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Abstract

Using data from the Household Expenditure and Income Surveys (HIES), we examine the status of inequality of opportunity in education in Jordan at different points in time. Through our analysis, we track the changes in trends in inequality of opportunity of education and decompose inequality into the contributions of different circumstances using the Shapley decomposition. We find that inequality in education opportunities at the completed primary level for youth is still high. As for secondary completion rates, wide inequality gaps have persisted between 2008 and 2013, but then sharply fell in 2017. In addition, similar to other Arab countries, inequality of opportunities at the above secondary level has worsened over time. When investigating the main factors driving such inequalities, we find that family wealth is among the most important determinant for the opportunity of attending or completing an educational level over time, followed by the parents' level of education, more specifically the mother's.

Keywords: Educational Attainment; Inequality of Opportunity; Jordan.

JEL Classifications: O12, I21, C25.

1. Introduction

As important as the parental care and guidance in developing one's path, the educational system of a country plays a significant role in shaping the tracks of people and societies. It is considered among the most influential factors towards economic and social mobility. If provided with such opportunity, individuals could enhance their social statuses and improve their outcomes. The question here is whether one educational system offers such opportunity equally to all persons, regardless of the circumstances they were born into. After all, these conditions, such as gender, parental education, household wealth, and community features, are rigidly imposed on the person the moment they are born and ought not to be a basis of differentiation between individuals.

Such inequalities of opportunities may hinder growth and increase poverty, hence examining their recent trends and understanding their drivers are key for achieving inclusive growth. Meanwhile, people tend to reject differentiation and unequal treatment if it was based on features they do not control. The 2011 uprisings that spread all over the Arab region are the proof of what could happen if such differentiation and marginalization were fostered by a country's systems and institutions.

According to the 2019 Human Development Report, inequalities in human development are growing. This report refers to both inequality in opportunities and inequality in enhanced capabilities. Having a set of basic capabilities—those associated with the absence of extreme deprivations—is not enough (UNDP 2019).

Over the years, Jordan has succeeded in reducing inequality of outcomes in education, mainly reducing the gender gap. At the different educational levels, female enrollment is almost equal to males', if not higher. The gender gap in enrollment is even reversed for higher educational levels (Dandan, 2017). Yet, it is equally important to examine inequalities of opportunities in education since incidence of the latter is higher than inequalities of outcomes in Jordan (UN-ESCWA and ERF, 2019). The literature highlights the importance of decreasing inequalities of opportunities to achieve social and economic justice and avoid intergenerational poverty trap.

The aim of this research is to study the inequality of opportunities in education in Jordan, namely for children and youth. We use data from the Household Expenditure and Income Surveys (HIES) for the years 2008, 2010, 2013 and 2017. The analysis consists in investigating the trends in inequality of opportunity and in decomposing inequality into the contributions of different circumstances using the Shapley decomposition (Shorrocks, 2013). We examine a set of circumstances the individual is born into and cannot control but end up shaping their various outcomes and course of their life. Since not all circumstances are observable or measured, we focus on factors captured by the HIES, such as gender, parental educational level, household wealth, and area of residence. As these factors do not cover all the uncontrolled circumstances, the estimated inequality of opportunity here is a lower bound of the actual inequality of opportunity.

Since the outbreak of COVID-19 and the notable increase in the dependency on e-learning, digital devices and internet the status of inequality of opportunity in education has been particularly affected and may have worsened. Equal access to both basic and digital services has now become more than ever before- a necessary condition for education and knowledge, which requires further research beyond the scope of this paper.

In section 2, we review the literature on inequality and its different dimensions. Section 3 provides a background on Jordan's educational system. In section 4 and 5, we present the data and methodology respectively. Section 6 summarizes the empirical findings and section 7 concludes.

2. Literature Review

A rapidly growing literature has developed in recent years on the topic of inequality and its different dimensions and measures.

Drawing on the established framework proposed by Roemer in 1998, inequalities can be divided into ones that are due to individual efforts, and others that are due to circumstances. The type of inequality that occurs due to personal efforts is generally socially desirable and offers proper economic incentives. On the other hand, inequality due to circumstances beyond individual control, such as gender, place of birth, family resources, and background, is morally objectionable and ignites a feeling of social injustice. It is the latter type of inequality that has received much interest from different scholars as it relates to economic, social, and political consequences, and points to distributional disproportionality, whether in social status, wealth or education (Roemer, 1998).

To investigate the inequality of opportunity in higher education, Sewell (1971) conducts a longitudinal study of high school students in Wisconsin. He argued that the main factor shaping students' ability is their socioeconomic background reflected by their household income, their place of birth, in addition to their parents' educational attainment and occupation. Sequentially, one's labor market outcome and earnings will be affected by his ability and his background characteristics. This integrated model became known in the literature as the "Wisconsin Model of Status Attainment." This model's principles helped reshape the future research on education and social mobility, by determining how the socioeconomic status of students, or in other words their circumstances, could influence their educational attainment and their future outcomes (Sewell, 1971).

In a review of the literature since 1990, Breen and Jonsson (2005) concluded similar findings to Sewell (1971) on the effects of uncontrolled circumstances, namely parental socioeconomic characteristics, on an individual's education and social mobility.

Since then, numerous studies have been conducted on the matter but due to measurement comparability problems and data limitations, knowledge about the severity and magnitude of inequality in different countries and regions in terms of inequality of educational attainment is still very limited.

Particularly, the literature on the inequality of opportunity in the Middle East and North Africa (MENA) region is comparatively small but also increasing in recent years, benefitting from new data availability. Researchers have looked at inequality of opportunity (IOp) primarily in several outcomes including wealth, income, and consumption (Assaad *et al.*, 2012, 2016, 2018; Alvaredo, Assouad and Piketty, 2019).

For instance, Assaad *et al.* (2012) study the sources of inequality in child health in 4 MENA countries using several standard measures such as height for age and weight for height to capture health. Their findings suggest that poor circumstances in Egypt, place of residence in Jordan, household wealth and demographics in Morocco, and finally, parental education, wealth level, and place of residence for Turkey are the main factors in explaining inequalities in child health in those countries. They argue thus that higher levels of health outcome inequalities are linked to higher levels of IOp.

Another work by Assaad *et al.* (2016) estimates IOp in consumption and income for Jordan, Egypt, and Tunisia. The authors conclude that IOp in income for these countries is moderate compared to Eastern European nations levels and is comparatively low when observing IOp in health and education estimated by other studies in these countries. Also, through the decomposition of the effects of each available circumstantial variable linked to the level of IOp, they find that parental background contributes the most to inequality of opportunities in all three countries (Assaad *et al.*, 2016).

Further, Alvaredo, Assouad, and Piketty (2019) assess income inequalities across and within different Middle Eastern countries between 1990 and 2016 through merging numerous household surveys with administrative income tax data. Their results suggest that the MENA region is overall the most unequal in the world, with wealth levels being a key factor in this inequality both between and within countries of the region. This finding is distinctly of interest in the context of the Middle East when noting the recent Arab Spring uprisings, driven by a feeling of unfairness and lack of social justice. Studies on IOp hence could better signify and explain this notion of unjustness by capturing the uncontrollable circumstances that individuals face in the region (Alvaredo, Assouad and Piketty, 2019).

A growing literature on the IOp in MENA countries emerged and several cross-country studies that focus on educational achievement and attainment were conducted.

El-Kogali and Krafft (2015) examined the inequality of investment in early childhood development in MENA countries including education, health, and nutrition finding and argue that IOp in educational attainment in the region starts even before children enter into primary education, suggesting the existence of important IOp in early childhood development. While some countries such as Jordan, Egypt, and Tunisia have achieved universal primary enrollment, this is a rather recent achievement (El-Kogali and Krafft, 2015; Elbadawy, 2015).

IOp is also evident in numerous educational achievement studies, especially in research using the Trends in International Mathematics and Science Study (TIMSS). One study on 8 MENA countries using the test scores from TIMSS by Salehi-Isfahani, Hassine and Assaad (2014) concluded that, wherein Jordan and Tunisia have comparable IOp, Egypt suffers from particularly high IOp, even when compared to high rates of inequality like the ones documented in Latin American countries. By observing previous similar studies using TIMSS since 1999, the authors further argue that family background and socioeconomic characteristics are the most deterministic factors that contribute to educational inequality in the region (Salehi-Isfahani, Hassine and Assaad, 2014). Further research is needed to update the results of Salehi-Isfahani, Hassine and Assaad (2014) using the most updated TIMSS data in Jordan (2003, 2007, 2011, and 2015).

Peragine *et al.* (2015) assess opportunity equality in educational achievement in another subset of Arab countries that include Jordan, Qatar, Tunisia, and United Arab Emirates (UAE). They measure educational achievement using students' PISA test scores and capture circumstances using gender, parental background characteristics. The results suggest that amongst the studied countries, Qatar has the lowest IOp while the UAE is amongst the most unequal countries despite having the best overall performance in test scores.

Hashemi and Intini (2015) additionally survey TIMSS test scores from eleven MENA countries and investigate how the circumstances these students were born into shape their educational outcomes. Their findings conform to the results reached by Salehi-Isfahani, Hassine, and Assaad (2014) and Peragine *et al.* (2015), and affirm that IOp in most of the region's countries is significant and has been escalating over time in the studied countries. Additionally, family background characteristics are found to be the main driver of inequality in both attainment and test scores when assessing the effect of individual circumstances on determining higher education attainment in, Egypt, Jordan, and Tunisia using Shapley decomposition methods (Krafft and Alawode, 2018).

Krafft and Alawode (2018) argue that instead of having the governments offer public schooling that is free of fees, they should charge tuition and offer need-based scholarships. Public spending on education hence should become progressive, ensuring that students that are most in need of financial aid could receive it to complete their degree. This is particularly of importance in the case of higher education since it directly affects labor market outcomes and future earnings. Education also proved to reduce overall income inequality in the MENA region more than any other region (Salehi-Isfahani, Hassine and Assaad, 2014).

Moreover, a deep analysis by Assaad *et al.* (2018) determined that while the overall IOp actually didn't increase between 1988 and 2012 in the Arab states, it changed between the different social classes, with the middle class collapsing toward lower-class children, and the gap between the latter and the higher class decreasing. This shift in IOp distribution burdened the middle class, which constitute a large section of the Arabic population, and stirred a feeling of injustice and disappointment due to the change in social mobility dynamics.

Recent studies using other data sources and measurements confirm the previous findings. Assaad, Hendy, and Salehi-Isfahani (2019) investigate IOp in youth educational attainment in Syria, Tunisia, Yemen, Iraq, Egypt, Palestine, Iran, and Jordan using Household Income, Expenditure and Consumption Surveys (HIECS). They examine the effect of gender, parental education, household wealth, and region of residency on the youth's chances of attaining different educational levels in those countries.

For this purpose, they apply both a probit model and a censored ordered probit model, which are frequently used in the literature, to estimate the probabilities of students ever attending school and the probabilities of them reaching a certain educational level. They argue that the countries under study are characterized by a high degree of IOp in educational attainment, especially when it comes to reaching the secondary level. Gender stands out as one of the main circumstantial variables instigating IOp in most of the countries studied (Assaad, Hendy and Salehi-Isfahani, 2019).

Other scholars set out to explore in-depth educational IOp in some MENA region countries, to ensure clearer context-specific policies to apply in each country's case.

One of the earlier studies was made in Bahrain to investigate income and educational inequalities. (Abdelbaki, 2012) The main findings of the research suggest that in the Bahraini case, income inequality was associated with educational IOp between different classes of income, leading to a further widening of the income gap between future generations and hindering the possibility of socioeconomic mobility. While IOp in educational attainment during the period 1980–2006 in Bahrain had been declining, disparities in public spending in different governorates, as well as

differences in tuition fees and availability of private schools are still instigating IOPs in many regions (Abdelbaki, 2012).

Meanwhile in Egypt, Assaad (2013) shows that the likelihood of reaching higher is highly unequal when several circumstantial variables like gender, household wealth, and parental education are considered. For instance, the probability of a young man from a least advantaged household accessing a higher education institution does not exceed 9%, compared to a staggering 97% for a young man from a most advantaged family. And given that public spending on education is regressive, these IOP trends suggest that the government policies benefit those that least need help at the expense of the more disadvantaged students. Therefore, Egypt's policy of free public education ends up subsidizing the education of the most well-off and deepens the IOPs in educational achievement (Assaad, 2013; Krafft and Alawode, 2018).

As for Egyptian youth, Ersado and Gignoux (2017) examine how educational attainment varies by observing changes in attainment, TIMSS results, and national examination scores over time and between individuals born into different circumstances.

They find that age, gender, area of residence, and parental education are deterministic factors in IOP. In fact, youth who are females, individuals from rural areas with low-educated parents are less likely to enroll in school, compared to their male counterpart, individuals who live in urban areas, and have highly educated parents. Additionally, household wealth and parental background characteristics are both found to be key factors in shaping inequality in examination outcomes of Egyptian students (Ersado and Gignoux, 2017).

These findings were further confirmed by a subsequent study in 2015 using three waves of Egypt labor market panel survey data (ELMPS 1998, 2006, 2012), where wealth and parental education were found to affect education opportunities and outcomes in Egypt (Elbadawy, 2015).

More recent studies included the investigation of the effects and evolution of unequal opportunities on the distribution of wellbeing and basic education covering the period 2005 to 2010 in Tunisia. (Jellali, 2019) The author used parametric and non-parametric approaches to study the effects of IOP on the distribution of human development indicators apprehended by monetary well-being. In the following step, she applied the dissimilarity index D-index and Shapley decomposition on the accessibility to basic education at primary school age. Findings of the research suggest that both studied inequalities have increased between 2005 and 2010.

In particular and for the accessibility to basic education, the decomposition of inequality results estimated a jump in inequality from six in 2005 to eight percent in 2010 with gender and place of

residence appearing as the major contributor to this inequality. Policymakers in Tunisia were hence recommended to abolish the free public primary schools system and replace it with need-based grants for girls in particular, and disadvantaged children in priority areas (Jellali, 2019).

To shed additional light on the structure and dynamics of overall IOp in Tunisia during the same period, Jemmali (2019) assesses the relative contribution of circumstances and the decomposition of factors driving IOp across time and space using the Human Opportunity Index data.

The paper's results reveal moderate and decreasing levels of inequality at the national level with notable improvements in coverage and distributional considerations across the country. However, increasing inequalities were still observed between some regions, with land-locked areas being the most disadvantaged and lagging behind the rest of the country. The place of residence, in addition to the number of siblings, parents' education, and household wealth were found to be the key circumstances producing such disparities. To break out of poverty and ensure the possibility to step up the social ladder, children with less advantaged circumstances are thus in need of more inclusive and pro-poor policy actions in Tunisia (Jemmali, 2019).

Equally, and to examine the potential differences between regional IOp in education across Algeria, Touitou, Yacine, and Ahmed (2020) adopt spatial analysis to 48 Algerian provinces in the period of 2008 to 2018 using General Census of Population and Housing (GCPH) data. Their findings highlight regional disparities in education and emphasize the centrality of educational improvements in Algeria with periphery provinces remaining at a disadvantage comparatively.

Similar trends were noted in a recent study for Jordan using the Household Income and Expenditure Survey (HIES) of 2013-2014 conducted by Al Sharafat (2019). The aim of this study is to explore the spatial overall inequality in Jordan; with a special focus on comparing Jordan's rural and urban areas. Significant inequality between rural and urban areas in Jordan was revealed. Even further, the findings of the study argue that a much more significant income inequality among administrative areas exists, with people in Amman being the richest, while those in Tafila, Maan, and Mafraq were the poorest. Consequently, one may argue that there is a concentration of economic sources in the capital city, while other regions are being neglected by policymakers (Al Sharafat, 2019).

Rizk and Hawash (2020) in a recent study extrapolate on all previous findings by exploring the potential causes of education inequality among youth between the urban and rural population and across different income quartiles in four MENA region countries including Egypt, Iraq, Jordan,

and Palestine using the LISSY-ERF³ harmonized dataset between 1999 and 2015.

In the studied countries, a positive association between income levels and the average number of years of education was detected. This shows that education in all 4 countries is pro-rich, despite noting disparities in the magnitude of the gap in educational attainment between the lowest and highest income groups. In the Jordanian case, a decline in the years of education for the lower-income quartile was detected in the last decade, with urban populations achieving an overall higher number of educational years compared to rural populations. Nonetheless, the difference between both urban and rural populations is not substantial ranging from only 1 to 2 years when compared to other cases such as Egypt (Rizk and Hawash, 2020).

To reduce education inequality within the society, two factors were highlighted: public spending on education and household total income. A higher public spending and a higher number of earners within the household were found to be generally associated with lower education inequality in the region (Rizk and Hawash, 2020).

3. The Educational System in Jordan

Education is universally recognized as one of the basic human rights and compulsory and free basic education is a right for children under the Convention on the Rights of the Child (CRC) signed by the majority of countries worldwide, including Jordan. The Jordanian education system underwent several changes since the country announced its independence in 1952 and outlined its Education Reform Law (ERL) in the same year (Abbas, 2012). With the ERL, Jordanian students' right to universal free and compulsory basic education for the first seven years of school was established.

The second major legal reform took place in 1964 by expanding access to public schools through decentralization and extensive monitoring of schools, resulting in a jump of an additional 500,000 enrolled students, half of them girls (Benson, 2020). In the mid-1980s, Jordan started reviewing its educational system to further develop it. One of the major outcomes of this review was the formation of the Permanent Education Law 3 (1994) which is still under effect to this day. This law provided the basis for identifying the principles and classifications of education in the country as well as the extension of free compulsory education to ten years (UNESCO – IBE, 2006).

A second and third phase of the Educational Development Plan took place between 1996 and 2005. Those phases aimed to further deepen the impact of the previously established reforms through the improvement of facilities and learning resources, enhancing the quality of education, the inclusion

³ The Economic Research Forum (ERF) and the Luxembourg Income Study Database (LIS) have jointly harmonized one of the largest available micro-databases of Household Income and Expenditure Surveys (HHIES) (LISSY-ERF).

of special needs students, and coordination between the public and private educational institutions to achieve educational development that corresponds to the needs of the new millennia (UNESCO – IBE, 2006). Then in July 2003, the government of Jordan launched the Education Reform for the Knowledge Economy, also known as the ERfKE I, to motivate the integration of information technology in the Jordanian education system (Akour and Shannak, 2012). Following its completion in 2009, a second phase (ERfKE II) was introduced to provide pre-tertiary education students with improved levels of skills to facilitate their involvement in the knowledge economy by 2016 (Akour and Shannak, 2012).

In 2019, the structure of the Jordanian education system included two years of pre-primary, 10 years of basic school, two years of secondary school, and higher education (UNICEF, 2014). Early Childhood Care and Education (ECCE) is currently optional and consists of nursery services and kindergarten (1 and 2) with the majority of providers being private institutions regulated by both the Ministry of Social Development (MOSD) and the Ministry of Education. Yet, The Ministry of Education and UNICEF are embarking on an ambitious eight-year plan (2017-2025) to “universalize access” to pre-primary education in the country⁴. Students then start compulsory free basic education at the age of six till 16 as mandated by Article 20 of the Jordanian constitution. Basic education in Jordan therefore is Grade 1 to 10 and is equivalent to primary and lower secondary education by international standards (UNICEF, 2014).

Secondary education then follows for two years as Grade 11 and 12, with two potential streams to follow: academic or vocational. Most secondary education is however in the academic track, with few vocational tracks provided by the Vocational Training Corporation in place as an alternative (UNESCO- UNEVOC, 2020) as well as an increasing number of private sector providers. In general, all secondary education is free but is not compulsory in Jordan, and by the end of the secondary track, examination scores, known as Tawjihi, decides students’ ability to enroll in higher education. Higher education is then provided under the supervision of the Ministry of Higher Education and Scientific Research in two categories: either a two-year post-secondary community college program or a four-year university program. Unlike previous educational levels, higher education in Jordan is not free and the tuition fees depend on case basis (nationality, track, or college for instance) (UNICEF, 2014).

The education sector in Jordan has hence witnessed remarkable development during the past two decades, with the government giving special importance to the sector and allocating 13% of the government budget to the Ministry of Education since 2015 (UNESCO, 2019). For Jordanians in 2019, the country has successfully achieved universal basic education for both boys and girls, and the rates of expected years of schooling are high and almost equitable (13.4 years for girls vs. 12.9 years for boys). Also, the female to male ratio in primary education was 96.4 and 108.7 in the

⁴ <https://www.jordantimes.com/opinion/editorial/access-pre-primary-education>.

secondary stage. It can be estimated that, in this year, the number of schools in Jordan amounted to 7434, with 136,062 teachers and a total of 2.1 million students in the system. This is considerable progress given that in 2004, Jordan had only 5526 schools and around 77 thousand teachers supplying educational services to 1.5 million students (Ministry of Education, 2004).

For the total student population in Jordan, approximately 26.1% of students are enrolled in private schools in 2019 while 6.7% go to the United Nations Relief and Works Agency (UNRWA) schools and other non-governmental institutions. The public sector remains the main provider of education in Jordan with a total of 63.7% of all students (Ministry of Education, 2019). Despite the evident dominance of the public sector, and by observing older statistics, there is clear rising importance of other sectors in the Jordanian educational scene compared to the early 2000s where 70.5% went to public school and only 19.2% enrolled in private ones. Concerning the quality of education in the country, in 2019, the average number of students per class was 25, with a ratio of 15.5 students to one teacher. In the same year, one-fifth of the total population was enrolled in both basic and secondary stages of education (Jordan, 2020).

Finally, the number of higher education institutions has increased to meet the rising demand for certain types and levels of skills to transition into the Jordanian labor market or abroad (Assaad, Krafft and Salehi-Isfahani, 2018). According to the Ministry of Higher Education in 2019, there is a total of 28 universities in Jordan, 10 of which are public and 18 are private, where almost 300,000 students are enrolled. The majority of higher education students are enrolled in bachelor programs as per the last census in 2016 (around 86%), and slightly more than 50% of bachelor students are females, remarkable progress considering that, in 2004, only 35% of university students were women (Ministry of Education, 2004).

4. Data

We use individual-level data from four rounds of the Jordan Household Expenditure and Income Surveys (HIES) covering (years 2008, 2010, 2013 and 2017)⁵. HIES surveys track the living standards in Jordan. It is the main data source to benchmark several indicators for household welfare as it is a “budget-survey” that includes information about assets, income as well as individual and household characteristics (gender, age, education attainment, marital and employment status).

Due to several challenges faced during the previous round of 2013-14, which affected the quality of the data, the 2017-18 survey was completely redesigned to ensure better representation. However, this most recent round still suffers from various issues. First, the data files made

⁵ HIES surveys for the years 2008, 2010 and 2013 were obtained from the data portal of the Economic Research Forum (ERF): www.erfdataportal.com

available for the analysis⁶ did not contain any information about the response rates or sampling weights, preventing researchers from correcting some sampling imperfections and from limiting biased deductions. The unavailability of sampling weights also prevents us from generalizing the conclusions of our research to the Jordanian population.

Another limitation of the 2017 HIES data is that information about the child's highest level of education is only available for those who are not enrolled in school anymore. In previous waves of the HIES, we used to have information for both children who left school and those who are still enrolled.

Moreover, the 2017 HIES does not include any variables that can be used as proxies for the quality of education to assess the convergence for reducing gaps in enhanced and basic capabilities.

Table 1 gives an overview of the total sample sizes for the full sample as well as the actual working sample sizes by gender and in the four rounds of HIES. For 2008, the total sample size is 15,442 among which 50.38 % are boys and 49.62% are girls. The representation of boys and girls in the full samples remains relatively the same over the years. For 2017, the first row represents full sample observations as for the second row of 2017; figures are much smaller as it accounts for the sample observations where the educational attainment variable is not missing.

As for the working sample size, the representation of girls relative to boys is smaller compared to the full sample size, which highlights the general favoritism of boys in the labor market. In 2008, 45.61% of the sampled working individuals are girls and 54.38% are boys, while in 2010, 46.3% are girls against 53.7% boys. In 2013, 46.02% are girls against 53.98% boys. Finally, in 2017, 45.94% are working girls against 54.06% boys.

Table 1: Samples Sizes by Year of Survey, 2008 to 2017

	Full Sample Size			Working Sample Size		
	All	Boys	Girls	All	Boys	Girls
2008	15,442	7779	7663	6,706	3647	3059
2010	15,472	7712	7760	6,477	3481	2996
2013	25,845	12991	12854	10,758	5807	4951
2017	47,473	23,899	23,574	18,630	10072	8558
<i>2017(actual working sample)</i>	<i>27,801</i>	<i>13,985</i>	<i>13,816</i>	<i>4984</i>	<i>3225</i>	<i>8558</i>

Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

Table 2 represents summary statistics of our variables of interest for each survey round (2008-2017). The variables studied are important to examine potential determinants of IOp in education.

⁶ The researchers received 50% of the HEIS data from the Department of Statistics in Jordan

By focusing on the father's education, we can see that the percentage of fathers with less than primary education has slightly decreased from 12.07% in 2008 to 10.01% in 2017. As for the percentage of fathers with primary or incomplete secondary, it has increased by around 14 percentage points over the 9-years period under study, whereas for the secondary level, the percentage of fathers has remained relatively stagnant. Finally, the proportion of fathers with above secondary education has decreased overtime.

Regarding the mother's education, the percentage of mothers with less than primary education was significantly higher (20.26%) than the fathers' (12.07%) in 2008. Yet, mothers' percentage has decreased overtime. The gender gap is highlighted in the primary or incomplete secondary education category as the percentage of mothers in question was near the fathers', both increased from 2008 to 2017 but not in the same magnitude.

The wealth variable is represented by quintiles (five evenly divided groups in terms of wealth). The percentage of individuals belonging to the 1st wealth quintile has decreased overtime. As for the percentage of individuals in the second and third quintiles, they have increased. Finally, the 4th and 5th wealth quintiles have relatively remained stagnant through the 9 years.

Finally, the percentage of Jordanians living in rural areas has decreased in favor of urban proportions.

Table 2: Summary Statistics by Year of Survey, 2008 to 2017 (Percentages)

		2008	2010	2013	2017
Gender	Boys	55.34	52.96	54.26	54.06
	Girls	44.66	47.04	45.74	45.94
Father's Education	Less than Primary	12.07	10.66	8.05	10.01
	Primary or Incomplete Secondary	39.34	40.74	41.04	53.51
	Secondary	12.52	13.55	12.57	13.88
	Above Secondary	36.07	35.05	38.34	22.61
Mother's Education	Less than Primary	20.26	17.12	11.57	13.63
	Primary or Incomplete Secondary	40.86	41.68	39.41	45.91
	Secondary	13.65	14.68	15.58	15.61
	Above Secondary	25.23	26.52	33.45	24.84
Wealth	1st wealth quintile	23.14	17.54	15.86	18.13
	2nd wealth quintile	16.75	18.79	12.39	19.52
	3rd wealth quintile	16.73	20.67	18.19	19.73
	4th wealth quintile	21.47	22.28	22.13	20.53
	5th wealth quintile	21.9	20.72	31.43	22.09

Area	Rural	19.69	17.57	18.65	16.18
	Urban	80.31	82.43	81.35	83.82

Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

5. Methodology

In this study, we update the analysis undertaken in the UN-ESCWA 2019 report⁷ using the most recent microdata from 2017 data. We adopt an integrated multidimensional approach in order to use adequate measuring methods of the multiple factors of IOp in education in Jordan overtime.

As discussed before, the IOp means the inequalities caused by external “circumstances” beyond the control of individuals. To measure this type of inequality, we first use the dissimilarity index (D-index) by different educational levels for individuals aged 6-25 over different survey rounds for the whole sample and by gender. The D-index calculates how boys and girls differ in terms of accessing a certain opportunity. Here, we present different opportunities (ever-attending/enrollment, completed primary, uncompleted secondary, completed secondary, and above secondary).

Beyond the dissimilarity index, we also use the Shapely decomposition method to present the marginal contribution of possible drivers of inequality (for instance; gender, father’s education, mother’s education, geographical area, and wealth) of accessing/attaining different levels of education for individuals aged 6-25 over the different survey rounds for the whole sample and by gender.

6. Empirical Findings

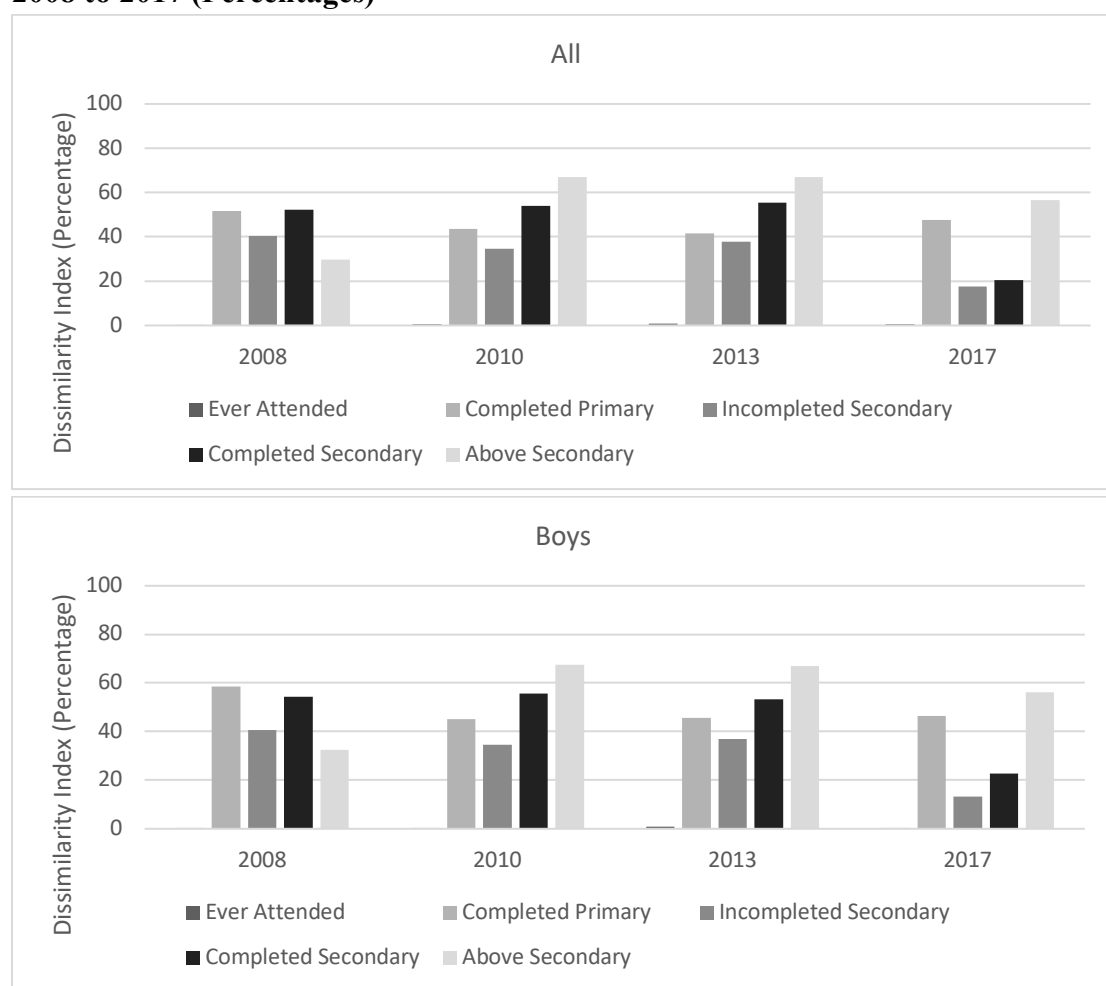
As shown in figure 1, IOp for the ever-attended school category is almost equal to zero over time in Jordan. In contrast, such a progress is not necessarily followed by high primary completion rates as inequality in education opportunities at the completed primary level for the youth is still high exceeding 40%, which goes in line with the main findings of UN-ESCWA (2019) (despite decreasing through the first three rounds (2008, 2010 and 2013) only to slightly rise in 2017). Low completion rates could be due to low or delayed entry, high repetition rates or drop-outs, or a mix of these. Examining the incomplete secondary level, the inequality of opportunities has decreased relative to primary schooling overtime. As for the secondary completion rates, wide persistent gaps were conspicuous during the first 3 rounds only to sharply fall in 2017, marking a great progress. Finally, inequality of opportunities at the above secondary level has worsened with D-index surpassing 60% in 2013 (but merely decreased in 2017), indicating that the circumstances that are above the youth control (gender, their parents’ level of education, their family wealth, and area among others) have a more important impact in determining the above secondary enrollment rates. This finding is not Jordan-specific. It is the same in the Arab region as high education completion

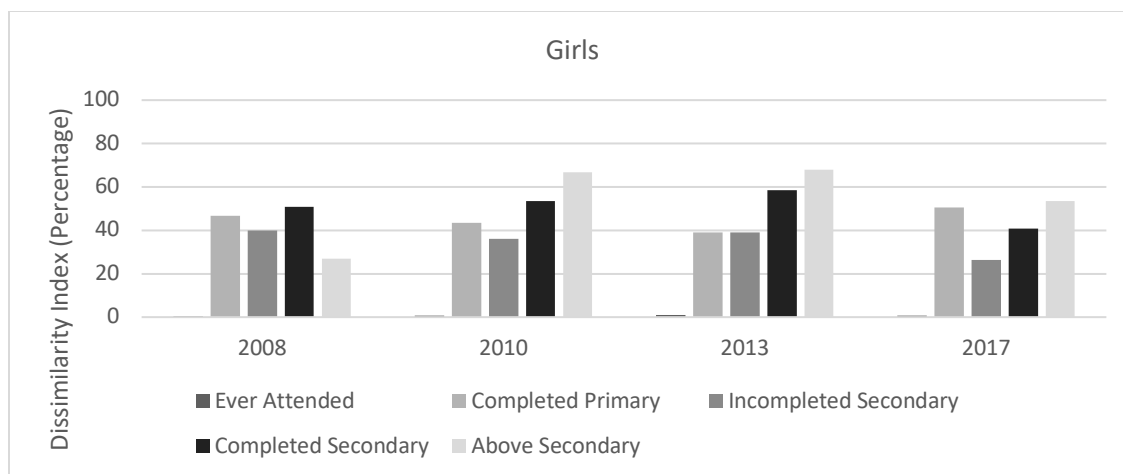
⁷ Rethinking inequality in Arab countries.

rates remained stagnant or decreased highlighting the low progress in reducing inequality of opportunity at higher education relative to the primary level (UN-ESCWA and ERF, 2019).

The gender gap is fairly low in the enrollment rates and incomplete primary level. Boys tend to have lower primary completion rates than girls in Jordan. This difference between the enrollment rate and completion could be a sign of dropouts for boys as they might have to go to work and earn money to provide for their families. Dissimilarity index for the completed secondary level was fairly similar for girls and boys across 2008 and 2010, only to have a wider gender gap in favor of boys in 2013 and 2017 (despite the latest overall reduction of inequality of opportunity).

Figure 1: Dissimilarity Index (D-index) by Educational Level, Ages 6 to 25 Year-Old, Years 2008 to 2017 (Percentages)

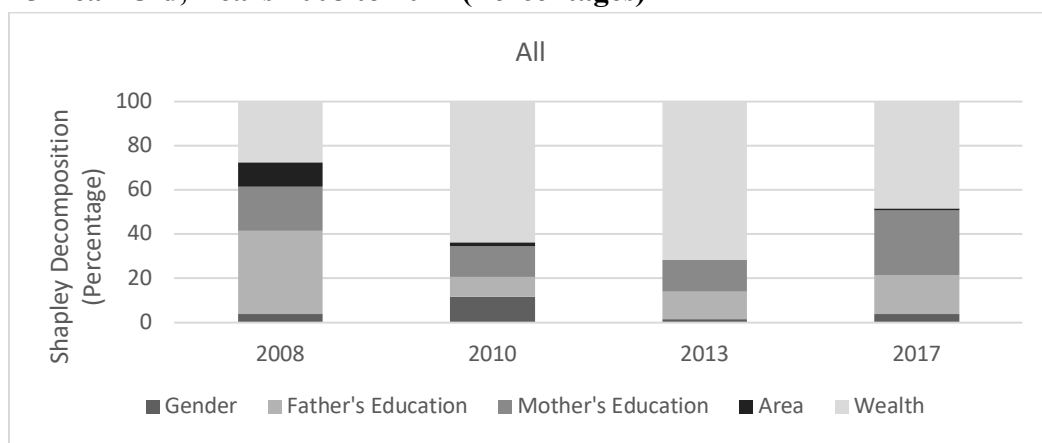


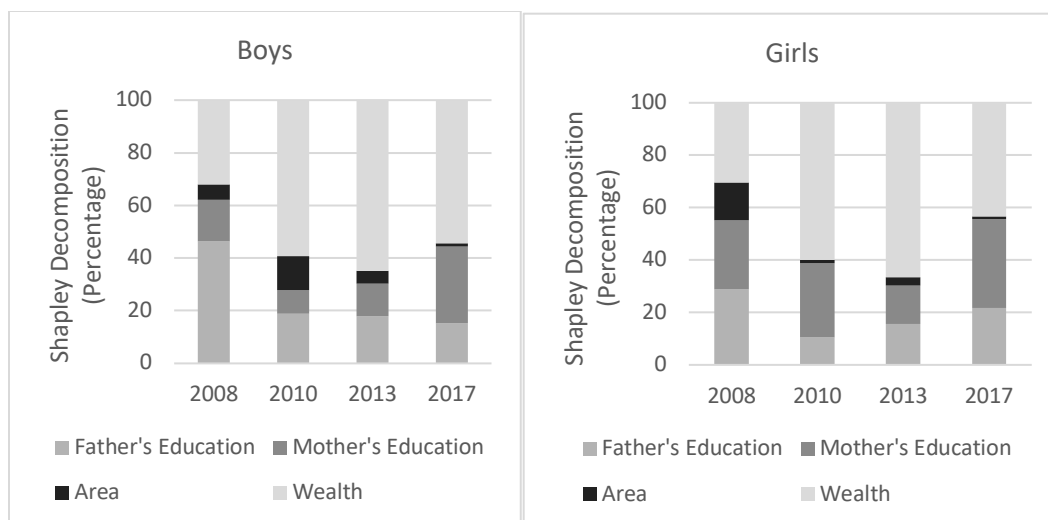


Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

The contradiction between low IOp in enrollment and the rising high IOp for completing the different higher levels of education justifies the high dropouts in the MENA region in general (UN-ESCWA, 2019). This finding has pushed our analysis a step further to conduct the Shapley decomposition exercise (Figure 2). It further shows us that family wealth is the dominant determinant for the opportunity of ever-attending schools over the different survey years (except for 2008). The geographical area has relatively no impact on school attendance from 2010 to 2017. An educated mother has an important role in her children's school attendance whereas the father's education had the major impact in 2008 but decreased overtime in favor of family wealth. Finally, gender has a fairly moderate impact on IOp in ever-attending schools, implying that girls are largely on a similar level as boys. Further disaggregation of the sample by gender shows similar findings except for a more important role of educated mothers in conveying girls' school attendance overtime.

Figure 2: Shapley Decomposition for Ever-Attending School by Circumstances, Ages 6 to 25 Year-Old, Years 2008 to 2017 (Percentages)



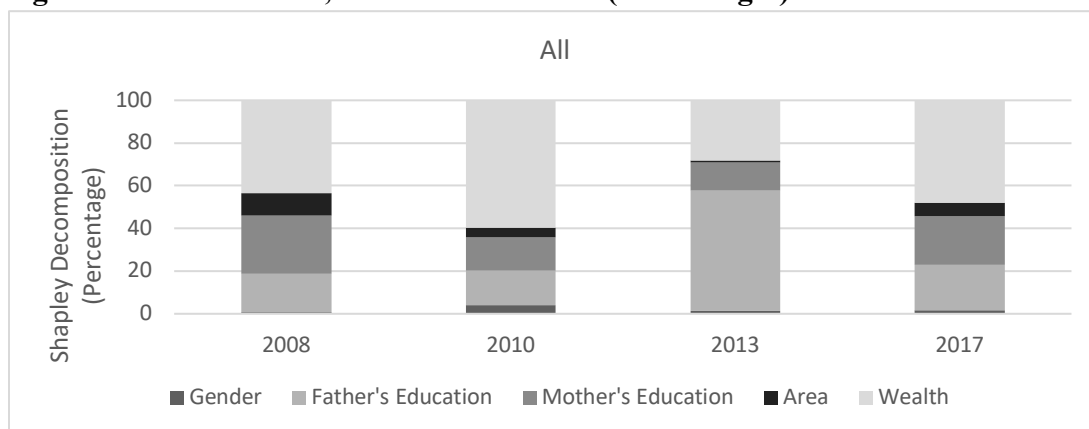


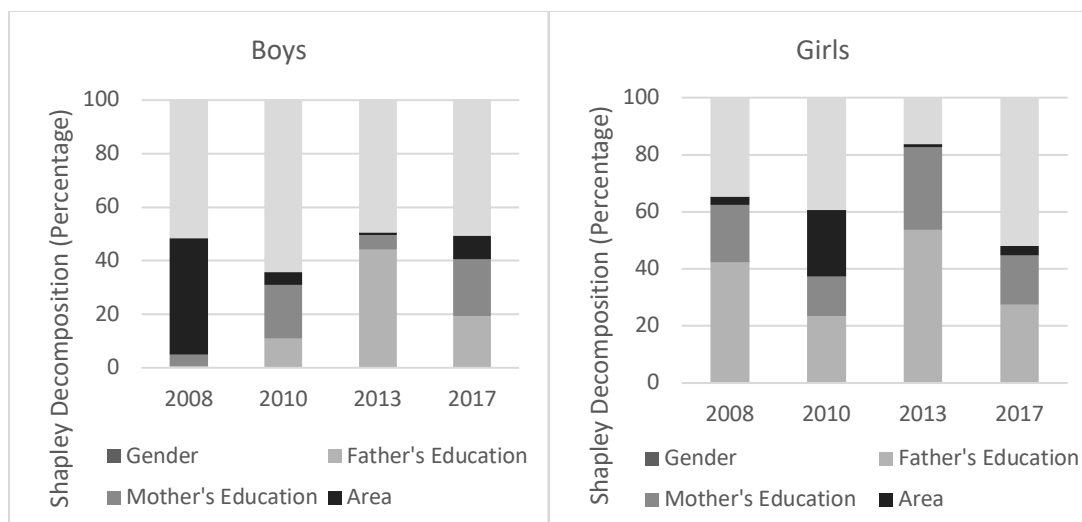
Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

Figure 3 shows the Shapely decomposition for completing primary education, wealth is still among the most important determinants overtime. There is almost no gender effect on this opportunity. Finally, the parents' level of education combined constitutes a fairly important determinant overtime.

For the boys' sample, wealth continues playing the most important contribution to the decision. In 2008, the geographical area had a relatively similar contribution as the family's wealth, followed by the mother's education. Examining the girls' sample, we find that parent's level of education tends to play even a more important role on their girls' primary completion than on their boys'. In other words, the more parents are educated, the more girls complete their primary education, and dropouts as well as sociocultural factors like child marriage are not an option.

Figure 3: Shapley Decomposition for Completing Primary Education by Circumstances, Ages 6 to 25 Years-Old, Years 2008 to 2017 (Percentages)

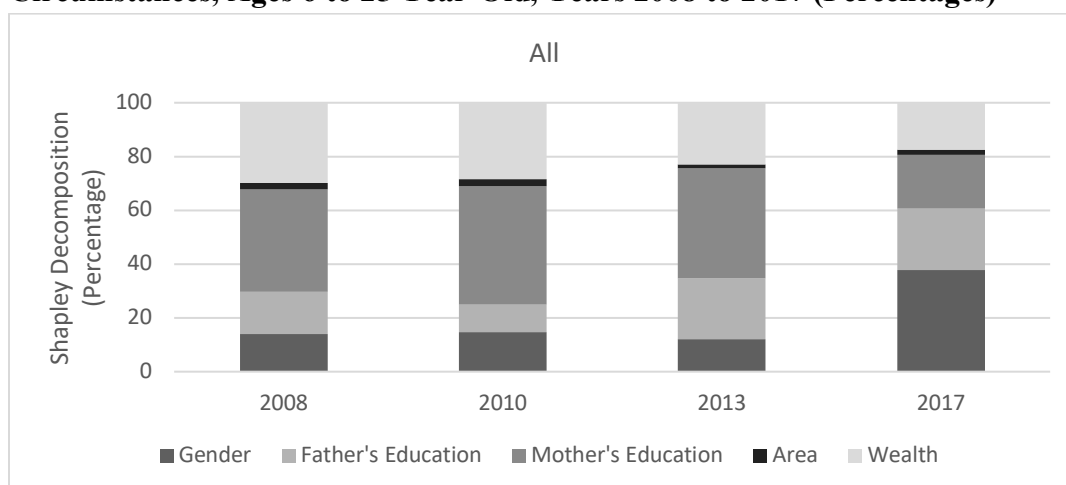


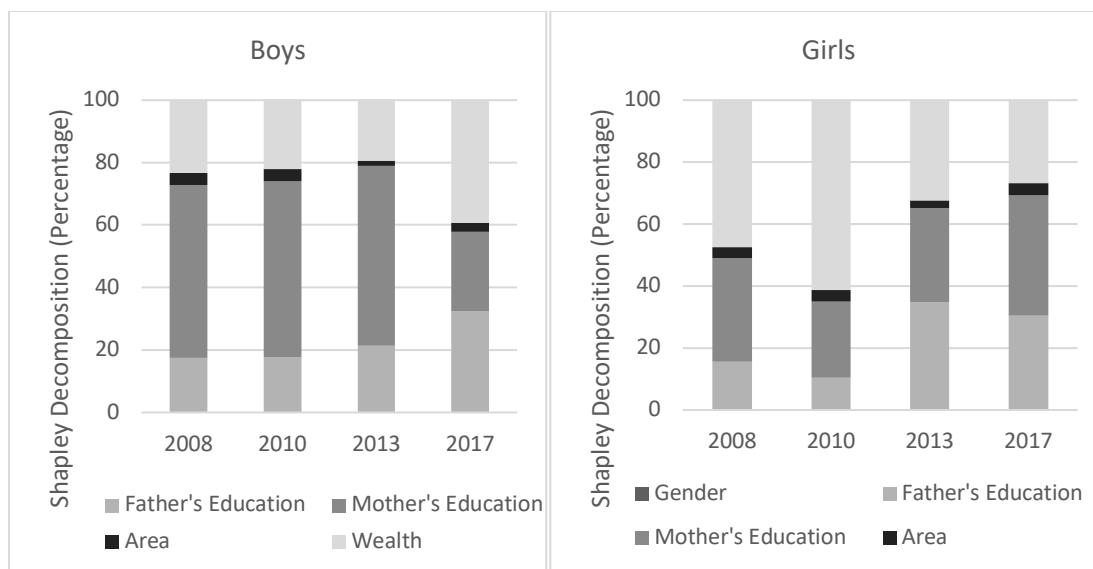


Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

As for the most important factors that are beyond the youth's control on incompleteness of secondary education, wealth and mother's education continue to be the primary factors affecting the academic progression through the years, followed by gender. For the males, the most important determinant is their mother's education that contributed with over 40%. While for females, wealth is the primary contributor to the academic progression followed by the mother's education and afterwards the father's education (Figure 4).

Figure 4: Shapley Decomposition for Incompletion of Secondary Education by Circumstances, Ages 6 to 25 Year-Old, Years 2008 to 2017 (Percentages)

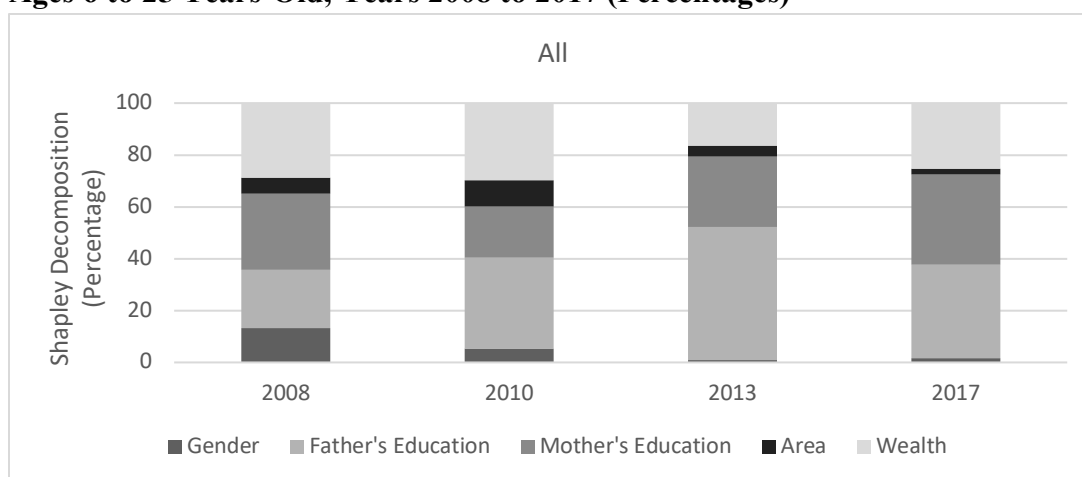


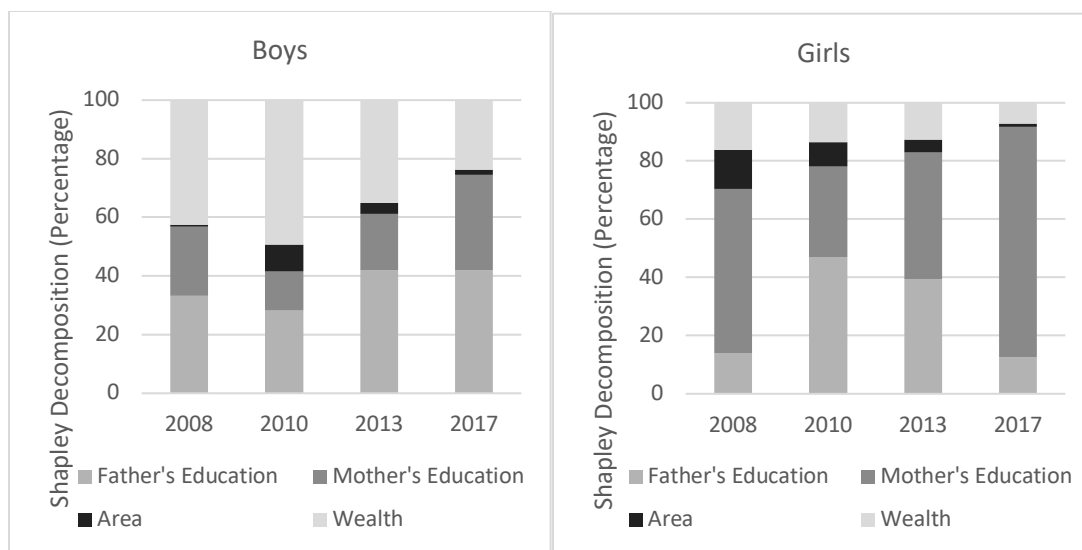


Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

Figure 5 presents the factors affecting the opportunity of completing secondary education. Mother's education and wealth continued to be the primary contributor for 2008 and 2010 but the parents' level of education combined became the main determinants of secondary completion starting 2013 and through 2017. Similar trends are found for the males' sample. As for the females' sample, the mother's education continues to be the main contributor for their girls' secondary education progression, followed by the father's education in 2010 and 2013 rounds, only to re-decline in 2017.

Figure 5: Shapley Decomposition for Completing Secondary Education by Circumstances, Ages 6 to 25 Years-Old, Years 2008 to 2017 (Percentages)

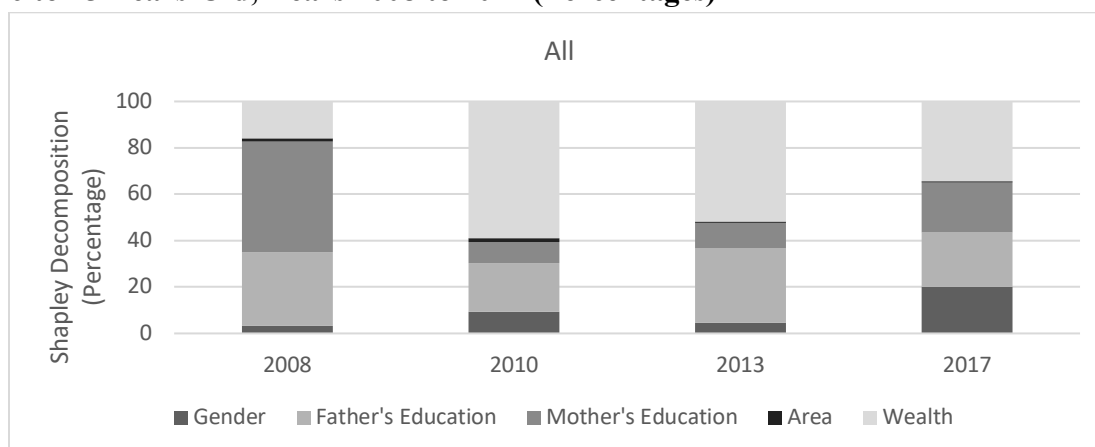


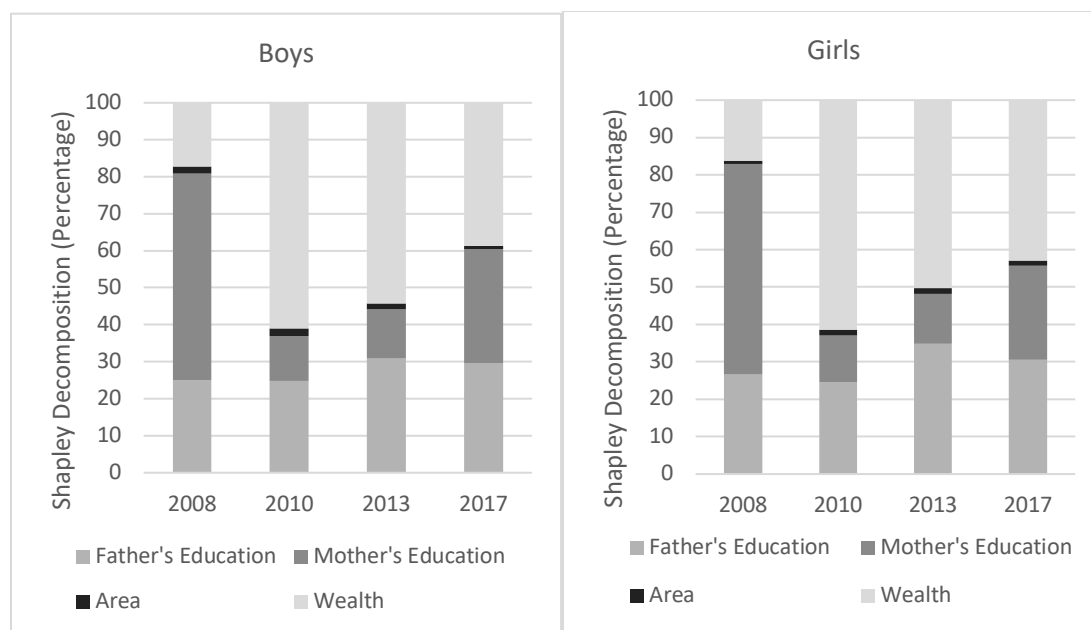


Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

Finally, figure 6 shows the relative contribution of the same factors on inequality of education opportunity at the above secondary level. We can see that an educated mother played a more significant role in above secondary education in 2008. This role was then taken by family's wealth from 2010 and beyond. The contribution of the father's education was fairly moderate over the years, while the contribution of gender to inequality of education opportunity at the above secondary level was fairly moderate from 2008 to 2013 and slightly increased in 2017. Disaggregation of the sample by gender shows similar findings.

Figure 6: Shapley Decomposition For Above Secondary Education by Circumstances, Ages 6 to 25 Years-Old, Years 2008 to 2017 (Percentages)





Source: Constructed by the authors using data from the Jordan Household Income and Expenditure Survey for the years 2008, 2010, 2013 and 2017.

7. Conclusion

Beyond examining inequalities of outcomes, IOps, capturing uncontrollable circumstance, guide strategies toward inclusive growth and social and economic justice, and avoid intergenerational poverty trap. Using data from the Household Expenditure and Income Surveys (HIES), we examine inequality of opportunity in education in Jordan at different points in time.

Looking at dissimilarity indices (D-index), we find that IOps for the ever-attended school category is almost equal to zero over time. In contrast, inequality in education opportunities at the completed primary level for the youth is still high. For those with an uncompleted secondary level, IOp has decreased relative to primary schooling overtime. As for the secondary completion rates, wide inequality gaps have persisted between 2008 and 2013, but then sharply fell in 2017. However, similar to other Arab countries, IOps at the above secondary level has worsened over time, specifically between 2008 and 2013, and merely decreased in 2017.

We further our analysis by conducting the Shapely decomposition exercise to investigate the main factors driving such inequalities. We find that family wealth is among the most important determinants for the opportunity of attending or completing an educational level over time, followed by the parents' level of education, more specifically the mother's.

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