; Lee et al., 2016).

Discussion results

Comparative results (female and male).



Extensions

- Explain wage difference between women and men, is that due to the gap in skills ?
- Introduce the competencies which are required by job in order to develop a benchmark selection between acquired and required competencies model.

Conclusions

- Methodological and generic competencies were most more rewarded in monetary payoff.
- Less important effect of specialised competencies. This finding provides a valuable insight to study more such results.
- Dynamic labour market and the over education graduates has change the traditional situation to a new one, in which methodological and social skills are more required then specific and theoretical competencies.

Conclusions

- Private sector appear to attribute less rewards for graduates' competencies than public sector, hence, policymakers need to make more effort to applied a same rate return.
- Female graduates earned less than male
- For further empirical studies, we propose to use a simple scale of percentage measurement instrument instead of a scale from low to high modalities.



THANK YOU

