THE IMPACT OF FOREIGN DIRECT INVESTMENT AND EXPORTS ON ECONOMIC GROWTH

CASE STUDY: COUNTRIES OF THE MENA REGION FROM 1980 TO 2011

by

Mohamed Abaid

B.A. in Economics, Tripoli University, 1996

M.S. in Economics, Tripoli University, 2005

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the Master of Science Degree

Departments of Economics

in the Graduate School

Southern Illinois University at Carbondale

May, 2013

RESEARCH PAPER APPROVAL

THE IMPACT OF FOREIGN DIRECT INVESTMENT AND EXPORTS
ON ECONOMIC GROWTH

CASE STUDY: COUNTRIES OF THE MENA REGION FROM 1980 TO 2011

By

Mohamed Abaid

A Research Paper Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Master of Science

in the field of Economics

Approved by:

Professor Kevin Sylwester

Graduate School

Southern Illinois University Carbondale

March 06, 2013

AN ABSTRACT OF THE RESEARCH PAPER OF

Mohamed Abaid, for the Master of Science in Economics at Southern Illinois University Carbondale.

TITLE: The Impact of Foreign Direct Investment and Exports on Economic Growth
Case Study: Countries of the MENA Region from 1980 to 2011.

MAJOR PROFESSOR: Kevin Sylwester

This research investigates and empirically examines the effects of both Foreign Direct Investment (FDI) and exports on the economic growth in fifteen MENA countries. The methodology involves estimating an economic growth model using panel data of the period from 1980 to 2011. By applying the OLS and the fixed effects estimation methods, the results indicate that exports have a significant positive effect on economic growth for MENA countries and the oil-exporting MENA countries. On the other hand, FDI has a significant positive effect on economic growth only in non-oil exporting MENA countries.

Keywords: Foreign Direct Investment (FDI), Exports, Economic Growth, Middle East and North Africa (MENA), Panel Data, OLS, and Fixed effects.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1- INTRODUCTION

Foreign Direct Investment, or FDI, has become one of the most important economic

issues being studied today. Balasubramanyam (1996) and Atrayee & Hendrik (2006) suggest

that FDI has an important role in influencing the financing of the economy in particular and

on economic development in general. Since the eighties, developing countries have shown a

marked increase in their share of the total net flows of FDI under the changes associated with

the economic and international political environments. Khan (2007) found that FDI has

emerged as the most important source of external resource flows to developing countries, and

that it has a positive effect on the economy of the host country; Easterly and Levine (2001)

characterized FDI as consisting of the transfer of modern technology with its contribution to

the accumulation of capital, and as a way of raising the efficiency of human capital and

bringing about an increase in employment, productivity, trade, and economic growth.

The Middle East and North Africa, or MENA, is one of the world's most dynamic and

challenging areas. The MENA region is distinguished by its economic diversity which

includes both oil-rich economies such as those of Saudi Arabia and Libya, and countries with

abundant labor such as Algeria and Egypt. The fifteen MENA countries discussed in this

research are Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Libya, Morocco, Qatar,

Saudi Arabia, Syria, Tunisia, Turkey, and the United Arab Emirates. MENA represents a

region with great economic potential in today's global marketplace. It was only in the late

1980s that serious efforts began to take shape in the MENA region to promote foreign trade

and attract FDI flows. Since the falling of oil prices in the late 1980s, it has become too risky

to rely on oil revenues to finance development programs. That risk has added momentum to

the creation of a more conducive environment for other development strategies including

export promotion and FDI inflows. Also, with the increasing global competition for FDI,

governments in the MENA region have focused their efforts on attracting further FDI inflows and liberalizing their trade sectors. According to Darrat, Kherfi, and Soliman (2005), reforms have generally included new FDI legislation as in Morocco in 1983 and in Egypt in 1989, which were later subjected to major revisions in 1988 and 1995 in Morocco and in 1997 in Egypt. Tunisia and Turkey also introduced new legislation to promote FDI in 1993 and in 1995, respectively, to eliminate restrictions facing FDI inflows.

The purpose of this research is to analyze the role of foreign direct investment and exports in promoting economic growth in the MENA countries and the interactions of FDI and exports with their economic growth. The research examines data from 15 developing MENA countries over the last three decades. It is important to examine the linkages between exports, FDI, and the economic growth of the MENA countries' economies in order to provide evidence as to whether rapid economic growth in this region is driven by exports and FDI. The question to be addressed in this research is this: Have FDI and exports had any real effect on economic growth in the MENA countries during the period 1980-2011?

The research is organized as follows: Section 2 provides a literature review, Section 3 presents the trends of FDI inflow into the world's economies, Section 4 presents data and methodology, Section 5 presents the estimation and the empirical results of the impact of FDI and exports on economic growth, and Section 6 comprises the conclusion.

2- LITERATURE REVIEW

There are some studies that have explained and determined the relationship between the inflows of foreign direct investment and economic growth. Most of them analyze the effect of FDI inflows on the growth of national income along with other factors of production. On the other hand, some of the new studies on economic growth conclude that FDI may affect not only the level of output per capita but also the rate of growth. In general, they conclude that FDI has many benefits to the host country, supporting economic growth by increasing productivity and supplying capital, technology, and substitutes for imports and exports to other countries.

A recent study by Tiwari and Mustacu (2011) examines the impact of FDI on economic growth in Asian countries. The study investigates 23 countries during the period 1986-2008 using a panel data approach. The results of the paper show that both FDI and exports improve the growth process, and that labor and capital play an important role in the growth of Asian countries.

Nicet-Chenaf and Rougier (2011) measure both the effects of exports' diversification on growth in MENA countries and the impact that new exports and FDI have on growth. The differences between this study and the paper by Nicet and Rougier lie in the sample, the period of the study, the methodology and the control variables used. They use a sample of eight MENA countries over the period 1995-2004 (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia, and Turkey). Their model is estimated using the system-generalized method of moments. Their study provides robust evidence that export discovery and FDI stimulate GDP growth, and that FDI does not necessarily have a uniform effect on growth, but that it varies according to the level of discovery of the country.

Ahmadi and Ghanbarzadey (2011) examine the Granger causality relations among the GDP, FDI, and exports in MENA countries. The study constructs the empirical framework

using the three-variable panel VAR model for the period 1970-2008, using the Hausman test and estimating the fixed effects panel data model to estimate the relations between the three variables by making use of the panel VAR equations for Granger causality tests. The results of their study reveal bidirectional causality relations among the three variables (the GDP, FDI, and exports) for MENA countries.

Mehrara, Haghnejad, Dehnavi, and Meybodi (2010) investigate the causal relationships among the GDP, exports and FDI inflows for 57 developing countries from 1981 to 2006. In this study, Mehrara et al make use of panel unit roots tests, panel co-integration and the panel generalized method of moments, or GMM. Their results show that exports and FDI inflows Granger cause GDP, and also that exports and GDP Granger cause FDI inflows in the long run. Also, the results provide evidence of short-run causality running from exports and FDI inflows to GDP. Therefore, their study shows that GDP and FDI inflows do not cause exports in both the short term and the long run.

Mohamed and Sidiropoulos' (2010) paper investigates and analyzes the main determinants of FDI in MENA countries. Their research covers the period 1975 -2006 for 36 countries that had been the major recipients of FDI among developing countries, 12 of which were in the MENA region. Using a panel data methodology, the results show that the key determinants of FDI inflows in MENA countries are the size of the economy of the host country, the size of its government, its natural resources, and the institutional variable. The paper concludes that countries that receive less FDI can make themselves more attractive to FDI by removing all barriers to trade, developing their financial systems and building appropriate and convenient institutions.

A study by Hussein (2009) examines and analyzes evidence pertaining to FDI in six countries (Saudi Arabia, the United Arab Emirates, Oman, Qatar, Kuwait and Bahrain). The paper goes on to identify the determinants of FDI in the Cooperation Council for the Arab

States of the Gulf, "GCC" countries, using recent growth theories and statistical techniques to empirically test for the association between FDI and economic growth in the GCC countries. Hussein's results in this paper, obtained from data analysis, indicate a weak relationship between FDI and GDP in the panel of the GCC.

Hsiao and Hsiao (2006) use time-series and panel data from 1986 to 2004 for eight developing countries in Asia (China, Korea, Taiwan, Hong Kong, Singapore, Malaysia, The Philippines, and Thailand) to examine the Granger causality relations between their GDPs, exports, and FDIs. They estimate the VAR and VECM of the three variables using fixed effects and random effects approaches. Their results show that FDI has unidirectional effects on their GDPs directly and indirectly through exports.

Finally, a study by Darrat, Kherfi, and Soliman (2005) examines the possible impact of FDI on economic growth in two contrasting regions, Central and Eastern Europe, or CEE, and MENA. They examine the link between FDI and growth in 6 MENA and 17 CEE countries, using data from the period 1979-2002. The evidence they obtained suggests that FDI inflows stimulate economic growth only in the EU accession countries in the CEE region, while the effect of FDI on economic growth in MENA and in non-EU accession countries is either nonexistent or negative.

In general, the literature shows that causality relations vary depending on the period studied, the econometric methods used, and the use of these linkages; one-way or two-way linkages. The results may be bidirectional, unidirectional, or no causality relations may be present. Moreover, some studies find that there is an insignificant relation between FDI and economic growth, and a few studies find a negative relationship between FDI and economic growth. The majority of studies, however, conclude that FDI and trade have a positive significant relation with economic growth.

3- TRENDS OF FDI INFLOW INTO THE WORLD

3.1: TOTAL FDI FLOWS INTO THE WORLD DURING THE PERIOD FROM
1980 TO 2011:

During the last seven years FDI inflows to MENA region countries have increased as compared to the eighties and nineties in the last century. Table 1 below is divided into two parts. The first part shows the regional average FDI inflows in millions of US$ and the regional average FDI in millions of US$ using 2011 prices, and second part shows the regional average FDI inflows in percentages of the total FDI inflow for the world. From the first part of Table 1 we see that global FDI inflows grew from an average of US$2,152,388 million (US$4,659,820 million in 2011 prices) in the period 1980-1989 to US$20,438,199 million in 2011, an increase of 42.86 percent. The table divides the world into three regions: developed countries, the MENA region, and the rest of the world. For the developed countries, the increase in FDI inflows remains high at 39.90 percent from US$3,192,304 in 1980-1989 to US$13,055,903 in 2011. Although FDI inflows increase for the MENA region from an average of US$161,471 million on average in the period 1980-1989 to US$791,079 million in 2011, which is an increase of 47.99 percent, it is still too low when we compare it with the other regions. Finally, the rest of the world has a high percentage of increasing FDI inflows at 49.47 percent from the average for the period 1980-1989 to 2011.

The second part of Table 1 shows a worldwide fluctuation. The average for FDI inflows in percentages for MENA / world was 3.5% during the period 1980-1989 which then drops to 1.2% in the period 1990-1999. Since year 2000 that average increased to reach 4% in 2010 and 3.9% in 2011. For developed economies / world the average of FDI inflows was extremely high in the period 1990-1999, recorded at 90.1%. Then the average started to decline, reaching 73.6% in the period 2000-2009, then 64.8% and 63.9% in 2010 and 2011 respectively. In opposition to that, the average for FDI inflows for the rest of the world

started at 28% in the period 1980-1989 then decreased to 8.7% in the period 1990-1999, and

then increased to 23.5%, 31.2%, and 32.2% in 2000-2009, 2010, and 2011 respectively.

Table 1: FDI Inflows into the world during 1980-2011 in millions of US$ and in %

Group	1980-1989	1990-1999	2000-2009	2010	2011
Regional average FDI Inflows in millions of US$					
World	2,152,388	7,444,773	85,840,185	19,906,662	20,438,199
Developed Economies	1,474,535	6,705,393	63,161,526	12,890,909	13,055,903
MENA region	74,584	91,605	2,509,899	795,730	791,079
The rest of the world	603,269	647,774	20,168,760	6,220,024	6,591,217
**Regional average FDI Inflows in millions of US$ using (2011prices)					
World	4,659,820	11,299,720	102,217,060	20,535,019	20,438,199
Developed Economies	3,192,304	10,177,492	75,211,695	13,297,805	13,055,903
MENA region	161,471	139,039	2,988,746	820,847	791,079
The rest of the world	1,306,051	983,196	24,016,630	6,416,361	6,591,217
Regional average FDI Inflows in percentages (%)					
Developed Economies / World	68.5	90.1	73.6	64.8	63.9
MENA / World	3.5	1.2	2.9	4.0	3.9
The rest of the world / World	28.0	8.7	23.5	31.2	32.2

Source: UNCTAD (1985, 1995, 2005, 2012); World Investment Report.
UNCTAD, http://unctadstat.unctad.org. ** Calculated using 2011 prices.

The trends in FDI inflow into the MENA region as compared to other regions were and

still are low as shown in Figure 1 below. Around the world, the distribution of FDI inflow is

uneven. The figure shows graphically the big differences between countries of the MENA

region, countries with developed economies, and the rest of the world. The biggest portion of

worldwide FDI inflows is to developed economies; the differences have been increasing since

1986 and the gap between the developed countries and the other regions have become bigger

and bigger. The trends in FDI inflow into the MENA region is close to zero when we

compare it with the rest of the world.

Source: UNCTAD, http://unctadstat.unctad.org
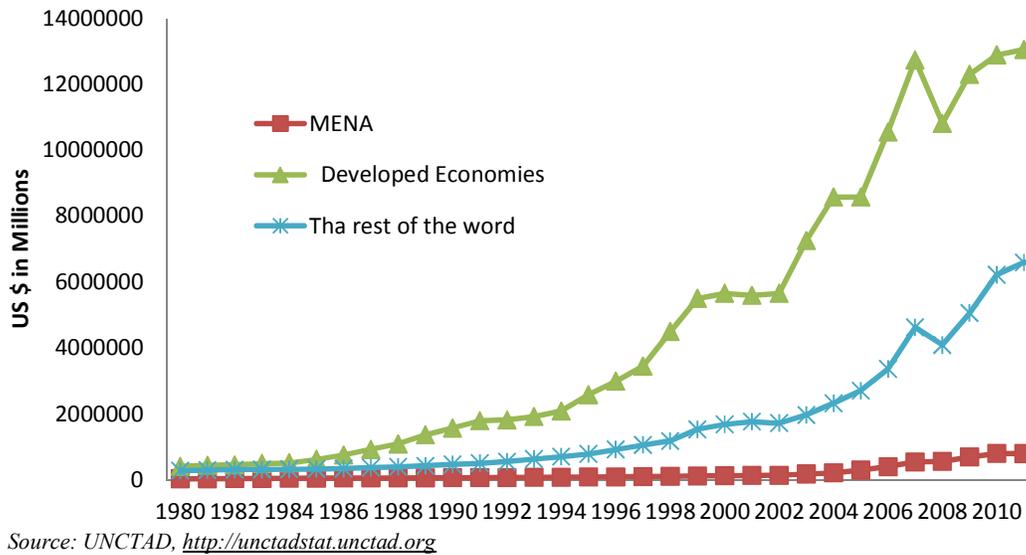
Figure 1: Trends in FDI Inflow into the world "1980-2011"

3.2: TOTAL FDI FLOWS AND STOCK IN MENA REGION DURING THE PERIOD FROM 1980 TO 2011:

Although Figure 1 shows that the trends in FDI inflow into the MENA region   remain fixed, Figure 2 below shows that there is some improvement and increase in the number of FDI inflows into MENA countries. As we see from the graph there was a slight increase in FDI inflows into MENA countries during the period 1980-2002. However, the total amount of FDI inflows received by MENA countries during the period 2002-2011 increased by more than five times, from US$100,000.00 million in 2002 to more than US$700,000.00 million in 2011. FDI inflows into the MENA region are small in absolute terms, but nevertheless might have a greater impact on their economies than what the absolute figure suggests.

Source: UNCTAD, http://unctadstat.unctad.org
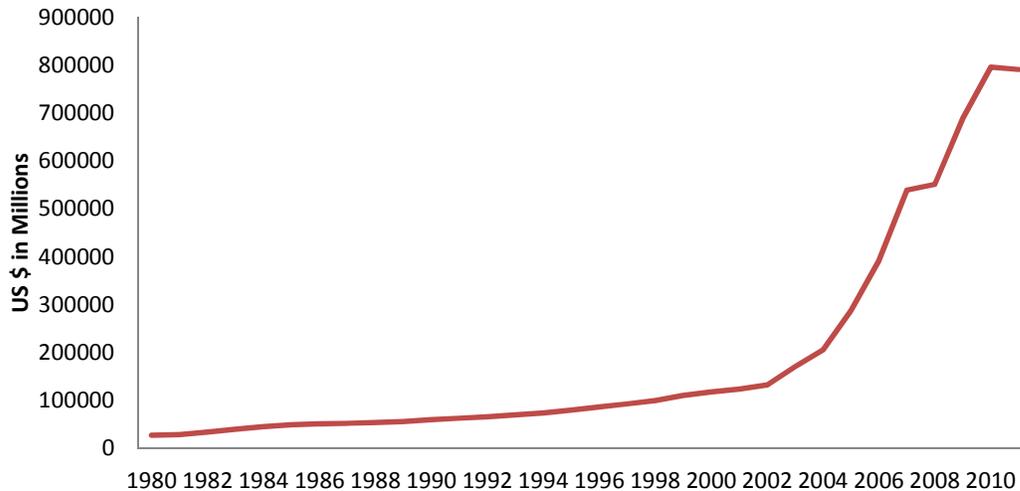
Figure 2: Trends in FDI Inflow into MENA "1980-2011"

   Figures 3 and 4 below show the inward FDI stocks into MENA countries during the

period 2002-2011. The highest MENA countries' inward FDI stock is illustrated in Figure 3;

the countries are Egypt, Iran, Israel, Morocco, Qatar, Saudi Arabia, Turkey, Tunisia, and the

United Arab Emirates. There are some interesting things to be seen in this graph. First, all of

these countries show smooth increases except Turkey; second, the trends in inward FDI stock

into Saudi Arabia are greater than other countries. The inward FDI stock in Turkey has

fluctuated during the period 2002-2011. The amount of inward FDI stock received in Turkey

increased from US$18,792.00 million in 2002 to US$154,124.00 million in 2007, then

dropped to US$80,370.00 million in 2008 and then increased to US$180,022.00 million in

2010, dropping again to US$140,305.00 million in 2011.[1] Saudi Arabia has a big share of the

amount of inward FDI stock as we can see in Figure 3. The amount has increased from

US$18,512.00 million in 2003 to US$186,850.00 in 2011, an increase of more than 900%.

---

[1] *UNCTAD, http://unctadstat.unctad.org*
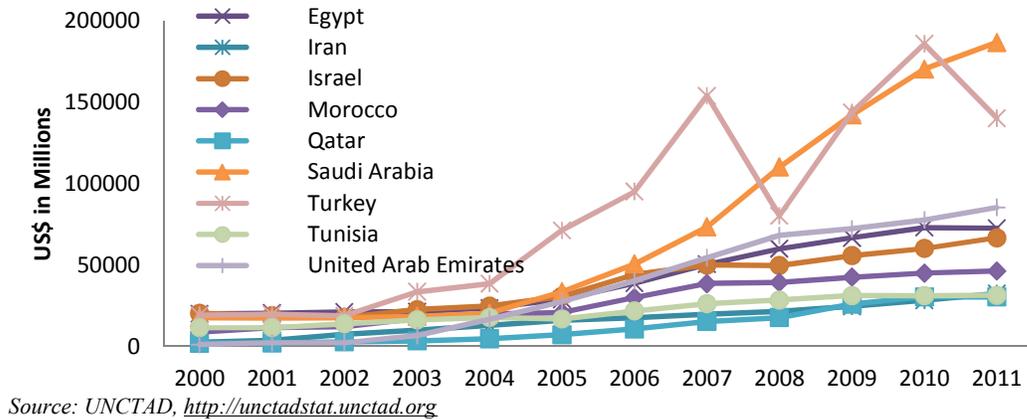
Figure 3: The highest MENA countries Inward FDI stock "2002-2011"

The lowest MENA countries' inward FDI stocks are illustrated in Figure 4; the countries are Algeria, Bahrain, Jordan, Kuwait, Libya, and Syria. The graphs in this figure show that all of these countries have increased their amounts of sharing inward FDI stock, even though the total amount for each country is still less than US$22,000.00 million in 2011, representing the lowest amount of the highest MENA countries' inward FDI stocks in 2011. Also, the graph shows that those six countries react in almost the same way in attracting FDI except Jordan, which has started to do better than the other five countries since 2003.
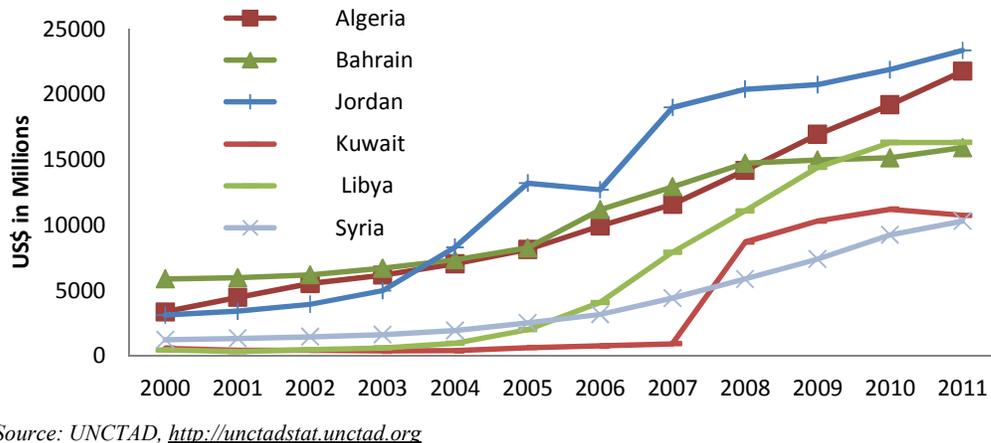
Figure 4: The lowest MENA countries Inward FDI stock "2002-2011"

4- DATA AND METHODOLOGY

It is anticipated that the study will test whether FDI and exports have had an impact on the economic growth of 15 MENA region countries: Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Libya, Morocco, Qatar, Saudi Arabia, Syria, Turkey, Tunisia, and the United Arab Emirates. The research excludes some MENA countries because of the unavailability of data for the variables tested in this paper. The data for this research has been collected from UNCTAD, World Development Indicators, the World Bank, International Financial Statistics, and the IMF. All the variables are defined in real values. The data set covers the period from 1980 to 2011.

4.1: THE MODEL:

To achieve the objective of this study (to determine the impact of FDI and exports on economic growth in the MENA region) a simple econometric framework is adopted. The study uses a model derived from the production function framework:

$$Y = f[L, K] \qquad ...(A)$$

Where: Y denotes the output level which is the per capita real Gross Domestic Product, or GDP. L denotes the amount of labor, representing the Labor Force of the country, or LF. K denotes the amount of domestically-financed capital stock proxied by the Gross Capital Formation or GCF. The model assumes a constant technology, so any increase in the amount of labor or capital will lead to an increase in the level of output.

Therefore, we can expand the production function by adding the Foreign-financed capital stock (FDI) and Exports (EX) separately as inputs to analyze their impact on economic growth. Balasubramanyam (1996) included FDI as an input in addition to labor and domestic capital in the production function in order to capture the externalities, since FDI is the prime source of human capital and new technology for developing countries. Exports have been added following some empirical studies which investigate export- led growth such as

Anyamele (2010), who states that more inputs of macro aggregates are needed for the production function to be illustrative of the real economy. The GCF includes both domestic and foreign investments. So, to prevent a double measurement of FDI in the model, the FDI stock is excluded from the gross capital formation.

So, Equation A becomes:

$$GDP = f[FDI, EX, LF, GCF] \qquad ...(B)$$

After extending the production function of Equation B and assuming that it is in log-linear form, an Ordinary Least Squares estimate, or OLS, can be specified as follows:

$$lnGDP_{it} = \alpha + \beta_1 lnFDI_{it} + \beta_2 lnEX_{it} + \beta_3 lnLF_{it} + \beta_4 lnGCF_{it} + \varepsilon_{it} \qquad ...(1)$$

Where i denotes country, t denotes time and ε_{it} is the error term which is assumed to be white noise and which varies over both country and time.

The study adds the lagged GDP to the model to control for persistent growth shocks:

$$lnGDP_{it} = \alpha + \beta_1 lnFDI_{it} + \beta_2 lnEX_{it} + \beta_3 lnLF_{it} + \beta_4 lnGCF_{it} + \beta_5 \ln GDP(-1)_{it} + \varepsilon_{it} \qquad ...(2)$$

Taking the first differences of both sides, the study obtains the following modified production function:

$$DlnGDP_{it} = \alpha + \beta_1 DlnFDI_{it} + \beta_2 DlnEX_{it} + \beta_3 DlnLF_{it} + \beta_4 DlnGCF_{it} + \beta_5 DlnGDP(-1)_{it}$$
$$+ \varepsilon_{it} \qquad ...(3)$$

Where $DlnGDP_{it}$ is the growth rate of the economy, $DlnFDI_{it}$ is the growth rate of foreign capital stock, $DlnEX_{it}$ is the growth rate of exports, $DlnLF_{it}$ is the growth rate of the labor force, $DlnGCF_{it}$ is the growth rate of domestic capital stock, and $DlnGDP(-1)_{it}$ is the lagged growth rate.

By estimating Equations 1, 2 and 3 using the OLS method under the assumption that ε_{it} is identically distributed across countries, a problem with this methodology will appear. The problem is that there is an unobservable fixed effect which captures country- specific heterogeneity. Hence, the study includes the fixed effects method which controls for the effects of time-invariant variables. The basic fixed-effects model focuses on the mean

response and assumes two things: first, that there is no serial correlation and second, that there is no cross-sectional correlation.

4.2: DATA DESCRIPTION:

The objective of this research to examine the impact of FDI and exports on economic growth, and as the model given above explains, there are five variables to be included to achieve this goal. The dependent variable is the real GDP per capita, and the independent variables are inward FDI stocks, exports, labor force, and gross capital formation. Table 2 summarizes some of these statistics using data on these five variables for the 15 MENA countries during the period 1980-2011.

Table 2: Summary Statistics

Variable	*Mean*	*Median*	*Std. Dev.*	*Min*	*Max*
Real GDP per Capita US$ in millions	81918.30	40774.84	109739.60	3271.15	779043.40
Inward FDI stock US$ in millions	12735.71	4131.98	24109.77	11.90	186850.00
Exports US$ in millions	29450.00	12740.85	46310.30	305.13	376223.70
Labor Force value in thousands	6352.31	2872.60	7257.82	107.43	27738.03
GCF US$ in millions	19074.85	10224.81	24056.23	523.42	162628.50

Sources: UNCTAD, http://unctadstat.unctad.org and *World Bank Development Indicators, http://databank.worldbank.org*

The correlation matrix presented in Table 3 indicates a positive relationship among all variables. As expected, the correlation between economic growth (GDP) and FDI is positive and so is the correlation between GDP and exports. Also, the correlation matrix indicates that there might be a serious multicollinearity problem in the data.

Table 3: Correlation Matrix

	GDP	*FDI*	*EX*	*LF*	*GCF*
GDP	*1*				
FDI	*0.811*	*1*			
EX	*0.825*	*0.781*	*1*		
LF	*0.582*	*0.384*	*0.254*	*1*	
GCF	*0.954*	*0.785*	*0.801*	*0.581*	*1*

Figure 5 below shows the trends in the GDP, FDI, exports, labor force and gross capital formation in MENA countries during the period 1980-2011 in logs in millions. From the graph it's clear that all the variables have increased and share nearly the same trend over time except for the labor force which shows a slight change during the period 1980-2011. The large changes were in the inward FDI stock which increased by 76.9% from 4.25 logs in millions to 5.75 logs in millions. Although the other variables increased as well, the amount of increase is less than that of the inward FDI stock. For instance, exports increased by 14%, the GDP by 13%, and the GCF by 9.5%.
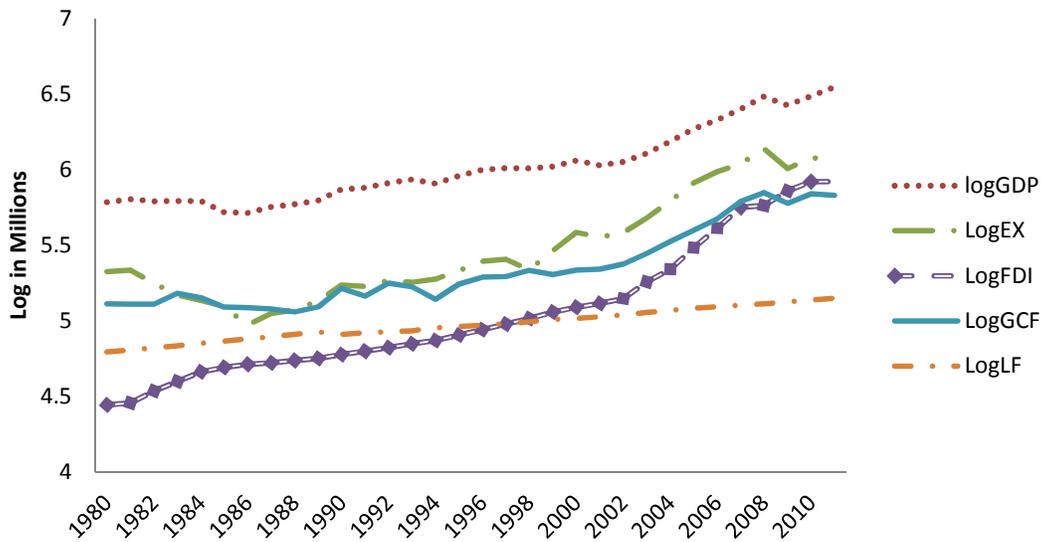
Figure 5: Trends in Log of GDP, FDI, Exports, Gross Capital formation, and Labor force into MENA "1980-2011"

5- EMPIRICAL RESULTS

This section of the paper presents the results of testing the effects of FDI and exports on gross domestic product using OLS estimates and fixed effects estimates for three particular specifications. Table 4 presents the results of the panel regression of the first specification, making use of the natural logarithm for the independent variables, FDI, exports, labor force, gross capital formation, and the dependent variable gross domestic product, Equation 1. The first column in the table presents the OLS estimation results which show that all of the coefficients of the independent variables are statistically significant at a level of 1% and have the expected sign except for the coefficient of the constant term which is insignificant, even at 10%, and the coefficient of the main variable, FDI, which has an unexpected sign. Also, the F-statistic is significant, and an R^2 of around 0.94 means that the data seem to fit the model well. However, the Durbin-Watson statistic which stands at 0.203 means that we have an autocorrelation problem. So, by adding the residual (-1) to the OLS in the second column we correct for the autocorrelation problem, and the results show that all of the coefficients of the independent variables are statistically significant at a level of 1% and have the expected sign except for the main variable, FDI, which has an unexpected sign. Also, the F-statistic is significant, and an R^2 of around 0.99 and a Durbin-Watson statistic of 1.978 means that the autocorrelation problem has been solved.

By using the fixed effects model for Equation 1, the results from the third column in Table 4 also show that all of the coefficients of the independent variables are statistically significant at a level of 1%, and show that FDI, exports, labor force, and GCF have a positive sign, which is expected, and a have a significant impact on the gross domestic product (GDP) of the panel countries. However, from the Durbin-Watson statistic which stands at around 0.433, we can see there is an autocorrelation problem. The fourth column shows the results of the fixed effects model for Equation 1 after solving for the autocorrelation problem. All of the

coefficients of the independent variables are statistically significant at a level of 1% except

for the coefficient of FDI, which is statistically insignificant even at a level of 10%.

Table 4: The Regression Results of the First Specification

Panel data Models: Dependent variable lnGDP per capita				
Independent Variables	*Equation 1*			
	OLS	*OLS*	*CSFE and PFE*	*CSFE and PFE*
Constant	0.182 (0.133)	0.241*** (0.058)	1.834*** (0.682)	1.147* (0.463)
lnFDI	-0.052*** (0.011)	-0.052*** (0.005)	0.082*** (0.016)	-0.011 (0.012)
lnEX	0.719*** (0.022)	0.696*** (0.010)	0.359*** (0.037)	0.574*** (0.028)
lnLF	0.301*** (0.015)	0.283*** (0.006)	0.189*** (0.072)	0.212*** (0.048)
lnGCF	0.168*** (0.026)	0.203*** (0.011)	0.344*** (0.033)	0.256*** (0.022)
Residual(-1)		0.889*** (0.021)		0.738*** (0.033)
Model summary				
R^2	0.937	0.988	0.979	0.991
Adjusted R-squared	0.937	0.988	0.976	0.989
F-Statistic	1631.8	7088.5	377.9	851.1
Durbin-Watson stat	0.203	1.978	0.433	1.786
Countries included	15	15	15	15
Total panel observations	437	422	437	422

Notes: 1- All variables are in logs. 2- Standard errors in parentheses with *** denoting significance at 1% level,
 ** denoting significance at 5% level, and * denoting significance at 10% level.
  3- CSFE means Cross-Section Fixed Effect and PFE means Period Fixed Effect.

In Table 5 the study looks further by adding lagged growth to the model which means that

we are looking at the second specification, Equation 2, after adding the natural logarithm of

the lagged GDP to the independent variables. The first column in the table shows the result of

the OLS estimates. The coefficients of the main variable, FDI, and of the constant term are

statistically insignificant. However, the other independent variables are statistically

significant at a level of 1%, and therefore the F- statistic is highly significant with a high R^2

of 0.99. There might be an autocorrelation problem here since the Durbin-Watson statistic is

1.552. In the second column, the results show that all of the coefficients of the independent

variables are statistically significant at a level of 1% and have the expected sign except for

the coefficient of the constant term, which is insignificant even at 10%, and for the

coefficient of the main variable, FDI, which has an unexpected sign. Also, the F-statistic is

significant with an R^2 of around 0.99 while the Durbin-Watson statistic is around 1.83.

Table 5: The Regression Results of the Second Specification

Panel data Models: Dependent variable lnGDP per capita				
Independent Variables	**Equation 2**			
	OLS	**OLS**	**CSFE and PFE**	**CSFE and PFE**
Constant	-0.070 (0.057)	0.075 (0.050)	-0.374* (0.648)	0.106 (0.411)
lnFDI	0.001 (0.005)	-0.023*** (0.004)	0.027** (0.016)	-0.001 (0.010)
lnEX	0.146*** (0.016)	0.381*** (0.024)	0.165*** (0.041)	0.327*** (0.033)
lnLF	0.040*** (0.009)	0.145*** (0.011)	0.098** (0.048)	0.140*** (0.042)
lnGCF	0.031*** (0.012)	0.111*** (0.012)	0.047* (0.024)	0.112*** (0.023)
LnGDP(-1)	0.819*** (0.019)	0.464*** (0.033)	0.752*** (0.055)	0.495*** (0.044)
Residual(-1)		0.448*** (0.036)		0.358*** (0.045)
Model summary				
R^2	0.988	0.992	0.992	0.993
Adjusted R-squared	0.988	0.991	0.991	0.992
F-Statistic	7424.1	8668.3	958.5	1115.9
Durbin-Watson stat	1.552	1.829	1.535	1.800
Countries included	15	15	15	15
Total panel observations	426	422	426	422

Notes: 1- All variables are in logs. 2- Standard errors in parentheses with *** denoting significance at 1% level,
    ** denoting significance at 5% level, and * denoting significance at 10% level.
    3- CSFE means Cross-Section Fixed Effect and PFE means Period Fixed Effect.

On the other hand, the results of the fixed effect estimates in the third column of the table

show that all of the independent variables are statistically significant at different levels. All of

the coefficients have the expected sign except for the constant term which has a negative sign

and is statistically significant at a level of 10%. The Durbin-Watson statistic is around 1.535,

and so the study tries to solve for the autocorrelation problem. In the fourth column, the OLS

estimation results are presented after adding a residual (-1) as an independent variable. The

results show that all of the coefficients of the independent variables are statistically

significant at a level of 1% except that the coefficients of the FDI and of the constant term are

statistically insignificant, even at a level of 10%. Therefore, the F- statistic is highly significant while the R^2 is very high at around 0.99 and the Durbin-Watson Statistic stands at around 1.80.

Table 6 presents the results of the panel regression of the third specification which makes use of the first difference of the natural logarithm for both sites as Equation 2 became Equation 3. We test the growth rate of the variables by taking the first difference, and the results in Table 6 show that the third specification is different from the two other specifications. Although the results of the OLS estimate in the first column of the table show that we have the expected sign for all variables, there are some variables that have statistically insignificant coefficients. The main variable in the regression -the growth rate in FDI, or *DlnFDI*- has no effect on the economic growth rate, the *DlnGDP*. Also, the coefficients of the labor force and macroeconomic shocks are statistically insignificant even at a level of 10%. On the other hand, the growth rates in exports and GCF have a positive relationship with the economic growth rate and are statistically significant at a level of 1%, while the F-statistic is also significant with an R^2 of around 0.409 and a Durbin-Watson statistic of around 1.943. This means that we do not have an autocorrelation problem.

By taking the first differences for all variables in both sites, the cross-section fixed effect drops out. The second column of the table presents the results of the period fixed effect estimates, which are almost the same as the results of the OLS estimate. The constant terms, the growth rates of exports and the GCF have positive relationships with the economic growth rate and their coefficients are statistically significant at a level of 1%. The results show that a 1 percent increase the growth rate of exports will lead to a 0.313 percent increase in the economic growth rate, and a 1 percent increase in the GCF growth rate will lead to a 0.122 percent increase in the economic growth rate. Also, the F-statistic is significant, and an R^2 of around 0.473 means that the data seem to fit the model well; therefore, we do not have

an autocorrelation problem since the Durbin-Watson statistic stands at around 1.89. To sum up, Table 6 shows that there is no relationship between the economic growth rate and the FDI and labor force growth rates, and that there is a strong relationship among the economic growth rate, exports, the GCF (domestic investments), and growth rates in the MENA region.

Table 6: The Regression Results of the Third Specification

Panel data Models: Dependent variable DlnGDP per capita		
Independent Variables	**Equation 3**	
	OLS	**PFE**
Constant	0.017** (0.008)	0.027*** (0.008)
DlnFDI	0.027 (0.020)	0.013 (0.021)
DlnEX	0.339*** (0.026)	0.313*** (0.031)
DlnLF	0.238 (0.154)	0.146 (0.159)
DlnGCF	0.167*** (0.025)	0.122*** (0.027)
DlnGDP(-1)	0.006 (0.039)	0.003 (0.046)
Model summary		
R^2	0.409	0.473
Adjusted R-squared	0.402	0.425
F-Statistic	56.2	9.94
Durbin-Watson stat	1.943	1.888
Countries included	15	15
Total panel observations	411	411

Notes: 1- All variables are in logs. 2- Standard errors in parentheses with *** denoting significance at 1% level, ** denoting significance at 5% level, and * denoting significance at 10% level
3- PFE means Period Fixed Effect.

Finally, the study examines the impact of FDI and exports by dividing the MENA countries into two categories: oil exporting and non-oil exporting countries. Table 7 below presents the results of the regression for the oil exporting MENA countries: Algeria, Bahrain, Iran, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates. The OLS estimation results presented in the first column show that the growth rates in exports, labor force, and GCF have positive relationships with the economic growth rate and that their coefficients are statistically significant at a level of 1%. However, the growth rates of FDI and the lagged GDP are insignificant even at a level of 10%. The R^2 stands at around 0.465, the F- statistic

is statistically significant and the Durbin-Watson statistic stands at around 1.967, which means that we do not have any autocorrelation problems. The second column provides the results of the fixed effect estimation, showing that none of the independent variables have any impact on the economic growth rate except for the growth rate in exports which has a statistically significant coefficient at a level of 1% and a positive relation with the economic growth rate. The R^2 is around 0.572, the F- statistic is statistically significant and the Durbin-Watson statistic stands at around 1.80, which means that we do not have any autocorrelation problems.

Table 7: The Regression Results of the Third Specification for the Oil Exporting MENA countries

Panel data Models: Dependent variable DlnGDP per capita		
Independent	*Equation 3*	
Variables	*OLS*	*PFE*
Constant	*0.004* *(0.013)*	*0.025** *(0.014)*
DlnFDI	*0.021* *(0.026)*	*-0.0007* *(0.027)*
DlnEX	*0.390**** *(0.033)*	*0.308**** *(0.042)*
DlnLF	*0.499*** *(0.204)*	*0.325* *(0.228)*
DlnGCF	*0.096**** *(0.036)*	*0.018* *(0.040)*
DlnGDP(-1)	*-0.032* *(0.058)*	*-0.029* *(0.078)*
Model summary		
R^2	*0.465*	*0.572*
Adjusted R-squared	*0.451*	*0.487*
F-Statistic	*34.8*	*6.72*
Durbin-Watson stat	*1.967*	*1.790*
Countries included	*8*	*8*
Total panel observations	*206*	*206*

Notes: 1- All variables are in logs. 2- Standard errors in parentheses with *** denoting significance at 1% level, ** denoting significance at 5% level, and * denoting significance at 10% level.
3- PFE means Period Fixed Effect.

Table 8 below presents the results of the regression for the non-oil exporting MENA countries: Egypt, Israel, Jordan, Morocco, Syria, Turkey, and Tunisia. The OLS estimation results presented in the first column show that the growth rates of all independent variables

(exports, FDI, labor force, GCF and the lagged GDP) have statistically significant

coefficients at various levels. All of the variables have an expected sign except for the labor

force which has a negative sign. The R^2 is around 0.463, the F- statistic is statistically

significant and the Durbin-Watson statistic stands at around 1.776, which means that we do

not have any autocorrelation problems. The second column provides the results of the fixed

effect estimation, showing that the growth rates of all the independent variables (FDI, labor

force, GCF and the lagged GDP) have statistically significant coefficients at various levels

except for the growth rate in exports, which is statistically insignificant even at a level of

10%. Also, all of the variables have an expected sign except for the labor force which has a

negative sign. The R^2 is around 0.592, the F- statistic is statistically significant, and the

Durbin-Watson statistic stands at around 1.760, which means that we do not have any

autocorrelation problems.

Table 8: The Regression Results of the Third Specification for Non-oil Exporting MENA countries

Panel data Models: Dependent variable DlnGDP per capita		
Independent Variables	**Equation 3**	
	OLS	**PFE**
Constant	0.039*** (0.107)	0.044*** (0.011)
DlnFDI	0.075** (0.034)	0.077** (0.036)
DlnEX	0.101** (0.044)	0.092 (0.058)
DlnLF	-0.498* (0.276)	-0.617** (0.290)
DlnGCF	0.321*** (0.031)	0.303*** (0.032)
DlnGDP(-1)	0.096** (0.044)	0.094* (0.051)
Model summary		
R^2	0.463	0.592
Adjusted R-squared	0.449	0.510
F-Statistic	34.4	7.25
Durbin-Watson stat	1.776	1.756
Countries included	7	7
Total panel observations	205	205

Notes: 1- All variables are in logs. 2- Standard errors in parentheses with *** denoting significance at 1% level,
** denoting significance at 5% level, and * denoting significance at 10% level.
3- PFE means Period Fixed Effect.

6- CONCLUSIONS

FDI inflows around the world have increased significantly since the 1980s. However, the distribution of FDI inflows has been uneven, and there is a big gap between developed and developing countries. Many developing countries including those of the MENA region have made some effort to attract FDI by establishing investment agencies, introducing policies that include fiscal and financial incentives, and pursuing a new development strategy that emphasizes FDI inflows and exports. Even though such polices can be effective in attracting FDI inflows, the benefit from them in the host countries may be limited, with an insignificant effect on their economies.

This research empirically examines the effects of both FDI stocks and exports on economic growth in fifteen MENA countries, using panel data from the period 1980-2011 by applying OLS and fixed effects estimation methods. The results analyzed in the first and second specifications indicate that the effects of all independent variables are statistically significant except for FDI. The third specification indicates that the effects of the FDI growth rate and labor force growth rate on the economic growth rate are positive but statistically insignificant even at a level of ten percent, and the effects of both exports and domestic investments, GCF, and growth rates are statistically significant at a level of one percent. This finding is similar to those obtained in some studies such as those of Nicet-Chenaf and Rougier (2011) and Darrat, Kherfi, and Soliman (2005), which argue that the effect of FDI on economic growth tends to be weak. The weak relationship between the FDI growth rate and the economic growth rate in the MENA region may not be surprising because of the fact that FDI inflows to MENA have been confined to a limited number of countries as this paper illustrates in Figure 3.

For oil exporting MENA countries, the results of the regression show that the exports, labor force and domestic investment growth rates have statistically significant impacts on the

economic growth rate as calculated by the OLS estimation method. On the other hand, only the exports growth rate has a statistically significant impact on the economic growth rate as calculated by the period fixed effect estimation method. For non-oil exporting MENA countries, the results of the regression show that the exports and FDI growth rates have statistically significant impacts on the economic growth rate as calculated by the OLS estimation method. However, only the FDI growth rate has a statistically significant impact on the economic growth rate as calculated by the period fixed effect estimation method.

To sum up, we may conclude that there is a significant and positive impact of exports only on the economic growth of panel MENA countries and oil- exporting MENA countries. The FDI growth rate has a significant and positive impact on the economic growth of panel non-oil exporting MENA countries.

REFERENCES

AbuAl-Foul, B. and Soliman, M. (2008), "Foreign Direct Investment and LDC Exports, Evidence from the MENA region." Emerging Markets Finance and Trade, Vol.44, No.2, pp. 4-14.

Ahmadi, R. and Ghanbarzadeh, M. (2011), "FDI, Exports and Economic Growth: Evidence from MENA Region." Middle-East Journal of Scientific Research, Vol.10, No.2, pp. 174-182.

Anyamele, O. (2010), "Foreign Direct Investment, Exports, and Education on Economic growth in Sub-Saharan Africa." International Research Journal of Finance and Economics Vol.51, pp. 38-49.

Atrayee, R. and Hendrik, V. (2006), "Foreign Direct Investment and Economic Growth: A Time-Series Approach." Global economy journal, Vol.6, No.1, pp.1-19.

Balasubramanyam, V., Salisu, M. and Sapsford, D. (1996), "Foreign Direct Investment and Growth in EP and IS Countries." The Economic Journal, Vol.106, No.434, pp. 92-105

Darrat A.F., Kherfi S. and Soliman M. (2005), "FDI and Economic Growth in CEE and MENA Countries: A Tale of Two Regions." 12th Economic Research Forum's Annual Conference, Cairo, Egypt.

Easterly, W. Levine, R. (2001), It's Not Factor Accumulation: Stylized Facts and Growth Models. The World Bank Economic Review. Vol.15, No.2, pp.177-219.

Hsiao, F. and M.C. Hsiao (2006), "FDI, exports, and GDP in East and Southeast Asia – Panel data versus time-series causality analyses." Journal of Asian Economics. Vol.17, pp. 1082-1106.

Hussien, M. (2009), "Impact of Foreign Direct Investment on Economic Growth in the Gulf Cooperation Council (GCC) Countries." International Review of Business Research Papers, Vol.5, No.3 (April), pp. 362-376.

Khan, M. (2007), "Foreign Direct Investment and Economic Growth: The Role of Domestic Financial Sector." Pakistan Institute of Development Economics, PIDE working papers, pp.1-55.

Mehrara, M. Haghnejad, A. Dehnavi, J. and Meybodi, F. (2010), "Foreign Direct Investment, Exports, and Economic Growth in The Developing Countries: A Panel Data Approach." Journal of Academic Research in Economics, Vol. 2, No.3, pp. 259-280.

Mohamed, S. and Sidiropoulos, M. (2010), "Another Look at the Determinants of Foreign Direct Investment in MENA Countries: an Empirical Investigation." Journal of Economic Development, Vol.35, No.2 (June), pp. 75-95.

Nicet-Chenaf, D. and Rougier, E. (2011), "New Exports matter: Discoveries, Foreign Direct Investment and Growth, an Empirical Assessment for Middle East and North African Countries." Journal of International Trade & Economic Development, Vol. 20, No.4, pp. 507-533.

Tiwari, A. and Mutascu, M. (2011), "Economic Growth and FDI in Asia: A panel-Data Approach." Economic Analysis & Policy, Vol.41, No.2 (September), pp. 173-187.

UNCTAD "United Nation Conference on Trade and Development"
http://unctadstat.unctad.org.

UNCTAD, World Investment Reports: (1985, 1995, 2005, and 2012).

World Bank Development Indicators, http://databank.worldbank.org.

APPENDICIES

APPENDIX

Table 9: List of analyzed MENA region countries

Algeria	*Jordan*	*Saudi Arabia*
Bahrain	*Kuwait*	*Syria*
Egypt	*Libya*	*Turkey*
Iran	*Morocco*	*Tunisia*
Israel	*Qatar*	*United Arab Emirates*

Table 10: List of analyzed Oil exporting MENA countries

Algeria	*Kuwait*	*Saudi Arabia*
Bahrain	*Libya*	*United Arab Emirates*
Iran	*Qatar*	

Table 11: List of analyzed Non-oil exporting MENA countries

Egypt	*Morocco*	*Tunisia*
Israel	*Syria*	
Jordan	*Turkey*	

VITA

Graduate School
Southern Illinois University

Mohamed S Abaid

mo_su_abid@yahoo.co.uk

Tripoli University
Bachelor of Science in Economics, January 1996

Tripoli University
Master of Science in Economics, September 2005

Research Paper Title:
The Impact of Foreign Direct Investment and Exports on Economic Growth
Case Study: Countries of the MENA Region from 1980 to 2011

Major Professor: Sylwester, Kevin