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The Effects of Income inequality on Economic Growth

Evidence from MENA Countries

Hamid Lahouij

Abstract

The main focus of this research paper is to investigate the impacts of income inequality and other economic growth determinants on economic growth of some selected oil-importing MENA countries using a panel data for the time span 1980-2007. This paper contributes to the literature on income inequality, economic development indicators, and economic development in novel ways. Our findings indicate that income inequality decelerate the rate of change of economic development. However, the results of this research might conflict with others’ results if their research combines oil-exporting and oil-importing MENA countries in their sample or use different methodologies. Therefore, the policy recommendations should be used cautiously.

Keywords: income inequality, economic growth, economic growth determinants, MENA region.

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1. Introduction

Since 1950s, one of the most important topics to which economists, policymakers, and even the press have been giving quite bit of attention is the relationship between the aggregate output and the distribution of income. Many studies have been conducted using different methods to help to understand the crucial relationship between these two variables. Such a pioneering study was conducted by Simon Kuznets. Simon’s work was based on the process of change from agricultural economies to industrial economies of three European countries: England, Germany, and United Kingdom. According to the author’s finding, as people migrate from agricultural parts to industrialized areas, the process of economic development will lead to a concentration of income. As the migration process is weakened, the trend of economic development process will be reversed (Araujo and Cabral, 2014.) In other words, Simon’s study suggests that the relationship between per capita GNP and income inequality is an inverted U-shaped relationship. As per capita income rises in underdeveloped countries, the inequality in the distribution of income rises until it reaches a maximum, then it decreases as per capita income increases further.

One of the interesting cases to which researchers and economists refer, and which raises the question of a possible relationship between income inequality and aggregate output is the puzzle raised by Lucas (1993.) As shown by Benabou (1996,) South Korea and Philippines were similar in the early 1960s with respect to all major macroeconomics factors such as GDP per capita, populations, urbanization, and primary and secondary school enrollment. However, they were different in their income distribution. In 1965, Philippines’ Gini coefficient was 51.3 while South Korea’s Gini coefficient was 34.3. Over the next thirty years, the annual average of growth of South Korea was 6% while the annual average growth of Philippines was only 2%. As a result, the aggregate output level of South Korea quintupled while Philippines’ output level barely doubled (Aghion et al, 1999).

The correlation between income inequality and economic growth is controversial. In fact, while the classical theory highlighted how income inequality is beneficial to economic development, a modern viewpoint has emerged to emphasize the potential adverse effects of income inequality on economic growth. On one hand, the classical viewpoint (i.e. Kuznets, 1955) states that income inequality is good for incentives and therefore it is beneficial to
economic development process. On the other hand, modern development economists (i.e. Alesina and Rodrik, 1996) have challenged the idea of the positive effects of income inequality on economic growth, and have conducted many cross-sectional studies to prove the negative correlation between the two variables.

Therefore, it is quite important to understand the relationship between income inequality and economic growth for many reasons. First, the countries that have the highest rates of income inequality are mostly developing and under-developed countries. Moreover, it has been argued that income equality in developing countries leads to a sustainable growth (Aghion et al, 1999). However, the “trickle down” economic theories have long suggested that income inequality allows the rich to earn high returns on their assets and accumulate wealth faster in order to redistribute some of it to make everyone wealthier (Clacke, 1992). As a result, and because most of the countries in the Middle East and North Africa region are developing countries, it is critical to analyze the relationship between income distribution and economic growth of this region.

Even though the Gini coefficient within the region was very high in the 1970s, the region noticeably improved among other regions in the world until the year of 2000. After the 1980s, in spite of the fact that the average income growth rate was low, the average income of poor people increased faster than non-poor people. The reasons behind that were increases in public employment, personal remittances, and international migration. Moreover, MENA countries experienced one of the most relatively equal income distributions in the world from 1995 to 1999 (Acar & Dogruel, 2012).

Since MENA region is not homogeneous in terms of income levels, development levels, and resource endowments, this paper will focus on analyzing the relationship between income inequality and economic growth within the non-oil-exporting countries. In addition, this paper endeavors to empirically assist policymakers and to suggest policies that might improve the income distribution within MENA states so as to maintain a sustainable growth rate.

2. Review of Literature

Many academic studies have developed models to uncover the relationship between income inequality and economic growth. While the classical standpoint has suggested that
income inequality has positive effects on economic growth, modern economists’ studies have demonstrated that income inequality has unbeneficial effects on economic growth.

An early investigator of the relationship between income distribution and economic development was Kuznets (1955.) The author studied the relationship between per capita income and how that income was distributed among the population. He examined the inequality in the form of what percentage of total income was gained by the fixed ordinal group. For instance, within the U.S, 44% of the total income was earned by the 20% of the population with the highest income in 1944. Kuznets suggested that as a country’s economic growth rises, income inequality between different groups of people would first rise, then fall, making an inverted U. If Kuznets’ theory is correct, the relationship between income distribution and economic development can be depicted as the following graph shows:

![Kuznets' curve](image)

Kravis (1960) examined the distribution of income before tax among consumer units in ten countries and compared it with that of the United States. The author confirms that the longer a country has been exposed to the process of economic and social changes due to the idea of industrialization, the more equal the income distribution tends to be. The partial integration of the population in the new sectors of the economy results in a great initial inequality. As the population integrates fully in these new sectors, the inequality between sectors decreases. In
other words, the income is more equally distributed within the wealthier countries. The same conclusion was made by Lydall (1968.)

Kaldor (1960) and Kalecki (1971) also studied the effects of income inequality on economic growth. Their studies were based on models in which workers were assumed to have a zero-saving rate. The authors argue that if workers were to transfer their resources to capitalists, aggregate savings would increase and that would lead to an augmentation of growth rate (Rodriguez, 2000.)

Paukert (1973) studied the relationship between income distribution and GDP per capita of 56 countries, 40 of which were developing countries. His study’s results have shown that the degree of inequality is associated with the GDP per capita. Even though the author observed that inequality keeps increasing until the GDP per capita reaches about $2000 and starts declining, the highest level of inequality within a country was a result of a move from the very lowest income level (GDP per capita less than $100) to the second lowest income level in which GDP per capita is between $100 and $200 (Matins-Bekat & Kulkarni, 2009.) This result confirms Kuznets’ inverted U theory. The same results were found by many studies using cross-sectional data sets such as Ahluwalia (1976), Cline (1975), Chenery and Syrquin (1975), and Papanek and Kyn (1987). However, Anand and Kanbur (1986) used a cross-sectional data and found that they were best fit by a U-shaped curve, not an inverted U (Fields, 1989.)

The main criticism that Kuznets’ hypothesis has received is the limited data that was used to come up with the inverted U theory. As was highlighted by Fields (1989), the available data that was used in Kuznets’ study was ten years on average, which might not be enough to make predictions for several generations. Fields also pointed out that the Gini coefficient does not account neither for the quality of life nor for the income earned in informal sectors, which tends to be much larger within developing countries (Matins-Bekat & Kulkarni, 2009.)

Fields’ (1989) results confirm that there is no relationship between the change in inequality and the rate of economic growth, and also there is no relationship between the change in inequality and the level of national income. This means that the main factor that causes inequality to either increase or decrease is not economic growth but rather the type of growth. Moreover, the study’s results suggest that countries need to maintain equal income distribution to grow rapidly.
There are other studies that have found no relationship between income distribution and economic development, such as Lee and Roemer (1998) Castelló and Domenech (2002) Panizza (2002), and Lopez (2004.)

Alesina and Rodrik (1996) conducted a cross-country study to determine the relationship between income distribution and economic growth for OECD and other developing countries. Their results suggest that the Gini coefficient has a negative effect on economic growth. The effect is even strong when the Gini coefficient is related to the distribution of land which was used as a proxy for the distribution of wealth. The same result (the negative relationship between income distribution and economic development) was found by many other studies, such as Galor and Zeira (1993), Persson and Tabellini (1994), Clarke (1995), Perotti (1996), Alesina and Perotti (1996), Easterly (2001), De la Croix and Doepke (2003), Josten (2003), Ahituv and Moav (2003), Viaene and Zilcha (2003), Josten (2004), Castelló-Climent (2004), Knowles (2005), Davis (2007), and Pede et al. (2009.)

Banerjee and Duflo (2003) used cross-country data to describe the relationship between inequality and growth. They utilized a non-parametric method to show that the relationship between the growth rate and the net change in inequality is non-linear, and changes in inequality in any direction result in a decrease of the next period growth.

Conversely, some other studies have shown that income inequality and economic growth are positively correlated. Forbes’ (2000) findings suggest that the cause of the significant bias in the estimation of the effect of inequality on economic growth is the country-specific omitted variables. The author’s conclusion was that a fixed effect yield to the consistent result, which is a positive relationship between the two variables in the short term. Moreover, Barro (2000) used a panel data for a large sample of developing and developed countries. Barro’s results indicate that income inequality has a positive impact on economic growth within developed countries. However, within developing countries, income inequality affects economic growth negatively. Many studies have found a positive relationship between the two variables, such as Partridge (1997), Li and Zou (1998), Bourguignon and Spadaro (2003), and Nahum (2005.)

3. The Endogeneity of Income Inequality
The literature review shows that the relationship between income inequality and economic growth is theoretically ambiguous. In this section, we go further to shed light on the causality between the two variables.

3.1 From Inequality to Economic Growth

As shown in the literature review section, the effect of inequality on growth is arguable. On one hand, there are three main arguments in the literature that determine the inverse effect of income inequality on growth: the first argument is that increases in income inequality lead to a lower growth rate because of the presence of credit constraint (Galor and Zeira, 1993.). The authors argue that the growth rises as the investment in human capital increases, assuming that the main characteristic of the process of development is the complementarity between physical and human capital. Poor people would not be able to invest in education due to the credit constraint, which implies that inequality will affect the growth negatively by increasing the number of people who are unable to invest in human capital.

The second is the political economy argument. Alesina and Rodrik (1994) based their argument on the following propositions:

- Taxation and redistributive government expenditures have negative effects on capital accumulation, and therefore they are negatively correlated with the growth,
- Taxes are proportional to income. However, all individuals equally benefit from the public expenditure, which implies that an individual’s level of taxation and expenditure are negatively associated with her income, and
- The median voter’s preferred tax rate is the rate that the government would select.

Taking into account these three propositions, one can conclude that growth and income inequality are inversely related.

The third argument is based on sociopolitical instability approach. Alesina and Perotti (1996) argue that individuals within highly unequal societies have incentives to engage in activities such as crime that may destabilize the society. Sociopolitical instability can also affect accumulation because of the current perturbations and future uncertainty. This approach also suggests an inverse relationship between growth and income inequality.
On the other hand, some other arguments show that there is a positive association between inequality and growth. Kaldor (1960) argues that the marginal propensity to save of poor people is smaller than that of rich people. Then if the saving rate is positively associated with investment rate, and investment affects the growth positively, the more unequal an economy is the faster it would grow. Bourguignon (1981) used a convex saving function to show that the initial distribution has positive effects on the aggregate output. In other words, the higher the initial distribution is, the higher the aggregate output would be (WB.)

“Investment indivisibilities” is another argument that is used to show the positive relationship between inequality and growth. Since a large amount of money is needed for any new investment project, and in the presence of ineffective capital market that prevents pooling resources by small investors, wealth concentration would be the result that would lead to a faster growth (WB.)

A third argument that supports this positive association between inequality and economic growth is the trade-offs between inequality and efficiency. Mirrlees (1971) argues that pay compression structures that do not compensate for merit would lead societies to be more equal. However, they would also have an inverse effect on individuals’ incentives, which are the decisive factors behind outstanding achievements.

3.2 From Economic Growth to Inequality

Quite a number of economic models have claimed that technological progress, which has been seen as the major source of economic development, may cause income inequality to increase whenever it impacts the productivity of the labor force in any way; in other words, whenever it is not neutral. For instance, one can claim that income inequality would increase if there was an introduction of new technologies that would increase the demand for skilled labor. However, one has also to take into account that the effects of technological progress on education might be ambiguous if an “expansion in the pool of skilled labor” was a result of the higher growth that is correlated with the progress of technology. Empirically, even though there are many studies that consider inequality as an endogenous variable, the studies of Deininger and Squire (1996), Chen and Ravallion (1997), Easterly (1999), and Dollar and Kraay (2002) have shown that growth does not have any impact on inequality (WB.) We therefore consider income inequality as an exogenous variable in this study.
4. Conceptual Framework, Methodology, and Prepositions

This section presents the data, the conceptual framework, the prepositions, and the methodology used to empirically investigate the relationship between economic growth and income inequality in oil-importing MENA countries: Comoros, Djibouti, Egypt, Israel, Jordan, Lebanon, Mauritania, Morocco, Sudan, Tunisia, Turkey, and Yemen.

4.1 Panel Data

In order to examine this relationship, we use panel data. Panel data contains observations of multiple occurrences obtained for different entities over multiple time periods. With panel data, we are able to examine the data across and within countries over time. Panel data have several advantages. For instance, by using panel data one can control for individual heterogeneity. Cross-sectional and times-series studies do not control for heterogeneity, which may bias the results. In our case, when analyzing the effects of income inequality on growth, there might be other variables that are either country-invariant or time-invariant variable that affect economic growth within a country. Panel data is able to control for these country- or time-invariant variables.

By combining observations of times series and cross-section, panel data display more informative data. Our study will take advantage of having information on economic growth, income inequality, and other economic growth determinants on the selected countries over time. Moreover, unlike cross-section and times series, panel data have the advantage of giving a better picture on the dynamics of adjustment. In other words, panel data are better in identifying and measuring effects that are simply not detectable neither in pure cross-section nor in pure time-series data. Finally, panel data models allow one to construct and test more complicated behavioral models than purely cross-section or time-series data (Baltagi, 2008.)

Panel data have also some limitations related to design and data collection that might be problems. Also, there might be selectivity problems and distortions of measurement errors. In addition, short time-series dimensions might be another limitation of panel data.

This empirical study is established on panel data over the time span 1980-2007. The dataset used is strongly balanced. That is, each country has data for almost all years for all the variables used in the study. It is collected from World Bank and Penn World Table (version 8.1).
However, some countries do not have enough data to be included in this study. Therefore, we dropped these countries to get robust results, and we ended up with the following countries: Egypt, Israel, Jordan, Morocco, Sudan, Syria, Tunisia, and Turkey.

### 4.2 Conceptual Framework

**Economic Growth**

Annual real GDP per capita is one of the best indicators to measure a country’s economy performance. In this research paper, the GDP per capita based on constant 2005 US dollars is used as a proxy for economic growth. The motivation of using this variable rather than other variables is its popularity in income inequality literature (i.e., *Barro, 2000*). As a result, real GDP per capita is the dependent variable.

**Major Economic Growth Determinants**

This study uses Gini coefficient, gross capital formation, human capital, government expenditure, and foreign direct investment which are considered as major economic determinants. The study also utilizes some other minor determinants, which are trade openness, fertility rate, inflation rate, and the gender parity index for gross enrollment ratio in primary education.

- **Gini coefficient**

  Income inequality is presented as the Gini coefficient, which measures the degree of inequality in the distribution of the income within a country. A Gini coefficient that is equal to zero expresses perfect equality and a Gini coefficient that is equal to 100 expresses maximal inequality. The Gini coefficient data represents a compilation and adaptation of Gini coefficients retrieved from nine different sources in order to create a single “standardized” Gini variable (*WB*). Gini coefficient is widely used in the literature (*Barro, 2000 and others*).

- **Gross Capital Formation**

  Gross capital formation as a percentage of GDP is used in this study as a proxy of investment. It is one of the most important variables that affects the economic growth of a given country.
• **Human Capital**

The study uses the index of human capital per person, based on years of schooling (Barro and Lee, 2012) and returns to education (Psacharopoulos, 1994) as a proxy for human capital stock. The source of the data is Penn World Table (version 8.1).

• **Government expenditure**

Since there is no data about the total government expenditure, this study employs general government final consumption expenditure as a percentage of GDP as a proxy for government expenditure.

• **Foreign Direct Investment**

Foreign Direct Investment as a percentage of GDP, net inflow is used in this empirical study as proxy for foreign direct investment.

• **Trade Openness**

Trade is the sum of imports and exports of goods and services, which is measured as share of GDP. The nation is more open to trade when the trade percentage of GDP is high. As a result the trade percentage of GDP is the measurement for trade openness.

**Minor Economic Growth Determinants**

• **Inflation Rate**

Even though a number of benchmarks exist, this study utilizes inflation, GDP Deflator (annual percentage) as a proxy for inflation. The data source is the World Bank database.

• **Fertility Rate**

Fertility rate, total births per women is used in this study as a proxy to population growth. It is utilized as a control variable. The data is taken from the World Bank database.

• **Market Distortions**

This study uses price level of capital formation (price level of USA GDPo in 2005=1) as a proxy for market distortions. Price level of capital formation is drawn from the Penn World
Tables and it is “frequently used in the macroeconomic and international literature and measures how the cost of investment varies between each country and the United States. It is meant to capture market distortions that affect the cost of investment, such as tariffs, government regulations, corruption, and the cost of foreign exchange” (Forbes, 2000).

4.3 Methodology

The research uses panel data for the time period 1990-2007 to investigate the relationship between economic growth and income inequality.

At the beginning we start with the model:

$$\text{Lngdp}_{it} = \alpha_0 + \alpha_1 \text{lngini}_{it} + \alpha_2 \text{govexp}_{it} + \alpha_3 \text{inv}_{it} + + \alpha_4 \text{fdi}_{it} + + \alpha_5 \text{hc}_{it} + \alpha_6 \text{X}_{it} + \eta_i + \epsilon_{it} \quad (1)$$

Where, the subscript i (=1,…, n) represents country and t (= 1,…,T) the period (years). Lngdp_{it} indicates the natural logarithm of real GDP per capita (constant 2005 US dollars), govexp_{it} represents general government final consumption expenditure (percentage of GDP), inv_{it} denotes gross capital formation (percentage of GDP), fdi_{it} is foreign direct investment, net inflows (percentage of GDP), hc_{it} refers to human capital, lngini_{it} symbolizes the natural logarithm of the Gini coefficient, X_{it} denotes set of control variables, which are trade openness, inflation rate, fertility rate, market distortions; \eta_i represents the unobserved country-specific fixed-effects such as country’s location, demography, culture that needs to be controlled before we explore the impact of explanatory variables on economic growth to avoid misspecification of the model; and \epsilon_{it} stands for the error term.

In addition, income inequality might affect economic growth through different channels. In this paper, we try to discover whether income inequality affects economic growth through trade openness, fertility rate, inflation rate, and market distortions.

4.4 Estimation

Our model can be estimated using different methods, such as fixed effect, fixed effect robust, fixed effect cluster, random effect, random effect robust, random effect cluster, dynamic panel model, GMM, and instrument variables. However, a country-specific effect that affects economic growth are difficult to be explored. If the unobserved country specific variables are correlated with the regressors, our models will produce biased results. To solve this problem, one
can use either fixed effect, random effect, or first differences. However, since random effect necessitates that the omitted variables be uncorrelated with the regressors, which seems to be unrealistic especially in case of growth model, it is preferred to either use fixed effect or first differences. We utilize economic rationality and statistical insights to choose the right model. After using Hausman test, our findings suggest that the fixed-effect model performs better than the random-effect model. Subsequently, our study finds a serial correlation problem in the data set. We therefore use the first differences to estimate our models. By doing that, we do not only address the serial correlation problem but also produce consistent results. Therefore, our models look as follows:

\[ \Delta \text{Lngdp}_{it} = \alpha_1 \Delta \text{lngini}_{it} + \alpha_2 \Delta \text{govexp}_{it} + \alpha_3 \Delta \text{inv}_{it} + \alpha_4 \Delta \text{fdi}_{it} + \alpha_5 \Delta \text{hc}_{it} + \alpha_6 \Delta X_{it} + \Delta \epsilon_{it} \]  

(2)

By first-differencing our data, we have solved the problems of serial correlation, the potential problem of heteroscedasticity, as well as the potential problem that might raise by country-specific variables if they are correlated with one or more of our regressors.

4.5 Prepositions

Based on the literature, we develop the following prepositions:

- **Preposition 1: Economic Growth and Income Inequality**

  There is a strong argument about whether income inequality and economic growth are positively correlated, negatively correlated, or uncorrelated. However, many studies (i.e. Barro, 2000) show that income inequality affects negatively economic growth of developing countries, and most of the countries included in this study are developing countries. Therefore, we assume that more income inequality will lead to a low economic growth. We then test for \( \alpha_1 < 0 \) against \( \alpha_1 = 0 \).

- **Preposition 2: Economic Growth and Investment**

  It is believed that domestic investment has positive effects on economic growth (Solow, 1956.) Therefore, it is assumed that investment will have a positive impact on the growth. Then \( \alpha_3 > 0 \) is verified against \( \alpha_3 = 0 \).

- **Preposition 3: Economic Growth and Government Expenditure**
Barro’s (1991) findings show that government expenditure has a negative impact on economic growth. However, other studies have shown that government expenditure and the growth are uncorrelated. We therefore test for $\alpha_2 = 0$ against $\alpha_2 < 0$.

- **Proposition 4: Economic Growth and Human Capital**

On one hand, Benhabib et al. (1994) contend that human capital has no effect on economic growth. On the other hand, Becker et al. (1994) argue that the effects of human capital on economic growth are significant. As a result, this research examines $\alpha_3 = 0$ against the alternative hypothesis $\alpha_3 > 0$.

- **Proposition 5: Economic Growth and the FDI**

Alfaro’s (2003) findings suggest that the relationship between the FDI and the growth is ambiguous. Other studies conclude that the FDI has a positive effect on economic growth (Hermes & Lensink, 2003; Forte & Mora, 2010). Consequently, we test for $\alpha_4 = 0$ against the alternative hypothesis $\alpha_4 > 0$.

- **Proposition 6: Economic Growth and Trade Openness**

While some economists (i.e. Yanikkaya, 2003) argue that trade openness has a negative impact on economic growth, especially for developing countries, some other economists (Frankel & Romer, 1999) contend that trade openness has significant positive effects on the growth. Therefore, this paper verifies $\alpha_5 = 0$ against $\alpha_5 > 0$.

- **Proposition 7: Economic Growth and Market Distortions**

Price level of capital formation is used as proxy for market distortions. Studies, such as Lee (1993) and Agarwala (1983), have shown that market distortions have a negative impact on economic growth. Thus, this study hypothesizes that $\alpha_6 = 0$ against $\alpha_6 < 0$.

- **Proposition 8: Economic Growth and Fertility Rate**

The argument about the relationship between economic growth and population growth goes way back to Malthus (1798). The consensus of economists about this relationship has shifted from fertility having strong negative effects to not being important and recently to having
some significant impact on economic growth (Ashraf et al. 2013). Thus, in this study we verify $\alpha_6 = 0$ against $\alpha_6 > 0$.

- **Preposition 9: Economic Growth and Inflation Rate**

Andrés & Hernando’s (1997) findings suggest that inflation affects economic growth negatively. Consequently, this paper assumes that inflation has a negative effect on economic development. That is, we verify $\alpha_6 = 0$ against $\alpha_6 > 0$.

5. **Results and Economic Insights**

These analysis findings, detailed in table 1 in the Appendix, suggest that income inequality decelerate the rate of change of the real GDP. In other words, an increase of the rate of change of income inequality causes the rate of change of real GDP to decrease. Income inequality can work to stifle economic growth in many different ways. First, high income inequality is associated with a higher level of poverty, which leads to poor public health and to an increase in crime rates, all of which place burdens on the economy. Indeed, studies have shown that there is a positive correlation between income inequality and crime activities, and this correlation reflects causation from inequality to crime rates (Fajnzlber et al., 2002). Moreover, these criminal activities have the same effects as a tax on economic development; in fact, they have a negative impact on domestic and foreign direct investments. They reduce competitiveness of firms, and create uncertainty and inefficiency by reallocating resources (Detotto & Otranto, 2010). Furthermore, many studies (such as Peri, 2004; Goulas, & Zervoyianni, 2013) suggest that there is a strong adverse influence of crime activities on economic growth. Therefore, crime activities are one of the mechanisms through which income inequality affect adversely economic development of a country.

In addition, a high level of income inequality appears to lead to poor health outcomes, such as short life expectancy, infant mortality, mental health, and obesity, and other social problems (inequality.org). For instance, studies have examined the relationship between inequality and mortality. These studies have shown that mortality is positively and significantly correlated with almost any measure of income inequality (Deaton, 2003). Moreover, the body of evidence of many empirical studies shows that income inequality has damaging health and social consequences, especially in countries in which inequality is increasing (Pickett, & Wilkinson,
Additional, health is a crucial source of human welfare as well as a mechanism for raising income levels. There are many channels through which a population’s health can affect economic growth, such as labor productivity, saving and investment, and demographic structure (Bloom & Canning, 2008). Also, good health has been found by many empirical studies to be positively associated with economic growth (Bloom et al., 2001). Moreover, an increase in income inequality may prevent many people from having access to high-quality and affordable health care. As a result, income inequality would have a negative impact on economic growth through having an adverse effect on public health.

Another mechanism through which unequal income distribution affects economic development is education. Unequal societies tend to underinvest in education, which means that income inequality has an adverse effect on education. In fact, dropout rates within the region are very high. For instance, in Morocco the dropout rate from the middle school is 53%, and only 15% of students get their high school diploma even though the enrollment rate in primary school is about 95% (usaid.gov). One of the reasons that would lead to this result is the inequality in income distribution, and therefore unemployment rates would increase because adults who had dropped out of school and join the labor force have no skills to find jobs. As Okun's Law suggests, an increase in unemployment rate would have an adverse effect on economic growth. Moreover, studies have shown that there is a positive relationship between education attainment and economic growth (Aghion et al., 2009; Barro, 2001). Therefore, we can conclude that income inequality affects negatively economic growth through low levels of education attainment.

Political instability could be another channel through which income inequality has a negative impact on economic growth. Alesina & Perotti (1996) have shown that income inequality increases sociopolitical instability by stimulating social discontent. An increase in sociopolitical instability would reduce investment. Consequently, income inequality and investment are inversely correlated. As investment is one of the essential engines of growth, we can therefore conclude that income inequality and economic growth are inversely related through the channel of investment.

Nevertheless, our results suggest surprisingly that market distortions accelerate the rate of change of economic growth. Unlike many other studies, Barro (1989) reported the same positive
relationship between market distortions and economic growth. One reason behind this result could be that the price level of capital formation is not a good proxy for market distortions. This is a preliminary result, and more focus studies are needed to discover more about a such behavior.

As it was expected, investment accelerates the rate of change of economic growth at a slow speed, and it is significant at a 1% level. Indeed, studies have shown that investment within the MENA region is still very low to help to boost economic growth within the region (Artadi and Sala-i-Martin, 2003).

Furthermore, although it is highly significant, general government final consumption expenditures decelerate the rate of change of economic development at a very slow speed. The adverse effect of government expenditure on economic growth has been reported by many previous studies, such as Landau, 1983; Barro, 1991; Abu-Bader & Abu-Qarn, 2003. Many reasons might be behind this effect, such as a weak of control of corruption and a lack of good governance.

In addition, foreign direct investment (net inflow) is found to have no effect on the rate of change of economic growth within the MENA region. A potential explanation of this could be the sharp decrease in foreign direct investment (net inflow) that the region has been experiencing. In fact, foreign direct investment “inflows to the MENA region amounted to an average USD 45 billion in 2013” (most of which was received by oil-exporting countries, especially United Arab Emirates and Saudi Arabia, 22% and 20% respectively). “This represents a 52% decrease compared to 2008, which was a peak year for FDI in the region, with USD 93 billion of inflows” (MENA-OECD Investment Programme Group, 2014).

In contrast to what was expected, trade openness is found to decelerate the rate of change of economic growth at a very small rate. This could be explained by the fact that oil-importing MENA countries export mainly low elastic products (i.e., raw materials), which are not affected by the degree of trade openness of a country. However, these countries import high elastic products (i.e., food), and therefore import share dominates the export share. As a result, trade openness could be harmful to growth.
In agreement with economic theory and many studies (Nelson & Phelps, 1966; Lucas, 1988; Becker, Murphy, & Tamura, 1990; Rebelo, 1992; and Mulligan & Sala-i-Martin, 1992), our results show that human capital is a very important variable that accelerates the rate of change of economic growth the most in our models. This could be explained by the heavy investment of MENA countries over the last few decades in human resources through education, which has enhanced not only the level but also the quality and quantity of human capital (Barro, 1992).

Finally, our findings suggest that fertility rate and inflation rate have no effect on the rate of change of economic development.

Table 2 presents the estimated results of the association between the Gini coefficient and the variables: trade openness, fertility rate, and inflation rate. The results show that income inequality does not affect the rate of change of economic growth neither through trade openness nor through inflation rate. However, we find a positive interaction between income inequality and fertility rate. That is, income inequality accelerates the rate of change of economic growth through fertility rate. A potential explanation of this could be that an increase in income inequality with high population growth rate would stimulate economic incentives that are necessary for capital accumulation and growth (Stevans, 2012).

6. Conclusion

This study explores the impact of income inequality and other growth determinants on economic growth in the MENA region. The research has some important policy recommendations:

First, as income inequality, government expenditure on final consumption, and trade openness decelerate the rate of change of economic development of the selected MENA countries, policymakers should implement regulations and programs that will alleviate inequality in income distribution, and governments should reduce government spending on final consumption so as to achieve higher growth rate. Moreover, MENA countries should invest more in human capital and focus on investment, as they both appear to accelerate the rate of change of economic growth. Market distortions seem to accelerate the rate of change of economic growth, a result that we recommend future studies to investigate deeply. Ultimately,
foreign direct investment, fertility rate, and inflation rate do not affect the rate of change of economic development in our study.

These conclusions are subject to a number of limitations. Firstly, variable choice could be a limitation because many of the variables used in the literature are not available for MENA countries on a yearly basis (for instance, female education and male education). Moreover, this study focuses on the selected oil-importing MENA countries. Thus, these results might conflict with others’ results if their research combines oil-exporting and oil-importing countries in their sample.

Bibliography

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This article was cited as a review of the literature.


This article is used to build a preposition between economic growth and investment.


This article was cited to explain how the interaction between income inequality and fertility rate affects economic growth.


This article is cited to build a preposition between trade openness and economic growth.
### Table 1: Estimated Coefficient

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Standard errors in parentheses: *p < 0.10, **p < 0.05, ***p < 0.01
Models of interaction between Gini coefficient and other variables

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Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$