Inequality in educational attainment of females in Arab countries: comparisons to Eastern and Central European Economies

Ahmed DRIOUCHI[1], Cristina BOBOC[2], Alae GAMAR[1]

Abstract: This paper emphasizes the status of women through the assessment of inequality in educational attainment in Arab countries and comparisons with Eastern and Central European Economies (ECE). The results show a recent relative high trend in education attainment with lowered gender and female inequalities. But these inequalities appear to be higher for females in Arab countries. Even with decreasing inequalities, lower equality is observed for females that show a decreasing pattern of inequality in education. But, the levels of inequality, vary between Arab countries and in comparison to ECE economies.

Keywords: Women, Inequality, Educational attainment.

JEL Classification: I320, J620

Introduction

Different studies and reports show the low performance of education, research and innovation besides the creation of new enterprises, even with the increasing roles played by women in the overall economy. Evidence has been systematically showing the limited impact on the inclusion of women in education, jobs and enterprise creation in the Arab World. For Arab countries, the economic and social research findings developed up to now constitute an important step towards enlightening and strengthening the available set of arguments for further economic inclusive growth

[1] IEAPS, Al Akhawayn University, Ifrane, Morocco

[2] *Bucharest Academy of Economic Studies & Institute of National Economy, Bucharest, Romania*

policies. They also constitute promising directions for policy changes in Arab countries. Filali Adib, Driouchi and Achehboune (2013), assert that education is one of the factors that are leading to the feminization of the labor market. Such a research uses variables such as the average years of schooling, the survival rate to the last grade of each level of schooling, and unemployment rates to evaluate the role primary and secondary education play in the inclusion of women. The findings clearly emphasize that the feminization of the job market in the Arab countries is significant and education is a prominent factor in this positive change. Similar results are attained in Gamar and Driouchi (2014). It is well known that the inclusion of women through education leads to enterprise creation and to further employment opportunities with the enhancement of economic and social participation. But, further issues need the development of updated knowledge as the globalization process generates new needs and new challenges. Chamlou and Karshenas (2016) focus on how the gender debate has neglected the economic dimension of women's empowerment and a great deal of debate and interest among researchers is needed to push the topics further. In a previous contribution, Chamlou, Muzi, and Hanane (2011) notes that the MENA region has achieved substantial progress in educating women, increasingly so at the tertiary level and across disciplines, but its female labor force participation remains the lowest. El Ashmawi (2015) observes that the Arab World is overwhelmingly young, with one third of the population below the age of 15 and one third between 15 and 29 years old. Different reports show that 25 per cent of Arab youth are unemployed and this is the highest rate in the world. This unemployment and unproductivity rate costs the region between USD40 and USD50 billion a year of lost opportunities. In most countries in the region, unemployment increases with the increase in the level of education. In some Arab countries, the educational profile of the unemployed indicates that one out of four had university education, 26 per cent of the unemployed persons are in urban cities where 44 per cent of them have university education. The study of gender educational inequalities has series of implications on economic policies and on social changes as shown by some previous research.

Stromquist (1989) discusses factors that affect women's participation and achievement in the formal educational system that contribute to significant gender inequalities in education. Cultural norms and the division of labor within the home function to the detriment of girls, who are defined primarily as future mothers, are introduced as contributing factors. The author considers that women in higher socioeconomic classes experience less restriction in gaining access to university, up to the limits imposed by cultural norms. But, the school experience of most women provides messages that reinforce rather than challenge the gender inequality.

The findings of Baliamoune and McGillivray (2009) indicate that gender inequalities in literacy measured by the ratio of 15–24-year-old literate females to males has a statistically significant negative on economic growth. The results show also that gender inequality has a stronger effect on growth in Arab countries. In addition, the authors find that the interaction between openness to trade and gender inequality has a positive impact. This result suggests that trade-induced growth may be accompanied by greater gender inequalities. Klasen and Lamanna (2009) use cross-country and panel regressions to investigate to what extent gender gaps in education and employment reduce economic growth. Using period (1960–2000), they find that gender gaps in education and employment reduce economic growth. The costs of education and employment gaps in the Middle East and North Africa, and South Asia amount respectively to 0.9–1.7 and 0.1–1.6 percentage point differences in growth compared to East Asia. Gender gaps in employment appear to have an increasing effect on economic growth differences between regions, with the Middle East and North Africa, and South Asia suffering from slower growth in female employment. Akkari (2004) investigates the educational development in the Middle East and North Africa, drawing on data from different international and national institutions. The paper begins with a review of similarities between countries within the region, and continues by investigating the situation of basic education, literacy rates and quality of education. In the third section, issues of inequality between public and private education are discussed. The paper concludes by outlining future educational challenges in the region.

The current research follows the patterns identified in the above research papers but focuses mainly on the computation of educational attainment of males and females using Barro and Lee datasets over the period 1950-2010. It emphasizes the needs of knowing more about educational attainment, the trends and magnitudes of gender educational inequality. The following questions are explicitly considered in this research.

- How education attainment inequalities affect the process of economic and social participation of women?
- How outcomes from inequality could be used for the enrichment of economic and social policies?
- How the situation of Arab countries could be compared with Central and Eastern European economics as these are countries with relatively newer development of markets?

The above questions are motivated by the continuous need for updating and feeding policy making with new inputs. Inequality in educational attainment has not yet been fully addressed in the context of Arab countries, mainly in relation to the provision of new policy insights.

The current paper starts with a literature review that addresses the major dimensions related to inequality in education attainment. It then shows the methods used in computations and assessment, with emphasis on the data used. Results are then introduced before engaging in policy issues and discussion.

I. Literature Review

The literature shows that education provides new opportunities (Bourguignon, Ferreira and Menendez, 2003). Several authors have investigated the issue of feminization and inclusion of women. The empirical evidence gathered shows that this process is already started in most economies of the Arab region, but needs to be further supported to ensure economic and social mobility with the quality of the human resources required for growth and development. Different authors such as Bordat, Davis and Kouzzi (2011), Sika (2011), Bibi and Nabli, (2010) have devoted research to the situation of Arab countries. The findings show that these countries are progressing mainly in education, gender equality and the empowerment of women. But, these authors indicate that many young women do not access schools in the Arab countries.

Accounting for inequality adds more insights to intergenerational research as new policies could be provided. There are several studies that look at the links to inequality measures. Magnani and Zhu (2015) deal with China's rapid economic growth that has been accompanied with transformations with increase in income inequality. A similar pattern is observed by Mok and Wu (2015).

Andreou and Koutsampelas (2015) show how spending on higher education in Cyprus has increased. The resulting expansion of higher education may result in a better distribution of educational opportunities.

Magnani and Zhu (2015) find that China's economic growth has been accompanied by economic and social transformations resulting in an income inequality increase.

Behrman, Graviria, Székely, Birdsall, and Galialni (2001) consider that inequality is widely regarded as one of the main problems facing Latin America both historically and today. The paper of Pastore and Roccisano (2015) provides new evidence on the extent of the inheritance of educational inequality in Azerbaijan, China, Egypt, Iran, Kosovo, Mongolia, Nepal and Syria where the ILO carried out the first wave of School-to-Work Transition survey. Lillard and Willis (1994) explore evidence concerning the relationship between parents and children education using the Malaysian Family Life Survey. They find that educational attainment has increased more than fivefold to about ten years of education and that gender differentials have disappeared.

Other authors have stressed changes in inequality of opportunities through generations. Checchi, Peragine, and Serlenga, (2016) studies the cross-country differences in conventional measures of inequality of opportunity in Europe. Exploiting two recent waves of data (2005 and 2011), they provide estimates of inequality of opportunity in about 30 European countries. In addition, they exploit two observations available for most of the countries to explore the relationship between many institutional dimensions and inequality of opportunity, finding evidence of negative correlation with educational expenditure (especially at the pre-primary level) and passive labor market policies. Previous contributions include research on intergenerational transmission of inequality as in Tomes (1981), Jacobs (1996), Bowles and Gentis (2002), Erikson and Goldthorpe (2002), Breen and Jonsson (2005) and Lawrence (2016). In addition, OECD has contributed to this debate through at least 4,major papers (OECD, 2007, 2010, 2011 and 2014).

In the specific context of Arab countries, the paper of Salehi-Isfahan, Belhaj-Hassine, and Ragui (2014) is an empirical investigation of inequality in education in the Middle East and North African region (MENA). The authors find that inequality of opportunities explains a significant part of the inequality in educational achievements. Worldwide, Balcázar, Narayan and Tiwari (2015) find ample heterogeneity among countries but, with a strong and stable correlation between inequality of opportunity and public spending on school education. Ragui and Salah (2013) examine the effect of increased local supply of schooling on intergenerational mobility in education in Jordan. The authors identify the effect by exploiting the variation in the supply of schools across cohorts and regions of Jordan. The findings show that the local availability of basic public schools does in fact increase intergenerational mobility in education. Ragui, Krafft, Roemer and Salehi-Isfahani (2016) address the issue of inequality in income in the MENA and observe that this is not particularly high. The authors attempt to relate it to inequality of opportunity. In addition, to expanding the literature on inequality of opportunity on the region, the authors provide estimates of inequality of opportunity in incomes and consumption for Egypt, Jordan and Tunisia. The attained results show also low levels of inequality of opportunity, besides inequality, in income measures.

On the descriptive side, several reports and publications have emphasized the importance of educational attainment inequalities in the Arab countries. Other authors show that other regions of the world, do exhibit the same problems as in Arab countries. Mok and Neubauer (2015) note that higher education expansion is becoming increasingly a growing trend in the Asia and Pacific region. Ianelli and Paterson (2005) observe a significant increase in participation to education in Scotland, over the past half century. But, the question is whether this expansion has reduced “inequalities in educational attainment and has contributed to social mobility”.

II. Theoretical Framework

In relation to measurement, Allison (1978) considers that measures of inequality are increasingly used to compare nations, cities, and other social units and that the properties of alternative measures have received little attention. The author addresses both theoretical and methodological implications of several common measures of inequality. The Gini index is found to satisfy the basic criteria of scale invariance and the principle of transfers.

Currently, different measures of inequality have been developed so far but the original work of the pioneering economists is still relevant (Atkinson and Brandolini, 2015). The Gini index is between 0 and 1 where 0 indicates perfect equality and 1 indicates maximum inequality. The Gini index is the most frequently used inequality index. The reason for its popularity is that it is easy to understand how to compute the Gini index as a ratio of two areas in Lorenz curve diagrams.

III. Empirical Methods and Data

The methods used in this research cover the calculation of GINI measures for education. The outlines of these methods are provided in the following sections.

1. Education GINI index to measure inequalities

In order to measure inequality in education we used the GINI coefficient to measure inequalities in education for the Arab Countries. We based the methodology for computing the GINI index for education on the usual methods used to compute it as well as previous works (Digdowiseiso, 2010 and Vinod, Yan and Xibo F. 2000) that used the GINI index to measure the inequalities in educational systems. The following presents the direct and indirect methods to compute the GINI index. We based our calculation of the GINI index on the Barro and Lee (2014) dataset for 15 Arab countries from 1950 to 2010.

The direct method to compute the GINI index is based on a formula (Deaton 1997) with:

$$GINI\ index = \frac{1}{\mu\, N\,(N-1)} \sum_{i>j} \sum_{j} |y_i - y_j|$$

Where:

μ is the average years of schooling;

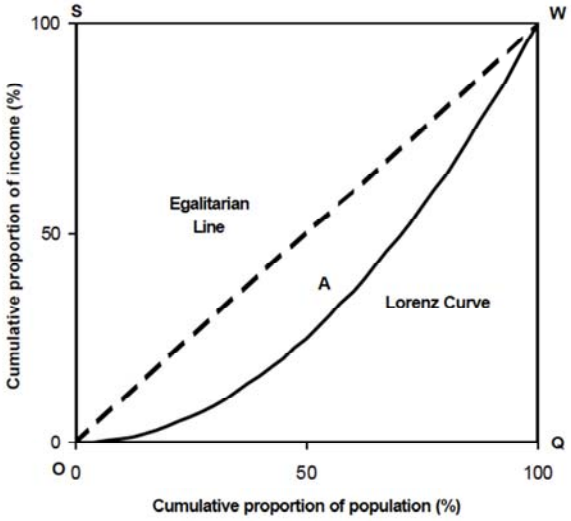
N is the total number of observations;

In general to compute the income GINI index, $y_i \; and \; y_j$ are dollar values of income of individuals. However, when computing the GINI index for education $y_i \; and \; y_j$ are years of school attainment of individuals.

On the other hand the indirect method consists of constructing the Lorenz curve for education. This curve holds the cumulative percentage of the schooling years on the vertical axis and the cumulative percentage of population in the x-axis. It is also includes a 45 degree line that represents a perfect equality in schooling. The GINI index is estimated using the ratio of the area enclosed between the equality and the Lorenz Curve lines (Area A) to the area between the x-axis and equality line (Area OWQ). Figure 1 presents the Lorenz curve and the respective areas mentioned to illustrate the areas used to estimate the GINI index. The following determines GINI index for education.

Figure 1: The Lorenz curve

$$GINI\ index = \frac{Area\ of\ A}{Area\ of\ OWQ}$$



Source: Vinod and al., 2000

This paper uses the second method to compute the GINI index for education for the Arab countries using the Barro and Lee (2014) dataset. We used seven schooling

categories, no schooling, and partial schooling for primary, secondary and tertiary that we computed using the total schooling in the Barro and Lee (2014) dataset as well as the completed primary, secondary and tertiary. Then we drew the Lorenz curve for each country for given years to compute the GINI indexes for different years.

2. Data

The research uses the updated data retrieved from the Barro and Lee (2014) dataset. This includes data ranging from 1950 to 2010 for the Arab countries namely: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Libya, Morocco, Mauritania, Qatar, Syria, Saudi Arabia, Sudan, Tunisia, United Arab Emirates and Yemen. The variables used include average years of total schooling and the four categories of education that captures the status of people in education: the first one concerns those with no education (no schooling), the second those that completed primary education (TP), the third those that completed Secondary education (TS) and the fourth those that completed tertiary education (TT). This data will be used to study of inequalities in educational attainment.

IV. Results

These results are respectively introduced as they relate to the assessment of time trends in average of schooling for total, females and males at different levels of education. These are followed by the trends taking place in the GINI coefficient related to the average schooling. These results concern respectively Arab and ECE countries. Statistical comparisons within Arab countries, ECE economies and between Arab and ECE are then introduced with emphasis on male female comparisons and also for females in Arab and ECE countries.

1. Trend line Regressions for Average Years of Schooling by schooling level during the period 1950-2010

a. Arab Countries

The coefficients for the trend line regressions for the different levels of schooling (table 1) for total, primary, secondary and tertiary are all highly statistically significant and positive with lower trends observed for total education in Mauritania and Yemen and higher time trends shown for the UAE.

For primary schooling, Kuwait and Yemen have low trends while the UAE and Libya have highest values. Sudan, Yemen and Mauritania exhibit the lowest trends with the highest values shown by the UAE and Jordan for secondary schooling. Tertiary schooling shows the lowest trends for Yemen, Iraq and Mauritania while trends for all

other countries are low in comparison with those related to primary and secondary education.

Table 1: The Coefficients and t-statistics for the trend line regressions for the different levels of schooling for the total population in Arab Countries

Countries	Average Years of Schooling								N
	Total		Primary		Secondary		Tertiary		
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	
Algeria	0.543	14.463	0.333	14.699	0.185	12.850	0.025	6.289	13
Bahrain	0.639	12.950	0.348	11.501	0.258	15.338	0.034	6.414	13
Egypt	0.611	15.005	0.337	16.683	0.250	11.697	0.024	6.215	13
Iraq	0.625	20.472	0.385	21.791	0.203	15.768	0.037	10.282	13
Jordan	0.723	29.241	0.381	51.546	0.311	17.255	0.031	16.920	13
Kuwait	0.452	13.249	0.173	17.349	0.259	7.610	0.020	3.991	13
Libya	0.705	18.326	0.402	19.696	0.254	12.540	0.048	4.869	13
Mauritania	0.270	12.128	0.192	11.546	0.073	12.572	0.006	9.833	13
Morocco	0.406	17.219	0.229	17.685	0.151	17.202	0.026	11.541	13
Qatar	0.529	34.840	0.297	16.785	0.195	40.370	0.037	20.910	13
Saudi Arabia	0.534	17.361	0.288	20.327	0.220	13.237	0.027	13.952	13
Sudan	0.274	15.675	0.214	14.633	0.054	13.377	0.006	4.202	13
Syria	0.486	19.007	0.342	23.177	0.131	9.540	0.013	8.437	13
Tunisia	0.597	19.881	0.359	27.208	0.210	13.595	0.028	6.221	13
UAE	0.777	18.130	0.428	18.036	0.306	19.094	0.042	9.769	13
Yemen	0.295	6.749	0.195	7.142	0.094	6.100	0.007	5.806	13

The coefficients for the trend line regressions for the different levels of schooling for the female population in Arab Countries (table 2), show series of interesting and statistically significant results. For females and for total schooling, the highest value is for Libya, the UAE followed by Jordan and Bahrain while Yemen and Mauritania have lowest statistically significant trends.

For primary education, the highest trend trend is expressed the UAE and Jordan with the lowest for Sudan and Mauritania. Sudan, Mauritania and Yemen show trends over secondary education with the UAE and Jordan having the highest. Lower values are shown by all Arab countries with Sudan, Mauritania and Yemen having the lowest values.

Table 2: The Coefficients and t-statistics for the trend line regressions for the different levels of schooling for the female population in Arab Countries

Countries	Average Years of Schooling								N
	Total		Primary		Secondary		Tertiary		
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	
Algeria	0.499	10.195	0.299	9.811	0.176	11.203	0.024	4.863	13
Bahrain	0.703	14.984	0.380	13.661	0.284	16.281	0.039	7.097	13
Egypt	0.552	11.930	0.309	14.301	0.224	9.656	0.020	5.688	13
Iraq	0.529	13.145	0.341	13.917	0.159	10.536	0.029	9.740	13
Jordan	0.768	18.294	0.428	24.985	0.316	12.686	0.024	14.624	13
Kuwait	0.585	14.950	0.233	28.811	0.320	9.614	0.031	8.278	13
Libya	0.808	10.963	0.432	13.400	0.315	8.718	0.060	4.779	13
Mauritania	0.195	8.351	0.148	8.268	0.045	7.944	0.002	8.253	13
Morocco	0.328	11.965	0.182	12.739	0.128	11.215	0.018	9.016	13
Qatar	0.699	28.306	0.353	21.659	0.279	31.555	0.067	22.588	13
Saudi Arabia	0.612	10.672	0.335	12.472	0.242	8.673	0.034	9.823	13
Sudan	0.246	11.463	0.189	11.899	0.050	9.754	0.007	4.386	13
Syria	0.495	15.423	0.355	15.634	0.130	10.573	0.010	7.798	13
Tunisia	0.556	12.704	0.337	18.116	0.194	8.993	0.025	4.838	13
UAE	0.928	17.074	0.486	17.855	0.383	17.350	0.059	10.880	13
Yemen	0.177	4.785	0.109	5.147	0.063	4.244	0.006	4.585	13

b. Central and Eastern European Countries

In all Central and Eastern European countries it could be observed an increasing trend in average years of schooling during the observed period for total population and on levels of schooling, and on genders (table 3). The highest trends for total education are observed in Albania, Bulgaria, Lithuania and Latvia for all samples: total, female and male samples. However, high differences are observed between variables (different levels of schooling) on each sample (total, female, male). For example, in Albania it is observed the highest trend for primary school and the lowest trend for tertiary school for all samples. Estonia and Slovenia are the countries with the highest trends in secondary education for all samples. Tertiary schooling shows the highest trends for Estonia, Lithuania and Bulgaria for all samples.

For female population (table 4), all ECE countries have statistically significant coefficients for all levels of education.

Table 3: The Coefficients and t-statistics for the trend line regressions for the different levels of schooling for the total population in Eastern and Central European Countries

Countries	Average Years of Schooling								N
	Total		Primary		Secondary		Tertiary		
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	
Albania	0.718	17.717	0.465	13.266	0.244	15.982	0.009	2.774	13
Bulgaria	0.606	17.526	0.318	23.316	0.238	10.180	0.050	21.236	13
Croatia	0.446	22.200	0.120	5.173	0.292	8.789	0.035	6.368	13
Czech	0.440	19.306	0.111	9.257	0.296	14.848	0.034	10.556	13
Estonia	0.530	18.408	0.075	13.976	0.385	15.372	0.070	9.252	13
Hungary	0.415	11.705	0.089	5.956	0.283	10.205	0.044	11.695	13
Latvia	0.605	29.165	0.240	14.506	0.329	16.266	0.036	12.093	13
Lithuania	0.617	47.025	0.269	19.223	0.294	27.583	0.054	8.812	13
Poland	0.506	42.501	0.239	13.856	0.229	12.663	0.039	6.288	13
Romania	0.571	20.507	0.250	7.787	0.297	26.338	0.024	11.187	13
Serbia	0.531	24.627	0.195	7.366	0.297	7.221	0.039	15.533	13
Slovakia	0.377	21.053	0.065	3.581	0.274	10.015	0.037	9.188	13
Slovenia	0.557	22.415	0.134	2.906	0.374	13.172	0.050	10.693	13

Table 4: The Coefficients and t-statistics for the trend line regressions for the different levels of schooling for the female population in Eastern and Central European Countries

Countries	Average Years of Schooling								N
	Total		Primary		Secondary		Tertiary		
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	
Albania	0.744	17.496	0.485	13.844	0.249	18.364	0.011	4.721	13
Bulgaria	0.652	21.321	0.332	26.091	0.259	12.484	0.060	21.472	13
Croatia	0.478	18.875	0.164	8.318	0.274	7.752	0.039	6.359	13
Czech	0.475	17.305	0.128	11.916	0.317	13.369	0.030	9.361	13
Estonia	0.550	16.465	0.066	22.013	0.398	15.917	0.086	8.014	13
Hungary	0.424	10.186	0.095	5.474	0.279	9.331	0.051	9.921	13
Latvia	0.623	27.546	0.236	15.925	0.343	16.756	0.044	15.191	13
Lithuania	0.650	53.184	0.277	22.662	0.310	39.743	0.063	8.396	13
Poland	0.533	46.158	0.253	13.782	0.234	13.428	0.046	6.334	13
Romania	0.589	28.899	0.279	10.565	0.285	20.444	0.025	9.604	13
Serbia	0.593	27.804	0.276	10.253	0.280	6.780	0.037	11.148	13
Slovakia	0.402	16.934	0.077	5.355	0.284	9.187	0.041	7.190	13
Slovenia	0.636	23.488	0.211	4.364	0.368	11.664	0.057	8.332	13

2. Assessment of Inequality

As shown by the estimated time trends, inequalities as measured by GINI in educational attainment, have been decreasing over the period 1950-2010. Females and males show trends that are negative and highly statistically significant (table 5).

Table 5: GINI trend lines coefficients with the t-statistics for females and males, Arab countries

Countries	Females		Males		N
	Coefficient	t-statistic	Coefficient	t-statistic	
Algeria	-0.0449	-9.8276	-0.0502	-11.3631	13
Bahrain	-0.0681	-12.6138	-0.0589	-9.9246	13
Egypt	-0.0534	-12.3576	-0.0624	-15.9627	13
Iraq	-0.0518	-14.3986	-0.0669	-18.4979	13
Jordan	-0.0602	-12.8108	-0.0338	-4.7698	13
Kuwait	-0.0594	-19.5871	-0.0379	-19.2750	13
Libya	-0.0693	-11.4430	-0.0528	-24.0912	13
Mauritania	-0.0152	-7.3956	-0.0299	-12.5525	13
Morocco	-0.0320	-13.0370	-0.0483	-28.0439	13
Qatar	-0.0534	-9.6708	-0.0405	-34.2342	13
Saudi Arabia	-0.0055	-11.6092	-0.0325	-10.2559	13
Sudan	-0.0234	-15.6180	-0.0249	-21.3930	13
Syria	0.0507	-18.5029	-0.0415	-10.0447	13
Tunisia	-0.0518	-14.0027	-0.0584	-29.1456	13
UAE	-0.0597	-8.2746	-0.0540	-12.5864	13
Yemen	-0.0169	-4.8710	-0.0407	-7.6489	13

GINI trend lines coefficients for females and males for ECE countries (table 6) show heterogeneous patterns. While for Arab countries there is an estimated decreasing trend in inequality, Central and East European countries show a decreasing trend only for Albania (for both females and males), Croatia (for females) and Serbia (for females). Positive trends are found for Latvia (females and males), Estonia (females), Slovakia (males) and Czech Republic (males) meaning that in these countries the inequality increased during the analyzed period. Most of ECE countries show no statistically significant trends in inequality during the analyzed period.

Table 6: GINI trend lines coefficients with the t-statistics for females and males, ECE countries (*, ** refer to statistical significance at 5 and 1% respectively).

Countries	Females		Males		N
	Coefficient	t-statistics	Coefficient	t-statistics	
Albania	-0.0328**	-4.4895	-0.0173*	-2.6141	13
Bulgaria	-0.0052	-0.6797	0.0052	0.8810	13
Croatia	-0.0235**	-3.9104	-0.0014	-0.1867	13
Czech	0.0095	1.3072	0.0214**	4.3652	13
Estonia	0.0170*	2.0272	0.0144*	2.0091	13
Hungary	0.0021	0.3084	0.0097	1.2878	13
Latvia	0.0131*	1.9726	0.0177**	3.1081	13
Lithuania	-0.0029	-0.3339	0.0103	1.6064	13
Poland	-0.0026	-0.4246	0.0074	1.4093	13
Romania	-0.0087	-1.3401	0.0082*	1.7783	13
Serbia	-0.0314**	-5.8889	-0.0100	-1.4332	13
Slovakia	0.0039	0.5192	0.0185**	4.4464	13
Slovenia	0.0051	0.6800	0.0152*	2.3001	13

3. Comparisons of estimated coefficients

This is achieved through comparing Arab countries, EEC economies and Arab countries to EEC countries.

a. Arab Countries

This section analyzes how females compare to males respectively in school and non-school attainment, in inequalities related to school attainment in addition to the number of years spent in education globally and for each level of education.

i. Primary, Secondary, Tertiary and Average Years of Schooling

When using the total average years of schooling, with the critical t-stat at respectively 5% and 1% being 1.771 and 2.650, males dominate in total education attainment in all Arab countries except Jordan and Qatar. Similar results are obtained for primary education with exceptions including Bahrain, Kuwait, Qatar and the UAE. For secondary education, only Iraq, Mauritania, Saudi Arabia and Sudan show highly statistically significant difference in favor of males.

For tertiary education, Egypt, Iraq, Jordan, Kuwait, Mauritania, Morocco, Syria and Saudi Arabia show the dominance of males. With the negative values, the average years of schooling of females is generally equal or lower than those of males (table 7).

Table 7: t-stat for Educational Attainment for Females compared to Males

Countries	Values for Females relative to Males per country 1950-2010			
	AYS ToS	AYS PS	AYS SS	AYS TeS
Algeria	-5.9461	-2.012	-1.265	-0.882
Bahrain	-1.9833	-0.909	-0.118	-0.477
Egypt	-5.9914	-1.857	-1.403	-2.917
Iraq	-6.2774	-1.718	-1.947	-1.739
Jordan	-0.3172	-1.936	-1.374	-2.680
Kuwait	-1.8023	-1.083	-0.058	-1.142
Libya	-3.0184	-1.912	0.372	0.741
Mauritania	-8.0743	-2.227	-2.429	-3.772
Morocco	-6.1679	-1.852	-1.659	-1.798
Qatar	-0.0093	-0.219	0.272	0.104
Saudi Arabia	-10.4568	-3.584	-2.187	-3.674
Sudan	-8.3285	-2.398	-2.375	-1.274
Syria	-7.7843	-2.463	-1.533	-2.804
Tunisia	-6.1569	-1.907	-1.586	-1.263
UAE	-0.1811	-0.235	0.200	-0.103
Yemen	-6.0327	-1.950	-1.304	-0.986

ii. Educational Attainment Inequalities and GINI Trends

The inequality differences between females and males are highly statistically significant at 1% for all Arab countries at both the GINI and the trend measures (table 8). Thus more inequalities exist for females. The trend line coefficient says that females have higher trends than males except in Bahrain Jordan, Kuwait, Qatar and UAE.

Table 8: t-stat for Educational Attainment for females compared to males

Countries	GINI	Trend line
Algeria	6.5629	10.8239
Bahrain	2.1851	-14.9535
Egypt	6.1793	20.1544
Iraq	6.3252	38.5570
Jordan	5.8318	-40.3068
Kuwait	3.6692	-78.7090
Libya	4.9015	-33.0784
Mauritania	9.3205	61.1696
Morocco	6.6891	70.0903
Qatar	1.1846	-29.7901
Saudi Arabia	10.6840	61.7311

Countries	GINI	Trend line
Sudan	11.8387	10.1513
Syria	9.5302	244.1551
Tunisia	6.3790	20.3997
UAE	2.2335	-8.8358
Yemen	6.1673	48.7138

b. ECE Countries

i. Primary, Secondary, Tertiary and Average Years of Schooling

For comparison of the school attainment between females and males in ECE countries (table 9), males do dominate or are equal to females in total education. The same result applies to all levels of education. Poland is the only exception. In this latter country in primary and secondary education females dominate males on educational attainment.

Table 9: t-stat for Educational Attainment for Females compared to Males for ECE countries

Countries	Values for Females relative to Males per country 1950-2010			
	AYS ToS	AYS PS	AYS SS	AYS TeS
Albania	-2.8202	-0.643	-0.965	-3.107
Bulgaria	-1.4762	-0.765	0.062	-0.423
Croatia	-7.7683	-3.289	-1.492	-1.389
Czech	-4.3712	-0.724	-1.241	-2.762
Estonia	0.001	0.129	-0.063	0.207
Hungary	-2.7119	-0.744	-0.658	-1.423
Latvia	-1.4515	-0.590	-0.273	-0.542
Lithuania	-2.5864	-1.009	-0.610	-0.036
Poland	-2.0574	11.794	1.887	1.055
Romania	-4.7507	-1.510	-1.123	-1.806
Serbia	-6.7316	-2.848	-1.127	-0.538
Slovakia	-5.8472	-1.609	-1.548	-1.360
Slovenia	-4.1403	-1.780	-0.705	-0.423

ii. Educational Attainment Inequalities and GINI Trends

The GINI coefficient is statistically higher or equal for females compared to males in all countries. Therefore the inequalities are higher for females than for males (table 10). In addition, the trend lines are higher for men compared to women except for Estonia, indicating that educational attainment measured by average years of schooling has been improved more for males than for females during the study ed period in all ECE countries except for Estonia.

Table 10: t-stat for GINI and trend line for females compared to males for 1950-2010

Countries	GINI	Trend line
Albania	1.8287	-20.3762
Bulgaria	3.2254	-14.0003
Croatia	6.0960	-30.0181
Czech	0.9963	-17.5413
Estonia	1.1193	2.9667
Hungary	1.9813	-9.5483
Latvia	0.5922	-6.8090
Lithuania	1.4382	-15.8996
Poland	2.8516	-16.1985
Romania	-0.0971	-27.5900
Serbia	6.7580	-31.8102
Slovakia	-0.3919	-22.3366
Slovenia	2.8523	-13.1749

4. Cross-country Comparisons of estimated coefficients for females and males within Arab countries and with ECE economies

This set of results relates to the comparison of GINI and intergenerational mobility between Arab countries and with ECE economies. The tables below show the t-statistic obtained from these comparisons. For this part, the countries in the tables are represented by letter indexed as: A: Algeria, B: Bahrain, C: Egypt, D: Iraq, E: Jordan, F: Kuwait, G: Libya, H: Mauritania, I: Morocco, J: Qatar, K: Saudi Arabia, L: Sudan, M: Syria, N: Tunisia, O: UAE, P: Yemen, Q: Albania, R: Bulgaria, S: Croatia, T: Czech, U: Estonia, V: Hungary, W: Latvia, X: Lithuania, Y: Poland, Z: Romania, AA: Serbia, AB: Slovakia, AC: Slovenia.

The critical values for the t-statistics are 1.771 at 5 % and 2.650 at 1% significance for GINI indexes and 1.833 at 5 % and 2.821 at 1% for intergenerational mobility. The values in the tables are written in bold for 5% level of significance.

i. Comparisons Education Inequalities for females within the Arab countries for total schooling

For inequalities among females in relation to total education attainment, Algeria appears to have GINI values higher than those of Kuwait and Qatar but they are lower than those in Sudan and Yemen with equalities with the other countries. The GINI for Bahrain does not show any statistical difference with other countries except for Egypt, Iraq, Mauritania, Morocco, Sudan and Yemen that have higher GINI estimates. Egypt shows

a higher GINI than for Kuwait and Qatar but is lower than Sudan and Yemen with GINI non-statistically different from other Arab countries. While Iraq shows no differences with other countries, it has a GINI that is higher than Jordan, Qatar and Kuwait but lower than Sudan and Yemen. Jordan has a GINI that is lower than that of Mauritania, Sudan and Yemen while is not different. Kuwait is not different from the others but lower than Mauritania, Morocco, Sudan, Syria, Tunisia and Yemen. Libya shows no significant statistical differences with other Arab countries except that its GINI is lower than those for Sudan and Yemen. Mauritania has a coefficient that is higher than those of Qatar, Saudi Arabia and the UAE. It has a lower GINI than in Sudan and Yemen but not statistically different from the other countries. Morocco shows a GINI higher than that of Qatar, Saudi Arabia, Syria and the UAE but is lower than in Yemen and its GNI is not statistically different from other Arab countries. Qatar has lower GINI compared to Sudan, Syria, Tunisia and Yemen. Saudi Arabia is lower than Sudan and Yemen (table 11).

Table 11: Comparisons of the Education Attainment Inequalities (GINI) for females within the Arab Countries for Total Education

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	0.000	1.924	-0.147	-0.281	1.572	2.365	0.454	-0.944	-1.531	2.397	1.308	-2.488	0.515	0.057	1.376	-3.666
B		0.000	-1.945	-2.078	-0.430	0.193	-1.231	-2.914	-3.238	0.148	-0.729	-3.974	-1.459	-1.803	-0.558	-4.811
C			0.000	-0.121	1.607	2.349	0.549	-0.638	-1.209	2.373	1.357	-2.018	0.619	0.193	1.424	-3.035
D				0.000	1.747	2.505	0.661	-0.493	-1.094	2.537	1.501	-1.923	0.757	0.320	1.558	-2.973
E					0.000	0.673	-0.879	-2.648	-3.004	0.640	-0.305	-3.830	-1.077	-1.452	-0.144	-4.773
F						0.000	-1.511	-3.662	-3.928	-0.055	-1.012	-4.839	-1.832	-2.203	-0.808	-5.829
G							0.000	-1.171	-1.609	1.501	0.630	-2.254	-0.036	-0.392	0.732	-3.048
H								0.000	-1.109	3.811	2.429	-2.907	1.542	0.923	2.369	-5.370
I									0.000	4.056	2.812	-1.069	2.035	1.476	2.744	-2.596
J										0.000	-0.989	-5.041	-1.841	-2.224	-0.779	-6.099
K											0.000	-3.700	-0.795	-1.191	0.149	-4.719
L												0.000	2.961	2.332	3.527	-1.824
M													0.000	-0.431	0.898	-4.067
N														0.000	1.268	-3.389
O															0.000	-4.434
P																0.000

ii. Comparisons Education Inequalities for females within the ECE countries for total schooling

All ECE countries appear to have statistically similar GINI estimates for females. There are though few exceptions where Croatia has higher GINI than Poland and Slovakia and Poland has lower GINI than Serbia and Slovakia, with 0.05 significance level (table 12).

Table 12: Comparisons of the Education Attainment Inequalities (GINI) for females within the ECE Countries for Total Education

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
Q	0.000	1.467	0.145	1.338	0.975	1.048	1.564	0.727	1.902	1.368	-0.184	1.933	0.444
R		0.000	-1.578	-0.170	-0.483	-0.626	0.120	-0.892	0.475	-0.192	-1.824	0.597	-1.370
S			0.000	1.423	0.970	1.084	1.697	0.686	2.152	1.473	-0.368	2.146	0.349
T				0.000	-0.333	-0.446	0.291	-0.731	0.664	-0.014	-1.683	0.770	-1.198
U					0.000	-0.042	0.592	-0.334	0.934	0.335	-1.254	1.015	-0.717
V						0.000	0.757	-0.347	1.217	0.459	-1.382	1.270	-0.813
W							0.000	-1.011	0.344	-0.321	-1.932	0.478	-1.502
X								0.000	1.426	0.753	-1.004	1.470	-0.392
Y									0.000	-0.724	-2.340	0.184	-2.019
Z										0.000	-1.732	0.826	-1.250
AA											0.000	2.338	0.712
AB												0.000	-2.002
AC													0.000

5. Comparisons for Education Attainment Inequalities (GINI) for females between Arab and ECE Countries

All coefficient of inequality among females in Arab countries are highly statistically significant and higher than those prevailing in each country from Central and Eastern Europe (table 13).

Table 13: Comparisons of the Education Attainment Inequalities (GINI) for females in the Arab countries relative to females in the ECE countries for total schooling

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
A	4.426	7.685	5.579	7.537	6.256	7.641	7.847	6.448	9.175	7.996	4.672	8.368	6.627
B	2.587	5.484	3.415	5.323	4.212	5.315	5.647	4.266	6.903	5.713	2.669	6.192	4.297
C	7.307	10.795	8.769	10.666	9.300	10.845	10.946	9.612	12.217	11.145	7.731	11.414	9.906
D	4.177	8.389	5.625	8.205	6.368	8.571	8.615	6.721	10.976	9.014	4.486	9.317	7.126
E	6.929	12.197	9.075	12.021	9.642	12.685	12.448	10.307	15.310	13.090	7.545	13.184	11.073
F	4.433	7.294	5.442	7.160	6.089	7.190	7.434	6.217	8.473	7.512	4.641	7.891	6.321
G	4.214	8.253	5.611	8.076	6.344	8.383	8.467	6.666	10.599	8.811	4.512	9.135	7.025
H	12.942	18.027	15.433	17.897	15.768	18.425	18.220	16.496	20.179	18.711	13.828	18.766	17.224
I	6.751	12.530	9.061	12.339	9.633	13.215	12.818	10.406	16.410	13.651	7.405	13.648	11.345
J	7.336	11.451	9.066	11.306	9.608	11.620	11.632	10.042	13.332	11.954	7.844	12.183	10.481
K	12.613	20.432	16.307	20.256	16.539	21.646	20.763	17.909	25.130	22.012	13.887	21.646	19.503
L	7.227	10.979	8.796	10.843	9.338	11.075	11.143	9.698	12.591	11.391	7.682	11.648	10.049
M	3.191	6.104	4.098	5.952	4.841	5.964	6.260	4.928	7.446	6.335	3.322	6.775	4.993
N	6.413	11.404	8.401	11.228	8.999	11.809	11.645	9.590	14.316	12.216	6.965	12.360	10.265
O	10.091	14.933	12.318	14.792	12.747	15.276	15.131	13.384	17.124	15.592	10.829	15.705	14.037
P	7.352	9.340	8.143	9.253	8.588	9.230	9.425	8.662	9.958	9.434	7.557	9.707	8.704

V. Results and Discussion of Implied Policies

The attained results show that school attainment has been increasing for all Arab countries and for total, primary, secondary and tertiary levels for both males and females. This is also confirmed by the estimated school attainment trends. Also the GINI coefficient and its related trends show results that support the decrease of inequalities for males and females. But, the females in comparison with males, show a prevalence of higher inequality. Details about these results could be summarizes as follows.

The coefficients for the trend line regressions for the different levels of schooling for total, primary, secondary and tertiary are all highly statistically significant and positive with lower but statistically significant trends for total education in Mauritania and Yemen and with higher time trends shown for the UAE.

For primary schooling, Kuwait and Yemen have low but statistically significant trends while the UAE and Libya have higher values. Sudan, Yemen and Mauritania exhibit the lowest trends with the highest values shown by the UAE and Jordan for secondary schooling. Tertiary schooling shows the lowest trends for Yemen, Iraq and Mauritania while trends for all other countries are low but statistically significant in comparison with those related to primary and secondary education.

The coefficients for the trend line regressions for the different levels of schooling for the female population in Arab Countries, show series of interesting and statistically

significant results. For females and for total schooling, the highest value is for Libya, the UAE followed by Jordan and Bahrain while Yemen and Mauritania have lowest statistically significant trends. For primary education, the highest trend is expressed the UAE and Jordan with the lowest for Sudan and Mauritania. Sudan, Mauritania and Yemen show trends over secondary education with the UAE and Jordan having the highest. Lower values are shown by all Arab countries with Sudan, Mauritania and Yemen having the lowest values.

For males, at the level of total education, Iraq, Algeria, the UAE, Libya and Tunisia have the highest values. At the level of primary, the UAE, Libya and Algeria have the highest values with Kuwait showing lower trend. Jordan has the highest trend over secondary education while Sudan has the lowest. Again, the tertiary education shows low values with the lowest shown by Yemen and Kuwait.

In all Central and Eastern European countries it could be observed an increasing trend in average years of schooling during the observed period for total population and on levels of schooling, and on gender. The highest trends for total education are observed in Albania, Bulgaria, Lithuania and Latvia for all samples: total, female and male samples. However, high differences are observed between variables (different levels of schooling) on each sample (total, female, male). For example, in Albania it is observed the highest trend for primary school and the lowest trend for tertiary school for all samples. Estonia and Slovenia are the countries with the highest trends in secondary education for all samples. Tertiary schooling shows the highest trends for Estonia, Lithuania and Bulgaria for all samples.

For female population, all ECE countries have statistically significant coefficients for all levels of education. The same estimated pattern applies also for males.

As shown by the estimated time trends, inequalities as measured by GINI in educational attainment, have been decreasing over the period 1950-2010. Females and males show trends that are negative and highly statistically significant.

GINI trend lines coefficients for females and males for ECE countries show heterogeneous patterns. While for Arab countries there is an estimated decreasing trend in inequality, Central and East European countries show a decreasing trend only for Albania (for both females and males), Croatia (for females) and Serbia (for females). Positive trends are found for Latvia (females and males), Estonia (females), Slovakia (males) and Czech Republic (males) meaning that in these countries the inequality increased during the analyzed period. Most of ECE countries show no statistically significant trends in inequality during the analyzed period.

Males dominate in total education attainment in all Arab countries except Jordan and Qatar. Similar results are obtained for primary education with exceptions including Bahrain, Kuwait, Qatar and the UAE. For secondary education, only Iraq, Mauritania, Saudi Arabia and Sudan show highly statistically significant difference in favor of males. For tertiary education, Egypt, Iraq, Jordan, Kuwait, Mauritania, Morocco, Syria and Saudi Arabia show the dominance of males. With the negative values, the average years of schooling of females is generally equal or lower than those of males.

The inequality differences between females and males are highly statistically significant at 1% for all Arab countries at both the GINI and the trend measures. Thus, more inequalities exist for females. The trend line coefficient says that females have higher trends than males except in Bahrain Jordan, Kuwait, Qatar and UAE.

For comparison of the school attainment between females and males in ECE countries males do dominate or are equal to females in total education. The same result applies to all levels of education. Poland is the only exception. In this latter country in primary and secondary education females dominate males on educational attainment.

The GINI coefficient is statistically higher or equal for females compared to males in all countries. Therefore the inequalities are higher for females than for males. In addition, the trend lines are higher for men compared to women except for Estonia, indicating that educational attainment measured by average years of schooling has been improved more for males than for females during the study ed period in all ECE countries except for Estonia.

For inequalities among females in relation to total education attainment, Algeria appears to have GINI values higher than those of Kuwait and Qatar but they are lower than those in Sudan and Yemen with equalities with the other countries. The GINI for Bahrain does not show any statistical difference with other countries except for Egypt, Iraq, Mauritania, Morocco, Sudan and Yemen that have higher GINI estimates. Egypt shows a higher GINI than for Kuwait and Qatar but is lower than Sudan and Yemen with GINI non-statistically different from other Arab countries. While Iraq shows no differences with other countries, it has a GINI that is higher than Jordan, Qatar and Kuwait but lower than Sudan and Yemen. Jordan has a GINI that is lower than that of Mauritania, Sudan and Yemen while is not different. Kuwait is not different from the others but lower than Mauritania, Morocco, Sudan, Syria, Tunisia and Yemen. Libya shows no significant statistical differences with other Arab countries except that its GINI is lower than those for Sudan and Yemen. Mauritania has a coefficient that is higher than those of Qatar, Saudi Arabia and the UAE. It has a lower GINI than in Sudan and Yemen but not statistically different fromUAE but is lower than in Yemen and its GNI is not statistically

different from other Arab countries. Qatar has lower GINI compared to Sudan, Syria, Tunisia and Yemen. Saudi Arabia is lower than Sudan and Yemen.

For males, all Arab countries show lower GINI in comparison with Yemen at the exception of Sudan that shows similar coefficient as in Yemen. It is the same observation for Sudan except for Mauritania and Morocco that have statistically similar GINI.

All ECE countries appear to have statistically similar GINI estimates for females. There are though few exceptions where Croatia has higher GINI than Poland and Slovakia and Poland has lower GINI than Serbia and Slovakia, with 0.05 significance level.

For males, all ECE countries have similar level of inequality measured by GINI index except Albania that has higher inequality compared to Bulgaria and Poland at 5% level of significance.

All coefficient of inequality among females in Arab countries are highly statistically significant and higher than those prevailing in each country from Central and Eastern Europe.

All inequality coefficients in Arab countries are significantly higher or equal to those from ECE countries. Bahrain and Saudi Arabia have all GINI coefficients not statistically different from those of all ECE countries. It applies also to Kuwait except for Bulgaria, Poland and Slovakia that have lower coefficients. Egypt has estimates higher than those of all ECE countries. The same applies to Iraq, Jordan (except Albania), Libya, Mauritania, Qatar (except for Albania), Morocco, Sudan, Tunisia, the UAE and Yemen.

The attained results indicate that further education policies devoted to reduce inequalities in educational attainment need to be pursued in order to enhance equality in school attainment at the levels of primary, secondary and tertiary education. While the results are valid for both males and females, the situation of women appears to be more critical and specific gender policies are needed because of the existing and non-decreasing inequalities of women relative to men in education.

These policies need to be complemented by policies in other sectors such as health and other socio-economic areas (Driouchi, 2013) as important interdependencies exist between education and the rest of the economy. In addition, macroeconomic policies are also invited to account for the reduction of education inequalities. These overall policies need to target all elements that are likely to be sources of inequalities (gender, territories and types of schooling systems besides children of different ages and with and without disabilities).

The attained results show first, that there has been a decreasing pattern for inequalities in education over the period 1950-2010. This pattern has concerned all Arab countries without exception. Policies aiming at further reducing inequalities are discussed within

the introduced framework. These attained results are also confirmed by the analysis of cross-sectional data as the School-to-work transition survey (SWTS) micro data files. The International Labor Organization has been conducting the school to work transition surveys (SWTS) in more than 30 countries between 2012 and 2015. The Arab countries included up to now are Egypt (2012, 2014) with respectively 5198 and 5758 observations, Jordan (2013) with 5405 surveys, the Occupied Palestinian Territories (2013) with 4320 observations besides an older survey for Syria (2007). There are also surveys for ECE countries where the more recent is of 2015. Furthermore, the attained results are confirmed with the indicator of the gender literacy gap used to assess goal 3 for the Millennium Development Goals. The literacy gender parity index measures progress towards learning opportunities for women in relation to those for men. It is a key indicator of empowerment of women (Terryn, 2003) with Literacy Gender Parity Index (15-24) defined as the ratio of women literacy rate (15–24) and men literacy rate (15–24)). Based on the data provided by United Nations (2015) and related to Millennium Development Goals, the Gender Parity index for tertiary education is higher than one for Bahrain (1.38 in 1991 and 2.18 in 2014), Qatar, Jordan and United Arab Emirates and Oman. It is less than 1 for the other Arab countries. Yemen appears to have the lowest figures. For secondary education, Algeria, Bahrain, Lebanon, Kuwait, Jordan, Libya, Qatar, Palestine, Tunisia and United Arab Emirates show a ratio that is close or slightly above one. The others have a ratio that is less than one. Yemen and Sudan have the lowest ratios. For primary education, all Arab countries show ratio that is most of the time less than one. These figures say that women express higher enrollment in education in Middle Eastern countries and show an important progress in others except in Yemen.

Other sources by UNESCO (2016) provide data on educational inequalities with focus on women. Neube and Anyanwu (2012) relate education, inequality to the transformations of Arab economies. World Economic Forum (2014) has also addressed series of inequalities faced by women, including in education. According to this report, the Middle East and North Africa region closed 60% of its overall gender gap in 2014. Despite experiencing the biggest absolute improvement compared to 2013, the region remains in the sixth position. It continues to rank last on the Economic Participation and Opportunity subindex, with only 42% of the economic gender gap closed. On the Educational Attainment subindex, the region surpassed Asia and the Pacific, ranking in fourth place with 93% of the educational gender gap closed.

The above discussion emphasizes how the monitoring of inequality in education attainment is critical for development and inclusion. It shows also that specific global and gender targeted policies in addition to sector policies need to be implemented.

Conclusion

This paper has attempted to assess gender inequality in school attainment. The limitations in secondary data directly related to the topic have allowed the use of other sets of secondary information such as the Barro and Lee (2014) database about education attainment. The length of the series used has also allowed to assess inequalities with GINI coefficients for the Arab countries given the lack of data on this matter.

The methods used include direct assessment of inequality through GINI measures to both Arab and ECE countries. Then the comparisons between variables and countries are conducted using t-statistics.

The attained results show the decreasing levels of inequalities among females with still high levels in comparison to males in the same country but also over all Arab countries. The situation is better in ECE countries where inequality being more adequate except for few countries.

The results say that Arab countries are invited to promote further economic policies to reduce the levels of inequality mainly among females, through ensuring more incentives for families to educate and for the promotion of employment. Similar recommendations could be set for ECE countries but the undergoing policies in these countries seem to account for the consequences of inequality.

But, further future cross-sectional and panel data are needed for improving the results through the development of more economic research oriented investigations on Arab countries. The main implications and recommendations derived include further social and economic research devoted to enrich the policy process.

Acknowledgement:

This paper has been produced with the financial assistance of the European Union within the context of the European Commission-FEMISE project on: “Support to economic research, studies and dialogue of the Euro-Mediterranean Partnership”, research project FEM41-01: Inequality, Intergenerational Mobility of Women Educational Attainment and Inclusive Policies in Arab Countries. The contents of this document are the sole responsibility of the authors.

References

Akkari, A. (2004). Education in the Middle East and North Africa: The Current Situation and Future Challenges. International Education Journal Vol 5, No 2, 2004, pp:144-153 http://iej.cjb.net.

Allison, P. (1978). Measures of Inequality. American Sociological Review 1978, Vol. 43 (December):865-880.

Andreou, S.N. and Koutsampelas, C. (2015). Intergenerational mobility and equality of opportunity in higher education in Cyprus. International Journal of Educational Development Volume 41, March 2015, Pages 80–87.

Atkinson, A.B. and Andrea Brandolini, A. (2015). Unveiling The Ethics Behind Inequality Measurement: Dalton's Contribution To Economics. The Economic Journal, 125 (March), 209–234.Doi: 10.1111/ecoj.12225©2015.

Baliamoune, M. and McGillivray, M. (2009). Does Gender Inequality Reduce Growth in Sub-Saharan African and Arab Countries?. African Development Review Volume 21, Issue 2, pages 224–242, September/Septembre 2009.

Barro and Lee. (2014). Educational attainment dataset. Barro and Lee Dataset, 2014 30 Aug. Update. Retrieved from http://barrolee.com/

Behrman, J.R, Graviria, A., Székely, M., Birdsall, N. and Galialni, S. (2001). Intergenerational Mobility in Latin America [with Comments)]. Economía, Vol. 2, No. 1 (Fall, 2001), pp. 1-44.

Bibi, S. and M. K. Nabli. (2010). Equity and Inequality in the Arab Region. ERF Policy Research Report PPR No 33. Egypt: Economic Research Forum.

Bourguignon, F., Ferreira, F and M. Menendez (2003). Inequality of Outcomes and Inequality of Opportunities in Brazil. DELTA Working Papers, No. 2003-24.

Bowles, S. and Gentis, H. (2002). The Inheritance of Inequality. The Journal of Economic Perspectives, Vol. 16, No. 3 (Summer, 2002), pp. 3-30. American Economic Association Stable URL: http://www.jstor.org/stable/3216947.

Breen, R. and Jonsson, J.O. (2005). Inequality of Opportunity in Comparative Perspective: Recent Research on Educational Attainment and Social Mobility. Annual Review of Sociology, Vol.31(2005), pp.223-243. URL: http://www.jstor.org/stable/29737718

Chamlou, N. and Karshenas, M. (2016). Women, Work and Welfare in the Middle East and North Africa: The Role of Socio-demographics, Entrepreneurship and Public Policies, 624pp. Mar 2016 ISBN: 978-1-78326-735.

Chamlou, N. Moghadam, V. and Karshenas, M. (2016). Women, Work, and Welfare in the Middle East and North Africa: Introduction and Overview. Chapter 1, pp:1-30 in Women, Work and Welfare in the Middle East and North Africa: The Role of Socio-demographics, Entrepreneurship and Public Policies, 624pp Mar 2016 ISBN: 978-1-78326-735-4 (ebook).

Chamlou, N., Muzi, S. and Hanane, A. (2011). Understanding the Determinants of Female Labor Force Participation in the Middle East and North Africa Region. 2011 AlmaLaurea Working Papers 31, ISSN 2239-9453. 19 pages.

Checchi , D., Peragine, V. and Serlenga, L. (2016). Inequality of Opportunity in Europe: Is There a Role for Institutions? in Lorenzo Cappellari , Solomon W. Polachek , Konstantinos Tatsiramos (ed.) Inequality: Causes and Consequences (Research in Labor Economics, Volume 43) Emerald Group Publishing Limited, pp.1 – 44.

Deaton, Angus. (1997). the Analysis of Household Surveys: A Microeconomic Approach to Development Policy. Johns Hopkins University Press, Baltimore and London.

Digdowiseiso, K. (2010). Measuring GINI coefficient of education the Indonesian cases, Munich Personal RePEc Archive (MRPA) Retrieved from http://mpra.ub.uni-muenchen.de/19865/ DOI: 10.5339/difi.2013.arabfamily.7. Published online: 31 Mar 2015.

Driouchi, A. (2013). ICTs for Health, Education, and Socioeconomic Policies: Regional Cases (pp. 1-340). Hershey, PA: IGI Global. doi:10.4018/978-1-4666-3643-9.

El Ashmawi, A.(2015). The Skills Mismatch in the Arab World: A Critical View. The Cairo Symposium. British Council. http://www.britishcouncil.org.eg/en/ symposium/thought-pieces/skills-mismatch-arab-world-critical-view.

Erikson, R. and Goldthorpe, J.H. (2002). Intergenerational Inequality: A Sociological Perspective. The Journal of Economic Perspectives, Vol. 16, No. 3 (Summer, 2002), pp. 31-44. American Economic Association, URL: http://www.jstor.org/stable/3216948.

Filali Adib, F.Z, Driouchi, A. & Achehboune A, (2013). Education Attainment, Further Female Participation & Feminization of Labor Markets in Arab Countries. MPRA 48491, Munich personal REPEC. July 2013.

Gamar, A. and Driouchi, A. (2014). Higher Education and Inclusion of Women in Labor Markes and in Business Development in Morocco. MPRA paper, 58072, University Library of Munich.

Ianelli, C. and Paterson, L. (2005). Does Education Promote Social Mobility? No. 35, June 2005. http://www.ces.ed.ac.uk/PDF%20Files/Brief035.pdf

ILO (2013a). Global Employment Trends 2013. International Labour Office Publication, January 2013. 190 pages.

ILO (2013b). Global Employment Trends For Youth 2013: A generation at risk. International Labour Office – Geneva: ILO, 111 pages.

Jacobs, J.A. (1996). Gender Inequality and Higher Education. Annual Review of Sociology, Vol. 22 (1996), pp. 153-185. Annual Reviews Stable URL: http://www.jstor.org/stable/2083428.

Lawrence, M. (2016). Unequal Advantages: The Intergenerational Effects of Parental Educational Mobility. American Educational Research Journal Vol. XX, No. X, pp. 1–29. DOI: 10.3102/0002831215621162. 2016 AERA. http://aerj.aera.net

Lillard, L.A and Willis, R. (1994). Intergenerational Educational Mobility: Effects of Family and State in Malaysia. The Journal of Human Resources, Vol. 29, No. 4, Special Issue

Magnani, E. and Zhu, R. (2015) Social mobility and inequality in urban China: understanding the role of intergenerational transmission of education, Applied Economics, 47:43, 4590-4606, DOI: 10.1080/00036846.2015.1031877.

Mok, K. H., & Wu, A. M. (2015). Higher education, changing labour market and social mobility in the era of massification in China. Journal of Education and Work. Retrieved July 28, 2015, from http://dx.doi.org/10.1080/13639080.2015.1049028.

Mok, K.H and Neubauer, D. (2015): Higher education governance in crisis: a critical reflection on the massification of higher education, graduate employment and social mobility, Journal of Education and Work, DOI: 10.1080/13639080.2015.1049023.

Neube, M. and Anyanwu, J.C. (2012). Inequality And Arab Spring Revolutions In North Africa And The Middle East. African Economic Briefs. AFDBDVolume 3 • Issue 7. July 2012. 24 pages.

OECD. (2014). Does parental education affect students' chances?. Education at a Glance 2014: Highlights, OECD Publishing, Paris. http://dx.doi.org/10.1787/eag_highlights-2014-8-en

OECD. (2011). Persistence of high unemployment: What Risks? What Policies?. Chapter 5 in OECD Economic Outlook, Volume 254, 2011/1 OECD 2011 – Preliminary Version, 33 pages. Retrieved from: http://www.oecd.org/eco/outlook/47656668.pdf

OECD (2010). A Family Affair: Intergenerational Social Mobility across OECD Countries.

OECD. (2007). Society at a Glance: OECD Social Indicators, 2006 edition, OECD, Paris

Pastore, F. and Roccisano, F. (2015). The Inheritance of Educational Inequality among Young People in Developing Countries. IZA Discussion Paper No. 9065, May 2015.

Ragui A., Krafft, C. Roemer, J. and Salehi-Isfahani, D. (2016). Inequality of Opportunity in Income and Consumption: The Middle East and North Africa Region in Comparative Perspective. Economic Research Forum, Working Paper 1003 May 2016. 34 pages.

Ragui, A. and Saleh M. (2013). Does Improved Local Supply of Schooling Enhance Intergenerational Mobility in Education? Evidence from Jordan. Economic Research Forum, Working paper 788, 29 pages

Salehi-Isfahan, D., Belhaj-Hassine, N. and Ragui, A. (2014). Equality of opportunity in educational achievement in the Middle East and North Africa. The Journal of Economic Inequality, December 2014, Volume 12, Issue 4, pp 489-515.

Sika, N. (2011). The Millennium Development Goals: Prospects for Gender Equality in the Arab World. Journal of International Women's Studies, Volume 12 Issue 3 Arab Women and Their Struggles for Socioeconomic and Political Rights Article 3. California Center for Population Research On-Line Working Paper Series.

Stromquist, N.P. (1989). Determinants of Educational Participation and Achievement of Women in the Third World: A Review of the Evidence and a Theoretical Critique. Review of Educational Research, Vol. 59, No. 2 (Summer, 1989), pp. 143-183, American Educational Research Association, Stable URL: http://www.jstor.org/stable/1170413

Terryn, B. (2003). Measuring Literacy in Developing Countries from an International Perspective. UNESCO Institute for Statistics C.P. 6128, Succursale Centre-Ville Montréal (Quebec) H3C 3J7, Canada b.terryn@unesco.org, 4 pages.

Tomes, N. (1981). The Family, Inheritance, and the Intergenerational Transmission of Inequality. Journal of Political Economy, Vol. 89, No. 5 (Oct., 1981), pp. 928-958. University of Chicago Press Stable URL: http://www.jstor.org/stable/1830814.

UNESCO. (2016). Concept note for a 2016 report on 'Education, sustainability and the post-2015 development agenda. Prepared by the EFA GMR team, UNESCO Headquarters, Paris, 2 December 2014.

United Nations. (2015). Millennium Development Goals Indicators 2015, Official UN site for the MDG indicators.

Vinod T., Yan W., and Xibo F. (2000) Measuring Education Inequality: GINI Coefficients of Education, World Bank Institute Retrieved from http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-2525

World Economic Forum. (2014). The Global Gender Gap Report 2014.