

# Impact of Gender Inequality on Economic Growth in the Arab Region

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## Abstract

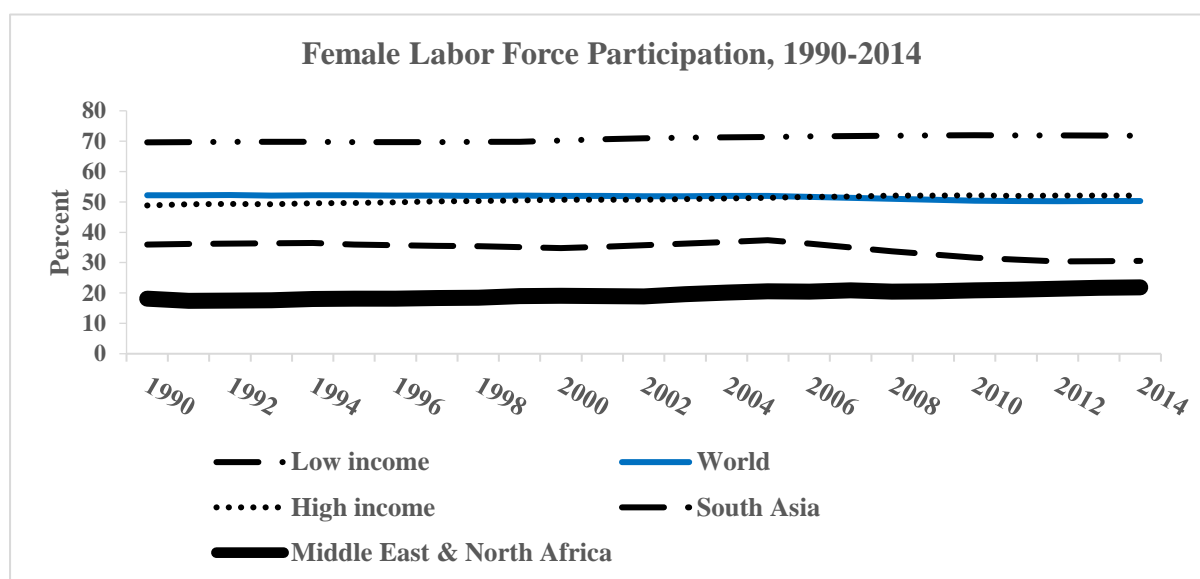
This study examines empirically the influence of gender inequality on the economic growth across Arab region. The data sample includes 19 countries for the period from 1990 to 2014. The model is estimated using Pooled OLS and Fixed Effect techniques. Interestingly, findings show that there is no evidence of both gender inequality in education and gender inequality in labor force to hinder economic growth across Arab region. In fact, the findings of this study show that the main factors driving the economic growth across the Arab region are capital accumulation as well as population growth.

**Keywords:** Gender Inequality, Labor Force, Education, Economic Growth

**JEL Classification Code:** I24, J71, O40

## 1. Introduction

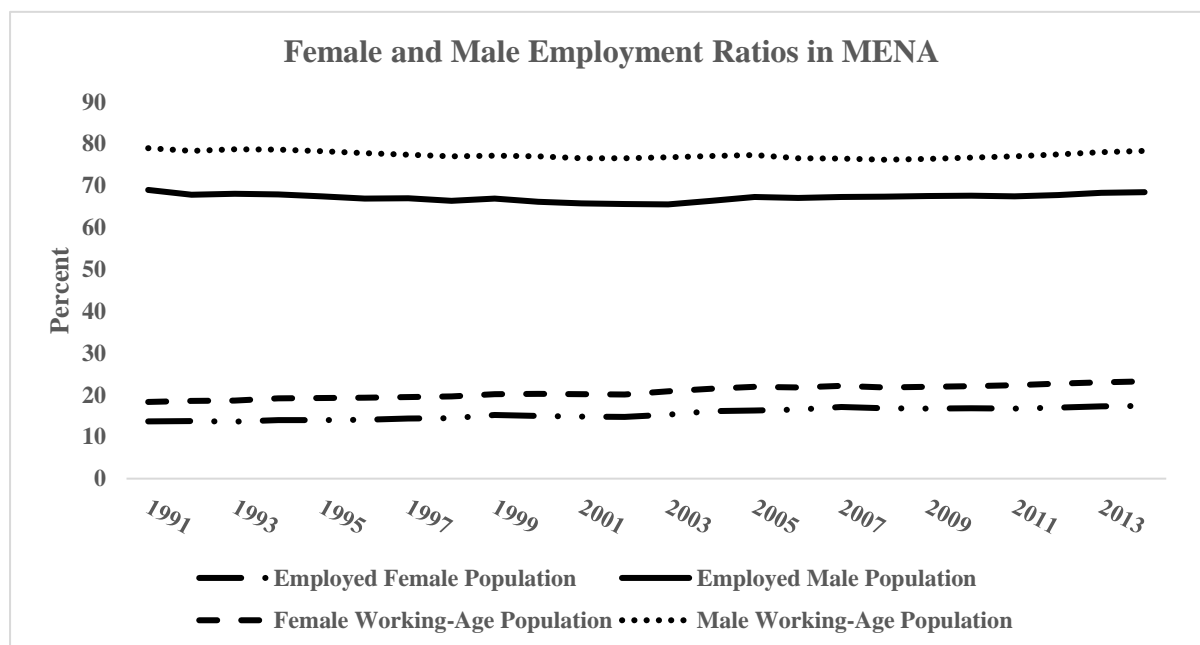
Gender inequality has become a vital issue in the Arab region. Although gender inequality issues are visible on different social, political, and anthropological levels; its economic impact on the growth and development of Arab economies is important to be investigated. Figure 1 in Appendix A shows the status of some of the Arab countries in terms of female labor force participation for the period from 1990-2014. It is clear that MENA is at a low constant rate of about 20% compared to the rest of the regions around the world.



Source: The World Bank – World Development Indicators

**Figure 1.** Female Labor Force Participation, 1990-2014

Moreover, the potential of the increasing female population could have a great economic contribution if opportunities were equally available to both genders. Figure 2 of Appendix A displays this phenomenon. The gap between the female working-age population and the employed female population is very distinct and much larger than what the male statistics show. According to the World Bank Development Report on MENA, the gap between the female working population and employed female population seems to be growing even larger reaching about 140 million unemployed females by the year 2100. This is a substantial number of potential human capital that should be invested in the growth of the Arab economies. Through the empowerment of women and increasing the female labor force participation, such gaps could be dampened for the advantage of economic growth and development.



Source: The World Bank – World Development Indicators

**Figure 2.** Female and Male Employment Ratios in MENA

A study by Lofstrom (2009) on gender inequality, economic growth, and employment states a simple yet influential notion that gender inequality in the work opportunities leads to fair distribution of work and therefore higher productivity. However, traditional attitudes and cultural norms drive such differences between men and women, causing women to deviate from job opportunities due to the duties of society. This idea is valid to a great extent in the Arab countries. Most differences and inequalities between genders are a result of cultural beliefs and religious norms that tend to cause the irrational utilization of a country’s human capital.

Several studies have been written with regard to the topic of interest in this paper. Most have used time-series data on a specific country while others use cross-sectional data to examine the effect of gender inequality across several countries. This study, however, focuses on the Arab region where many of the countries under investigation are high-income countries especially the Gulf Cooperation Council (GCC) and yet endure large gender gaps in social, economic, and even health-related areas. The main purpose is to investigate whether or not improvements in gender equality will cause economic growth and development in this region.

The findings of the paper show that gender inequality has an insignificant effect on the growth of Arab economies. It actually proves that the main force driving these economies is the non-gender inequality related. This gives capital accumulation and population growth most of the credit of annual GDP growth in this region and any attempts in closing these substantial gender gaps will not have a direct effect on economic growth.

This paper is organized in the following manner. Section II begins by giving a brief explanation of previous relevant literatures written about the topic under investigation. Section III gives an overview of the gender inequality in education and the labor force across the Arab countries. The methodology and model specification used in this study is then explained in Section IV, followed by data description in Section V. Section VI provides the empirical results with explanations and analysis. The conclusion and recommended future studies are provided in Section VII.

## 2. Literature Review

A number of studies examine the effect of gender inequality on economic growth. Although the studies investigate different countries with different economic structures, the results are mostly skewed to having a negative correlation between gender inequality and economic growth.

A study by Ali (2015) investigates the relationship between gender inequality and economic growth in the case of Pakistan by using time series data from 1980-2009. The main purpose of his study is to prove women's important role in the development of the country. He specifically uses the difference in labor participation rates and education between males and females to do his research. Using a multiple regression model with Labor Force Participation Rate of Females (LFPF), Labor Force Participation Rate of Males (LFPM), Gender Parity Index (GPI), and Openness of Trade (OP) as the independent variables affecting the dependent variable GDP, Ali (2015) concludes that there is a positive relationship between gender equality and economic growth. Klasen and Lamana (2009) reach the same conclusion regarding gender inequality in education and the labor force using cross-country and panel data for the period from 1960-2000. The results are clear in the sense that gender inequality reduces economic growth in the countries of study. They concluded with the finding that gender gaps are the reason behind the growth differences across regions.

Other studies have been made to yield similar results, including Yumusak et.al (2013) and their paper to see the influences of gender inequality in education on the Turkish economic growth. This paper explains how women participation in the economy is a major resource that should be used more in Muslim countries in order to reach economic development targets. It focuses on the case of Turkey for the time frame 1968-2005 using a co-integration approach, yielding the empirical result that women's low level of education has a negative effect on economic growth and there is a positive long-run relationship between closing the gender gap in education and economic development.

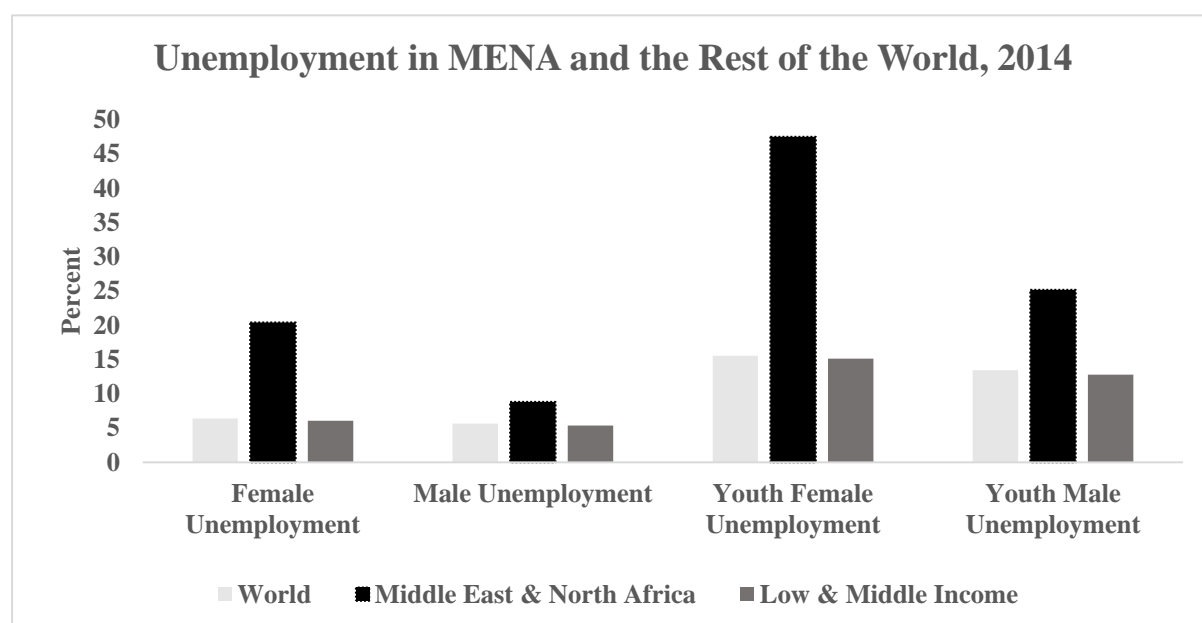
Brummet (2008) also reached the same conclusion using the data of 138 countries for the time period 1960-1986. This paper reformulates gender inequality as a ratio instead of examining female and male measures as separate factors to control the problem of multicollinearity. The results prove that high levels of gender inequality have a negative effect on economic growth. Similar results have also been reached by Klasen (1999), where the relationship is investigated through the effect of gender inequality on the quality of

human capital, investment, and population growth. By compromising the well-being of the countries under study, gender inequality eventually reduces economic growth and development. Martina and Garvi (2009) with an analysis in the case of Spain, and Arora (2012) with a state analysis for India have also reached the same conclusions on the relationship between gender inequality and economic growth.

Baliamoune-Lutz and McGillivray (2007) have reached different results regarding the relationship under study using panel data across African and Arab countries. Although the findings were very robust in terms of the negative relationship between gender inequality and economic growth, their paper concluded that the case is not the same with more open economies in the region. This suggests that trade-induced economies may be associated with higher levels of gender inequality.

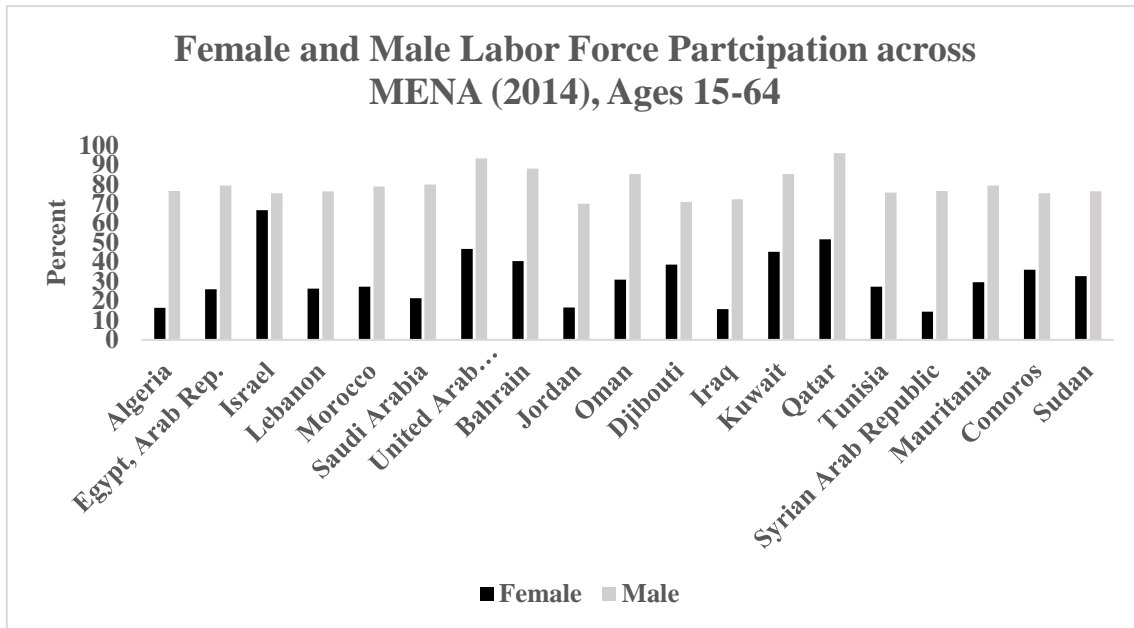
### 3. Overview of Gender Inequality in the Arab Region

Although gender inequality comes in many forms, the focus of this paper is the inequality in the labor force and education. While gender inequality in the labor market and education are measured separately, we will also examine the results of increased levels female education on the female labor force participation rates.



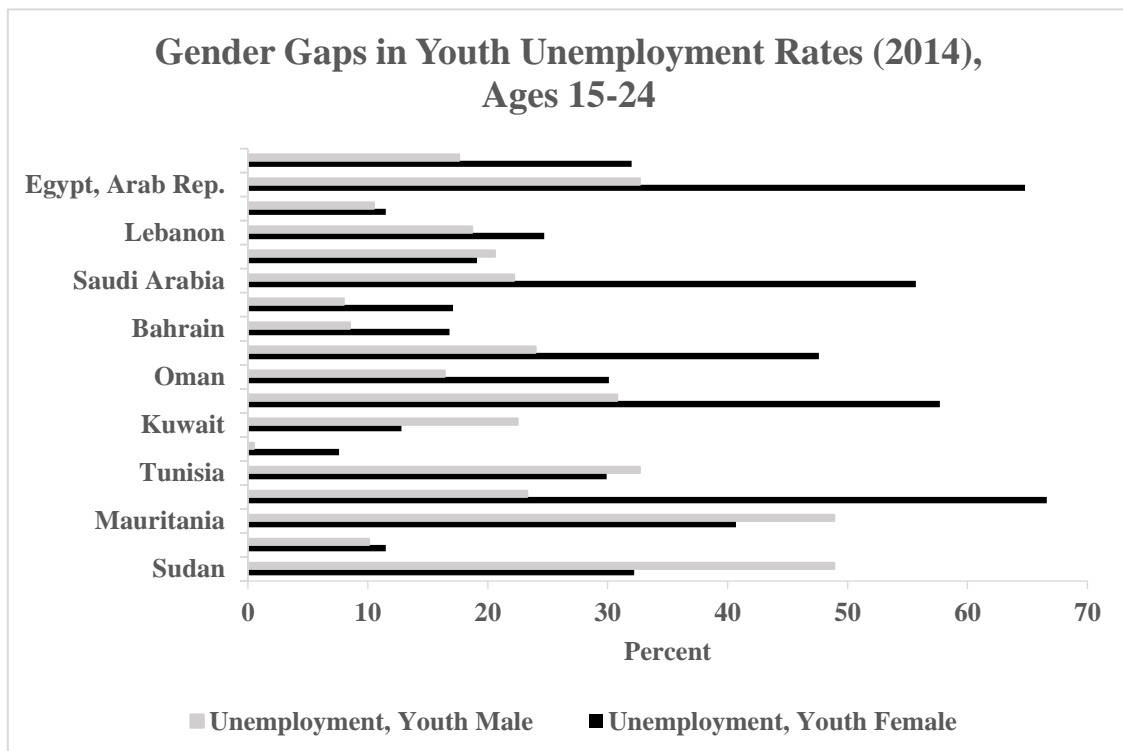
Source: The World Bank – World Development Indicators

**Figure 3.** Unemployment in MENA and the Rest of the World, 2014



Source: The World Bank – World Development Indicators

**Figure 4.** Female and Male Labor Force Participation across MENA (2014), Ages 15-64



Source: The World Bank – World Development Indicators

**Figure 5.** Gender Gaps in Youth Unemployment Rates (2014) Ages 15-24

Inequality in the labor force is shown in Figure 3 of Appendix A, which displays unemployment in MENA compared to the rest of the world. This shows a high percentage of unemployed young women in the Arab region of about 40% compared to an average of 15% in the rest of the world. According to the MENA Development Report of the World Bank, , the unemployment gap between men and women during the period 1985 throughout 2010 across the Arab region widened from 5.5% to 10%. This gap representing the lack of economic opportunities for women is highlighted in Figure 4 where the difference between female and male participation rates across the region are substantial. Figure 5 concludes the main idea of the labor force gender inequality by displaying the gender gaps in youth unemployment rates across the region where female unemployment, once again, is causing this large gap.

As per the statistics and surveys conducted by the World Bank to reveal the issue of gender inequality in the report “Opening Doors: Gender Inequality and Development in MENA”, several graphs and tables are worth mentioning. In terms of education, an example of Tunisia and Egypt is displayed in Table 1.1 shows the correlation between education and labor force participation. These two countries are specifically chosen to display such relationships due to the sufficient data availability. The table shows higher participation rates of females with higher levels of education, reaching around 60% in Tunisia and 59% in Egypt as of 2010 for females of tertiary education. This is a positive indicator if female tertiary education across Arab countries was in fact high. However, completion of primary and secondary schooling is low, which gives an indicator as to why female labor force participation rates are also low. This refers to the cultural norms and traditional mentalities that takes over the region. Figure 1.7 of the report shows an example of Iraq, where reasons for dropping out from school are shown with a high percentage of girls dropping out due to social reasons such as “social reasons”, “family not interested”, and “end my education”.

The mentality of male superiority over women is one of the underlying reasons behind gender inequality across the Arab region. A comparison between Egypt and Indonesia is displayed in Figure B2.2a of the report, showing that 80% of women and 90% of men in Egypt believe that men should have more rights to a job than women when jobs are scarce, as opposed to 40% and 65% respectively in Indonesia. This shows a common belief in the culture of the region where women are convinced that men have rights to jobs more than them. Women’s opinions about work are shown in Figure 2.4 with data collected from Egypt, Iraq, Jordan, and Morocco. Throughout all four countries, between 60%-90% of the female population, married and single, believe that “Being a Housewife is Just as Fulfilling as Working for Pay”. This represents a large number of the female population that would willingly stay out of the labor force due to traditions and cultural beliefs.

This idea is finally concluded in Figure 2.2 of the report, comparing women of the Arab region to the rest of the world, with their levels of education taken into account. This graph shows a significant gap between women’s opinion in MENA countries and the rest of the world, by calculating respondents’ opinions to surveys regarding the issue. In MENA, about 8-10% women disagree with favoring men for employment when jobs are scarce, as opposed to 32-60% of women around the world opposing this idea.

Taking into account the previous figures and statistics, this paper will study these gender inequalities in the labor force and education of the Arab region to validate previous literatures that have been written regarding the impact of gender equality on economic growth in the long run. We will magnify the significance of female participation in the economies of Arab countries and the extent to which any improvements to gender equality will be effective.

## **4. Methodology and Model Specification**

### *4.1 The Solow-Swan Growth Model*

The Solow-Swan Growth Model is one of the convenient starting points of growth models since the 1950's. Developed by Robert Solow and Trevor Swan in 1956 (Note 1), this model is widely used as a measure of economic growth in the long-run through a neoclassical aggregate production function. The model explains long-run economic growth as a function of capital accumulation, labor or population growth, and productivity.

From the variables of the Solow-Swan Growth Model, the interest variable of this research paper is labor. Since the effect of gender inequality in the labor force on economic growth is being examined, labor is the only interest variable out of the model's three variables. Capital accumulation and productivity are supposedly used as control variables. Productivity, however, is omitted due to the lack of data in the Arab region.

### *4.2 Estimated Model*

The objective of this paper is to measure the effect of gender inequality on economic growth across the Arab region. This impact is investigated using a growth model, which is estimated using panel OLS and fixed effect approach.

In the estimated growth model, the effect of gender inequality in the labor force and in education on economic growth is captured. Labor is represented by the Labor Force Participation Rate of Females (% of female population ages 15+) and the Labor Force Participation Rate of Males (% of male population ages 15+). The variables have been taken into account separately to investigate the effect of females' participation in the labor force (the interest variable) independently on economic growth. The second variable of interest of this study is the Gender Parity Index (GPI) that measures the ratio of girls to boys enrolled at primary level education in private and public schools. As explained in the overview, it is ideal for this study to measure the gender parity in higher levels of education and its effect on economic growth. However, due to the lack of data, a primary level ratio is used. The dependent variable that is being examined in this study is economic growth. Real GDP Annual Percentage Growth is the proxy used as an indicator of this dependent variable.

A number of factors are used in this model as control variables. These factors are controlled for in order to capture a more accurate correlation between our interest variables and dependent variable (Real GDP Growth). The first of these factors is Gross Fixed Capital Formation as a percentage of GDP and it is used as an indicator for Capital Accumulation. Second, Labor Force Participation Rates of Males (ages 15+) is used and it refers to the male



labor force. Third, Openness of Trade is measured using Trade as a percentage of GDP as an indicator of total exports and imports as a share of gross domestic product. Fourth, Annual percentage of population growth of each country is used across the time frame of the study. Finally, West Texas Intermediate annual oil prices are used to measure the impact of changes in oil prices on the countries of the Arab region across the time frame.

Extending the estimated model by Ali (2015), the economic growth is investigated in this paper by the following model(Note 2):

$$Y = \beta_0 + \beta_1 \text{GFCF} + \beta_2 \text{LFPF} + \beta_3 \text{LFPM} + \beta_4 \text{GPI} + \beta_5 \text{Trade} + \beta_6 \text{Population} + \beta_7 \text{Oil} + \varepsilon$$

Where, GFCF indicates Gross Fixed Capital Formation, LFPF is Labor Force Participation Rate of Females, GPI represents Gender Parity Index, Trade refers to total trade as a Percentage of GDP, Population represents population growth, Oil is for oil price.

## 5. Data Description

The data sample is composed of 19 Arab countries(Note3) throughout the period from 1990-2014. A list of the countries used in the sample can be found in Appendix B. Gross Domestic Product Growth, Gross Fixed Capital Formation, Labor Force Participation Rate of Females, Labor Force Participation Rate of Males, Gender Parity Index, Trade as a Percentage of GDP, and Annual Population Growth secondary data are obtained from the World Bank Database *World Development Indicators* (WDI). The data for annual West Texas Intermediate oil prices are obtained from *US Energy Information Administration* (EIA) and crude oil prices are in US Dollars per barrel.

## 6. Empirical Results and Analysis

Table 1-A displays the results of the estimated model using an Ordinary Least Square regression. The estimation gives a very insignificant relationship between the interest variables of this study and GDP growth. Labor Force Participation of Females (LFPF) and the Gender Parity Index (GPI) are presented with insignificant P-values of 0.929 and 0.348 respectively. This shows that any change in these two variables will have a very negligible effect on the growth of the economies of the Arab region.

**Table (1:A):** Ordinary Least Square Regression

Source	SS	DF	MS	Number of Observations =	270
<b>Model</b>	12.3131892	7	1.75902703	<b>F (7, 262) =</b>	3.23
<b>Residual</b>	142.623013	262	0.544362644	<b>Prob &gt; F =</b>	0.0026
<b>Total</b>	154.936202	269	0.575971011	<b>R-squared =</b>	0.0795
				<b>Adjusted R-squared =</b>	0.0549
				<b>Root MSE =</b>	0.73781

It is worthy to mention, however, that two of the control variables used in this estimation, Gross Fixed Capital Formation (GFCF) and Population Growth (Population) resulted in significant P-values of 0.005 and 0.043 respectively. Meanwhile, Labor Force Participation of Males is shown marginally significant with a P-Value of 0.101. This could be an indicator of the main factors that are actually driving economic growth in these Arab economies.

Considering the fitness of the model as a whole, Table 1-B shows an R-squared of 0.0795 and Adjusted R-Squared of 0.0549. This shows that the variables chosen in this model are accountable for about 8% of economic growth, while other variables not estimated in this study are clearly accountable for most of the changes in the dependent variable.

**Table (1:B): Ordinary Least Square Regression**

Y	Coefficient	Standard Error	t	Interval	P>t	95% Conf. Interval
GFCF	0.3527054	0.1240178	2.84	0.5969039	0.005	0.1085068
LFPF	-0.0102567	0.1145457	-0.09	0.2152906	0.929	-0.2358039
LFPM	0.8535222	0.5183778	1.65	1.874239	0.101	-0.1671946
GPI	0.6100914	0.6492197	0.94	1.888444	0.348	-0.6682611
Trade	0.0589952	0.142502	0.41	0.3395902	0.679	-0.2215999
Population	0.1694898	0.0834879	2.03	0.3338826	0.043	0.0050971
Oil Prices	-0.0004798	0.0762851	-0.01	0.1497301	0.995	-0.1506897
Constant	-3.679922	2.323248	-1.58	0.894692	0.114	-8.254537

The results are estimated further as shown in the following Fixed Effect Regression in Table 2-A. The previous observation is confirmed that the two most significant variables in this model are Gross Fixed Capital Formation (GFCF) and Population Growth. The regression confirms the fitness of the model discussed earlier with an overall R-squared of .036 in Table 2-B.

**Table (2:A): Fixed-effects Regression**

Y	Coefficient	Standard Error	t	Interval	P>t	95% Conf. Interval
GFCF	0.3426828	0.1865998	1.84	0.7102347	0.068	-0.0248691
LFPF	-0.6812816	0.5617137	-1.21	0.4251449	0.226	-1.787708
LFPM	1.464011	2.134061	0.69	5.667543	0.493	-2.739521
GPI	-0.5672256	0.9427349	-0.6	1.289711	0.548	-2.424163
Trade	0.4777712	0.3509282	1.36	1.169006	0.175	-0.213464
Population	0.189408	0.1066942	1.78	0.3995671	0.077	-0.0207511
Oil Prices	0.0518136	0.1189977	0.44	0.2862073	0.664	-0.1825802
Constant	-6.229426	9.270805	-0.67	12.03159	0.502	-24.49044

**Table (2:B): Fixed-effects Regression**

<b>Fixed-effects (within) Regression</b>		<b>Number of Observations =</b>	<b>270</b>
<b>R-Squared:</b>		<b>Number of groups =</b>	19
<b>Within =</b>	0.0506	<b>F(7,244) =</b>	1.86
<b>Between =</b>	0.1680	<b>Prob &gt; F =</b>	0.077
<b>Overall =</b>	0.0360	<b>Corr (u<sub>i</sub>, Xb) =</b>	-0.6773

The results of the regressions are made to examine the effect of gender inequality on economic growth are puzzling. Previous studies that have been written regarding this relationship concluded with a fit model and clear significant results. However, the case could actually be different for the Arab economies. It is clear from the results that the main drivers of the economy are capital formation (or investment) and population growth, with a marginal effect from the labor force participation rates of men. According to the model, an increase in capital formation of 1% will lead to a 35% increase in GDP growth and an increase of 1% in population will be liable for around 19% of the growth in GDP.

Although the expectation is that gender inequality will have a big impact on the growth of Arab economies, several reasons could be behind these findings. It is apparent that countries in the Arab world will have economic growth as long as there are investments and capital formation and population growth. Whether or not females are given equal opportunities in the labor market and in education does not have a very significant effect on these countries. Giving males more opportunities in the labor market, however, may have a bigger effect.

Since most of these Arab countries are within the GCC with high income levels mainly from oil exports, it is logical that capital accumulation and investments are the main factors driving these economies. As long as these countries are incurring a surplus and it is being allocated to such investments, it does not matter whether males or females are given the opportunities to run such projects. As for the rest of the countries, population growth could play a major role through the increase in spending, consumption, employment, and eventually output. Likewise, population growth of females and males jointly will have a positive effect on economic growth, despite gender inequality.

The results could be an implication of the cultural norms and traditions of the Arab societies. The mentality of males and females in this region could result in its economic structure. It could be the belief that females' roles in the household of raising and teaching their children is more important for the well-being of the societies. This would eventually lead to population growth and a rise in the male labor force participation rates (which are shown to be marginally significant in our results). On the other hand, it could be the employment of females in the informal labor sector, which is not reported in our data, that is causing the results to be misleading. This is especially the case in lower income countries where females mostly work in agriculture works and farms.

## 7. Concluding Remarks and Policy Implications

This study provides evidence of the impact of gender inequality in education and the labor market on economic growth in the Arab region. Panel regression of 19 Arab countries over the period from 1990-2014 is used to discover that gender inequality has a minimal effect on economic growth in this region. In fact, it is clarified that other factors of capital accumulation and population growth are in fact highly significant with economic growth compared to the rest of the variables used. This result is rational and consistent with the fact that most Arab regions rely heavily on investments leading to capital accumulation and on population growth. As long as these two factors are growing, gender inequality will not hinder the economic growth of these countries.

This result, however, could be a consequence of several drawbacks in the data conducted for this study. Although the sources for secondary data collection used are reliable, many countries' data charts have missing values for several years and some have no data at all. Also, regarding the interest variables used, labor force participation rates of females do not take into account the females participating in informal occupations. Informal employment is widely known in Arab countries, especially developing countries (such as Egypt) where a lot of agricultural work is done by females and is not included in the labor participation rates. Future studies could take into account the drawbacks of this paper to avoid the consequences of having a model that is not fit.

Although gender equality has not been found as a major contributing attribute to economic growth, it is nevertheless a significant variable in the human development and welfare of economies as a whole. Therefore, policies should be oriented towards improving the welfare and health of individuals to enhance population growth of both genders as it is found to be a major factor affecting GDP growth of the Arab region. Policies towards investments to enhance capital accumulation are mostly recommended in the case of economic growth of the Arab region since this factor was found to be the most effective of all variables.

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## Notes

Note 1. Romer, D. (2012). The Solow Growth Model. In *Advanced macroeconomics* (4th ed.). New York: McGraw-Hill Companies.

Note 2. Natural Log of all variables are taken before the regression.

Note 3. Three of the 22 Arab countries have been omitted from the study due to the lack of data in most of the variables (Libya, Somalia, and Yemen). See Appendix B for list of countries included in the sample.

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