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Earnings Premium from Education in the Context of Educational Expansion

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Abstract: Education can be seen as an investment that brings higher incomes to individuals. People with higher levels of education collect important earnings premium in the labour market. On the other hand, the expansion of education is a major trend that characterizes evolution of societies, with important positive effects at the level of social and economic development. This paper aims to explore the influence of educational attainment on subjective incomes of individuals, while taking into account other relevant personal factors, as well as the phenomenon of education expansion at national level. We build our analysis on data from the World Values Survey Wave 7 (Haerpfer et al., 2020) collected from individuals around the world in various national settings. Our results are useful for better understand the influences of increasing participation to education on the earnings structure at both individual and national levels.

Keywords: *expansion of education; earnings premium; social structure; World Values Survey.*

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1. Introduction

Education can be seen as an investment that brings higher incomes to individuals. People with higher levels of education collect important earnings premium in the labour market. Due to the socialisation function of education, the link between education and private monetary returns is mainly explained by the enhancement of personal knowledge and skills, improved cognitive mechanisms for skills use, problem solving, and higher resilience (Pallas, 2000). Due to the allocation role of education, education provides to the individuals access to desired social positions characterised by higher monetary and non-monetary benefits (Kerckhoff, 1974, 1976).

In the last decades, the expansion of education has become a major trend characterising evolution of societies, with important positive effects at the level of social and economic development. However, the effects of educational expansion at the level of private economic returns are still a matter of debate. This debate is fuelled by the idea that education is a positional good, giving more importance to the relative educational position (within the educational distribution) than to the educational attainment. Some scholars argue that economic returns decline as education expands because education represents a scarce good, while the decline of scarcity shrinks its premium (Dickson & Smith, 2011). Other studies suggest that economic returns of education remain unaffected or even increase due to the higher demand for educated workers in the labour market in contexts of technologization and more complex economic activities (Goldin & Katz, 2008).

This paper aims to explore the influence of educational attainment on incomes of individuals, while taking into account other relevant personal factors, as well as the phenomenon of education expansion at national level. Our results are useful for better understand the influences of increasing participation to education on the earnings structure at both individual and national levels.

2. Expansion of education

The expansion of education is one of the main features of contemporary societies (Ballarino et al., 2009; Ballarino et al., 2013) and moreover, it is a much more complex process than it was supposed in the past (Mayer et al., 2008). That is why there are different views about what the expansion of education means, but also what effects it produces.

First of all, most of the sociological and economic literature has defined the expansion of education as a change (Ballarino et al., 2013) as

according to Wan (2006) it is considered that the expansion of education is able to facilitate a lot of favourable changes both for individuals and nations. On the other hand, educational expansion was viewed as a unidirectional and monotonic process that never ends because primary education and basic literacy are becoming widespread and mandatory, the length of compulsory education is increasing, then lower and upper secondary education is also growing and becoming universal which leads to an increased participation in the first phase of tertiary education and also to high shares of tertiary graduates (Mayer et al., 2008). Therefore, the expansion of education means longer periods spent in education by each person leading to a significant part of his/her early life, from 6 to 18 years old and often further, up to 25 years old or even more (Ballarino et al., 2013; Beduwe & Planas, 2003).

The expansion of education had a significant increase during the last century, especially after the World War II (Haim & Shavit, 2013). Both secondary and tertiary education registered increasing attendance rates which exceeded 85% of the relevant age group for the secondary level, while the number of tertiary students had grown to about 100 million people by the year 2000, which represented about 20% of the worldwide cohort, compared to the year 1900, when only about 500.000 students, respectively about 1% of higher education age people, were enrolled in worldwide higher education institutions (Haim & Shavit, 2013; Schofer & Meyer, 2005).

Some studies showed that the educational expansion at higher levels takes place when the economy is not growing because individuals don't have enough employment opportunities on the labour market. This pattern is more present among males, while most often the educational choices of women are less oriented towards occupations (Ballarino et al., 2013). Thus, the expansion of education can lead to early career changes because of the progressive extension of the number of years spent in education, but also the progressive extension of the leaving education and starting a career median age (Mayer et al., 2008).

According to Human capital theory, the expansion of education represents an economic necessity for both micro and macroeconomic perspectives (Wan, 2006). This is one of the reasons why the participation to education is supported by the national governments which believe that educational expansion will grow the productivity of the employees and will also stimulate the economic growth (Haim & Shavit, 2013).

Another effect of the educational expansion is related to the increase in earnings. A study on British education expansion found that following this phenomenon, the men's education increased on average by about one year and the earnings by about 8% while women obtained a similar increase

in wages but with a little more time dedicated to education (Devereaux & Fan, 2011). Moreover, other studies found that employers demand for educated workers is fuelled by the fact higher skills increase workers productivity and lead to higher wages (Devereaux & Fan, 2011; Wan, 2006).

The growing participation rates of women in higher levels of education is another effect of educational expansion, which happens because typically female occupations such as social services, education and administration require more and more a higher education degree, while on the other hand, men continue to choose vocational tracks instead of higher education more frequently (Ballarino et al., 2013; Haim & Shavit, 2013). Moreover, other important effects generated by educational expansion are related to the development of a more democratic society because educated individuals are able to take more informed political decisions, and also to the social inequalities decrease within nations through social mobility promotion (Wan, 2006). Last but not least, the expansion of education is to be seen as a progress to equity and equality of opportunity (Beduwe & Planas, 2003).

However, studies showed also some negative effects associated to educational expansion. Thus, it was found that educational expansion is not necessarily an effective policy for the equalization of educational opportunities, but also it can even enhance the inequalities (Haim & Shavit, 2013). On the other hand, another negative effect is related to the tuition fees increase, as a result of which many students from low-income families do not have the opportunity to pursue higher education (Wan, 2006). Moreover, another less positive effect is that graduates are far less well-prepared now than they were before the educational expansion (Devereaux & Fan, 2011).

3. Data and methodology

We build our analysis on data from the World Values Survey (Wave 7) collected from individuals around the world in various national settings. The survey was carried out in 2017-2020 period (Haerpfer et al., 2020).

We use multinomial regression models to identify factors that predict income level of individuals. The dependent variable is represented by the subjective (self-assessed) income that has been re-coded in three categories: low, medium and high. Educational attainment is measured according with ISCED11, including four categories: primary, secondary, post-secondary and tertiary education. Other independent variables included in the analysis were the age, gender, area of residence and employment status of individuals. Also, we included a country-level variable in the model - Gini index (latest available according with World Bank (2019), for controlling the level of income inequality.

Moreover, in order to study the effect of educational attainment on earnings premium in various contexts of educational expansion, we grouped countries in three categories, according to Education index (0 to 1, UNDP, 2018): countries with low access to education (0 to 0.6), countries with medium access to education (0.61 to 0.8), and countries with high access to education (0.81 to 1). Education index is calculated as an average of mean years of schooling among adults and expected years of schooling among children. Regression models have been applied for each group of countries in order to analyse the effect of educational attainment on subjective income in the three national contexts.

4. Results

As mentioned in the methodology section, to accomplish the objectives of the present research, we developed three multinomial regression models, depending on the level of access to education, with the education index as a proxy variable for access to education. Thus, we developed three logistic regression models: 1) for countries with low access to education, 2) for countries with medium access to education, and 3) for countries with high access to education.

4.1. Countries with low access to education

We ran the first model on the sample of countries with low access to education. Controlling for the influences of other individual variables, the model shows that the Gini index positively influences the probability of an individual to have a low income compared to a medium income. Therefore, in countries where access to education is low, a high level of income inequality at the national level can influence the likelihood of individuals to have a low income. An increase of one unit in the Gini coefficient, increases the probability of having a low income by one time. At the same time, it does not affect the probability of having a high income. In countries with more unequal incomes, a considerable part of the population may have low incomes, and high incomes may be concentrated only for a small group of individuals. In these cases, the probability of having a low income increases considerably. In short, these results may indicate that in developing countries with low access to education, the likelihood of having a low level of income is influenced by the unequal income distribution already existing in that country.

Controlling for differences in sex, gender, age, employment status, and macro variables such as the Gini index, we noticed that education significantly influences individuals' income in countries with low access to

education. The model shows that individuals with primary, secondary, and post-secondary education are more likely to have a low-income level than a medium income level compared to the reference category of respondents with a tertiary level of education. On the other hand, in countries with a low level of educational expansion, education does not significantly influence the probability of having a high income compared to a medium income.

Occupational status is also significantly connected to the individuals' level of income. Controlling for other aforementioned relevant predictors in the model, we observed that employed and inactive individuals are less likely to have a low income than a medium income compared to unemployed individuals. On the other hand, employed or inactive individuals are more likely to have a high income than a medium income. These results are consistent with the fact that individuals present in the labour market can secure an income from salaries earned from paid employment or other forms of employment. So, compared to unemployed individuals, employed individuals are more likely to have a source of economic capital. On the other hand, inactive individuals such as students might be financially dependent on their family's income.

Table 1. Results of multinomial regression with income level as a dependent variable (countries with lower access to education).

Predictors	Dependent variable: Income level			
	Reference category: Medium income level			
	Low income level		High income level	
	Exp (B)	Sig.	Exp (B)	Sig.
GINI index	1.038	.000	1.010	.124
Age	1.007	.000	.991	.004
Gender (Male, Female=Ref.)	.927	.173	.983	.840
Area of residence (Urban, Rural=Ref.)	.851	.001	1.001	.993
Employment status (Ref=Unemployed)				
Employed	.610	.000	2.041	.000
Inactive	.615	.000	2.081	.000
Education level (Tertiary				

level=Ref.)				
Primary level	2.761	.000	.931	.554
Secondary level	2.107	.000	.839	.124
Post-secondary level	1.234	.094	.871	.361
Intercept		.000		.000

Notes: Pseudo R-Square: Cox and Snell= .053; Nagelkerke= .064; McFadden=.030, Goodness-of-Fit: Pearson: Chi-Square=8986.164, df= 8570; Sig=.001; Deviance: Chi-Square=8381.051, df= 8570; Sig=.926; N=8996

Regarding the socio-demographic variables, the model shows that age and area of residence can impact an individual's income. As an individual gets older, the likelihood of having low-income increases and the likelihood of having a higher income decreases, compared to a medium income. If the age increases with one unit, the possibility of having a low income increases by one time and the probability of having a high income decreases by .991. Older individuals are more likely to struggle with economic resources because of the many facets of social exclusion at these ages. Regarding the area of residence, the model shows that individuals from urban areas are more likely to have a high-income level than a medium income and a lower probability of having a low income than individuals from rural areas. This result can be correlated with job opportunities generally being lower in rural areas. Moreover, in many countries, economic development in rural areas is much lower than in urban areas. On the other hand, gender does not significantly influence an individual's income in countries with low access to education.

4.2. Countries with medium access to education

We ran the second model on the sample of individuals from countries with medium access to education. Controlling for differences for other variables such as education, employment status, gender, area of residence and age, the income inequality in a country impacts the individuals' income. If the Gini index coefficient increases by one unit, the probability of having a low income or a higher income, compared to a medium income, increases by one time. In countries with medium access to education, if the income inequality is higher, the individuals can be either in the category with low incomes or people with higher incomes.

Controlling for differences in other relevant variables at macro and at the individual level, the level of education impacts the income premium of

an individual. Individuals with primary, secondary, and post-secondary education are more likely to have a low income than individuals with tertiary education. Moreover, compared to the reference category of individuals with tertiary education, individuals with primary, secondary and post-secondary education are less likely to have a high-income level. Therefore, the human capital in the form of educational investment positively impacts the income level in countries with a medium level of educational expansion.

Table 2. Results of multinomial regression with income level as a dependent variable (countries with medium access to education)

Predictors	Dependent variable: Income level			
	Reference category: Medium income level			
	Low income level		High income level	
	Exp (B)	Sig.	Exp (B)	Sig.
GINI index	1.049	.000	1.013	.001
Age	1.008	.000	.989	.000
Gender (Male, Female=Ref.)	1.017	.555	1.016	.724
Area of residence (Urban, Rural=Ref)	.714	.000	1.078	.110
Employment status (Ref=Unemployed)				
Employed	.578	.000	1.270	.007
Inactive	.606	.000	1.232	.025
Education level (Tertiary level=Ref.)				
Primary level	4.217	.000	.756	.000
Secondary level	2.193	.000	.639	.000
Post-secondary level	1.712	.000	.712	.000
Intercept		.000		.000

Notes: Pseudo R-Square: Cox and Snell= .083; Nagelkerke= .101; McFadden=.050, Goodness-of-Fit: Pearson: Chi-Square=29370.945, df= 26872; Sig=.000; Deviance: Chi-Square=26396.280, df= 26872; Sig=.980; N=29448

Employment status can also predict the individuals' level of income. The model in Table 2 (controlling for other relevant predictors) shows that employed and inactive individuals are less likely to have a low income than a medium income compared to unemployed individuals. Moreover, the same model indicates that employed and inactive individuals are more likely than unemployed individuals to have a high income than a medium income. As we mentioned in the previous section, employed individuals can benefit from financial resources from salaries, but unemployed individuals might have difficulties obtaining financial resources. Inactive individuals such as students, on the other hand, might benefit from their family's financial resources.

Some of the sociodemographic variables in the model significantly predict the level of income. As in the case of the previous model on individuals from countries with low access to education, ageing is associated with a lower income level. If the age increases with one year, the probability of having a lower income increases one time. Older individuals are more likely to have a lower income than younger individuals. Regarding the area of residence and gender, they are only significant in predicting high income. Individuals from urban areas are less likely to have a low-income level than a medium income than individuals from rural areas. Regarding gender, men are more likely than women to have a higher income than a medium income. This result can be associated with wage inequalities in the labor market where women earn less than their male counterparts in the same positions.

4.3. Countries with high access to education

The third model is constructed on the sample of individuals from countries with high access to education. If we control for differences in sex, age, place of residence, employment status and level of education, we observe that income inequality in a country with high access to education influences the likelihood of individuals of having a low level of income. As in the case of the first model (the sample of individuals from countries with low access to education), a high level of income inequality at the country level affects the likelihood of having a low-income level at the individual level. An increase of one unit in the Gini coefficient increases the probability of having a low income by one time. At the same time, high income inequality at the country level does not influence the likelihood of having a high-income level. A high disparity of incomes in a country produces and reproduces the inequalities in incomes already existing. Consequently, there is a high propensity in countries with a high-income inequality to have more low-income individuals.

Educational attainment is another factor that influence the income level in countries with high access to education. Individuals with primary, secondary and post-secondary education are more likely than those with tertiary education to have a low-income level compared to a medium income level. At the same time, individuals with primary, secondary or post-secondary education are less likely than those with university education to have a high-income level.

On the other hand, as with the previous model, employment status impacts income level. Thus, employed and inactive people are more likely to have a high income than medium income compared to unemployed individuals. At the same time, employed and inactive people are less likely to have a low income (compared to a middle income) compared to unemployed individuals.

If we examine the influence of sociodemographic variables on income, we notice that age has a positive impact on the probability of having a low income, and gender and age influence the likelihood of having a high income. As with the other two models, as a person ages, one age increase increases the possibility of having a low income. These results can be associated, as mentioned above, with various facets of social exclusion at older ages. Moreover, if we examine gender, we observe that men have a higher probability of having a high income than a medium income compared to women. Regarding the area of residence, as in the case of the first model, individuals from urban areas are more likely to have a high income than a medium income, compared to individuals from rural areas (Table 3).

Table 3. Results of multinomial regression with income level as a dependent variable (countries with high access to education)

Predictors	Dependent variable: Income level			
	Reference category: Medium income level			
	Low income level		High income level	
	Exp (B)	Sig.	Exp (B)	Sig.
GINI index	1.036	.000	1.015	.162
Age	1.020	.000	1.003	.175
Gender (Male, Female=Ref.)	.951	.291	1.226	.005
Area of residence (Urban, Rural=Ref)	1.000	.996	1.332	.005

Employment status (Ref=Unemployed)				
Employed	.231	.000	1.764	.036
Inactive	.307	.000	1.669	.065
Education level (Tertiary level=Ref.)				
Primary level	2.292	.000	.289	.000
Secondary level	1.972	.000	.425	.000
Post-secondary level	1.767	.000	.590	.000
Intercept		.000		.000

Notes: Pseudo R-Square: Cox and Snell= .087; Nagelkerke= .110; McFadden=.058, Goodness-of-Fit: Pearson: Chi-Square= 11835.756, df= 10326; Sig=.000; Deviance: Chi-Square= 9917.510, df= 10326; Sig= .998; N= 11339

5. Conclusions

This study explored the influence of educational attainment on earnings premium, while taking into account the process of educational expansion at the national level. Our results confirm the theory of human capital and findings of previous studies on the significant economic returns of education (Psacharopoulos & Patrinos, 2018).

According to our findings, after controlling for various relevant factors (age, gender, area of residence, employment status and general level of income inequality), the level of education has positive effects on individual earnings. These results remain valid, irrespective of the level of educational expansion in the country. So, we conclude that education expansion is in line with a higher demand for educated workers and higher level of education continues to lead to higher earnings.

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