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Article

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Does foreign direct investment influence manufacturing sector growth in Middle East and North African region?

FDI and
manufacturing
sector growth

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Abstract

Purpose – This study empirically assessed the influence of foreign direct investment on the manufacturing sector growth in the Middle East and North African region using panel data of 18 countries covering the period of 1975–2017.

Design/methodology/approach – The study employed Levin *et al.* (2002) test (LLC) and Im *et al.* (2003) panel unit root test. Furthermore, Kao's cointegration test was applied to examine the long-run relationship between the variables. Both the Dynamic OLS and Fully modified OLS were used in estimating the short-run relationship.

Findings – The results of the DOLS and FMOLS indicate that both inward and outward FDI influence the manufacturing sector growth positively. This shows that much of the manufacturing sector growth in the MENA region is driven by both inward and outward FDI. Our findings made a strong new proposition that aside from the negative influence proposed by Stevens and Lipsey (1992), outward FDI could also have a positive influence on the manufacturing sector of a country through effective utilization of domestic raw materials that are produced locally for production of goods in a foreign country.

Practical implications – MENA countries should concentrate more on making policies that will encourage the effective utilization of domestic resources for outward foreign direct investment in other countries of the world as it has the capacity to boost the manufacturing sector growth. Also, policies that will attract more inflows of FDI in the region should be encouraged. Both inward and outward FDI should be considered as an integral part of MENA economic policy in order to spur the manufacturing sector growth.

Originality/value – Previous empirical studies on the relationship between FDI and manufacturing sector growth have focused much on the influence of inward FDI. Thus, very little attention has been paid to the contribution that the outward FDI makes to the growth of the manufacturing sector of the host country. Our empirical study focused on the influence of both inward and outward FDI on the manufacturing sector growth with specific emphasis on the MENA region that remains the center of attraction of inward FDI and a source of inward FDI to most nonoil producing developing and developed countries given the oil-rich nature of the region.

Keywords Inward foreign direct investment, Outward foreign direct investment, Manufacturing sector growth, MENA region

Paper type Research paper

Introduction

The manufacturing sector of an economy plays a crucial role in the production of goods and services, the creation of job opportunities, and the transformation of developing economies to a developed economy. Today, the level of economic development of a country is most often reflected by the modernity and performance of its manufacturing sector. As such, many countries of the world strive to improve their manufacturing sectors either by investing more or attracting FDI, which is assumed to bring in new technologies, innovations, create more jobs,

JEL Classification — F21, O14, O53

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and so on. The Middle East and North African regions are made up of mostly oil-producing countries, and hence, become a center of attraction of foreign direct investment that will have an impact on the growth of the manufacturing sector. Also, domestic oil and gas companies could expand its operation abroad through what is called outward foreign direct investment, and this act could have a positive or negative effect on the manufacturing sector of the host country.

Chenery and Strout (1966) posited that FDI inflow is expected to transfer technology, as well as increase managerial and marketing skills to domestic industries in order to enhance their productivity and economic growth to the wider economy of the host nation. It is evident that in recent times, Foreign Direct Investment (FDI) has become the most important source of external resource flows to developing countries and plays an extraordinary role in globalization. Furthermore, FDI has a significant potential to transform economies through innovation, enhancing productivity, and creating better-paying and more stable jobs in host countries, in sectors attracting FDI, as well as in the supportive industries (Arnold *et al.*, 2011; Bijsterbosch and Kolasa, 2009; Echandi *et al.*, 2015; Rizvi and Nishat, 2009; WEF, 2013).

However, statistics from the World Bank (2018) shows that FDI inflows and outflows have been fluctuating in the MENA region. FDI inflows to the MENA region amounted to an average of USD 53 billion in 2013. This represents a 52% decrease compared to 2008, which was a peak year for FDI in the region, with USD 113 billion of inflows (see Figure 1). After almost a decade of strong FDI growth, inflows started falling in 2009/10, in the aftermath of the global economic and financial crisis. They subsequently hit an all-time low in 2011 following the political upheavals in several Arab Countries in Transition. These events have had a negative spillover effect on the investment attractiveness of the entire region, with some investors suspending their operations, downscaling their commitments, or withdrawing their investments all-together in some countries (Organisation for Economic Co-operation and Development, 2014). In terms of outward FDI, it reached a peak of USD 65 billion in 2007 and started falling after the 2008 global economic and financial crisis (see Figure 2).

Previous empirical studies on the relationship between FDI and the manufacturing sector growth have focused much on the influence of inward FDI (Patience, 2011; Javorcik, 2004; Blomstrom and Wolf, 1994; Aitken and Harrison, 1999; Masron and Hassan, 2016; Samantha and Liu, 2018; Moussa *et al.*, 2019). Thus, very little attention has been paid to the contribution that the outward FDI makes to the growth of the manufacturing sector of the host country. Although, developed countries such as the Netherlands, the United States, Germany,

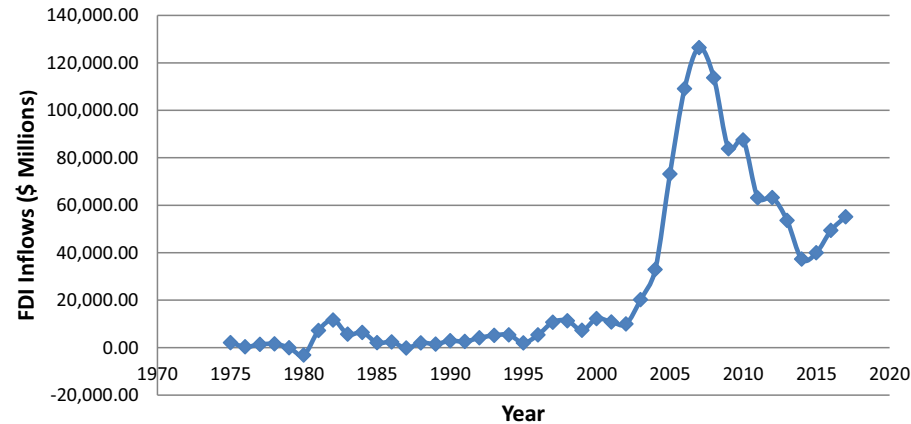
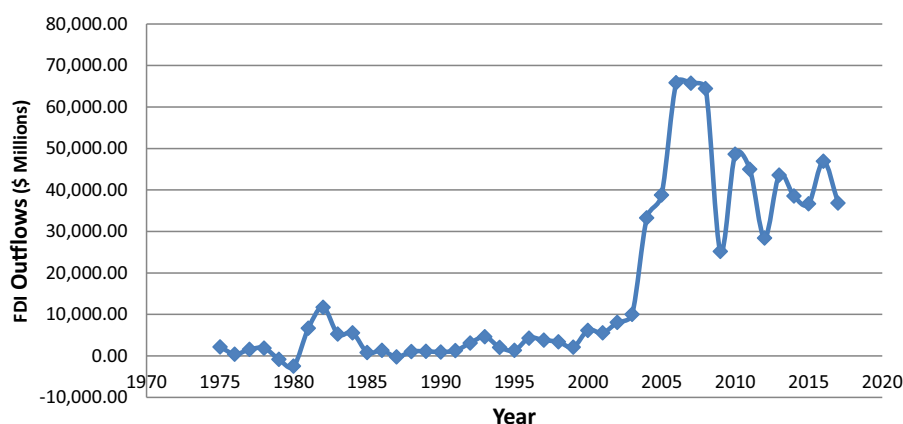


Figure 1.
Foreign direct
investment inflows in
the MENA region
(1975–2017)

Source(s): Author’s Chart Based on Data Obtained from World Development Indicators and United Nations World Economic Situation and Prospects (2018)



Source(s): Author's Chart Based on Data Obtained from World Development Indicators and United Nations World Economic Situation and Prospects (2018)

Figure 2.
Foreign direct
investment outflows in
the MENA region
(1975–2017)

Hong Kong, the United Kingdom, Switzerland, Japan, Ireland, France, Canada, Belgium, Spain, etc., and even developing countries of China and India remain the leading source in terms of outward FDI, the MENA region that is made up of oil and gas producing countries could be a source of inward FDI to most nonoil producing, developing and developed countries. Thus, there is a need for a study like this to be carried out in the MENA region, given the oil-rich nature of the region. Hence, our study will take cognizance of the influence of both inward and outward FDI using the panel data of 18 countries in the MENA region covering the period of 1975–2017. Thus, the major aim of this study is to determine the influence of inward FDI and outward FDI on the manufacturing sector growth with specific emphasis on the MENA region.

Foreign direct investment and manufacturing sector growth: theoretical and empirical literature

[Findlay \(1978\)](#) postulates that FDI increases the rate of technical progress in the host country through a contagion effect from the more advanced technology, management practices, etc., used by foreign firms. FDI is assumed to augment domestic capital, thereby stimulating the productivity of domestic investments ([Borensztein et al., 1998](#)).

Theoretically, FDI stimulates host country manufacturing sector growth by transferring technology and restructuring the industrial sector. It is through foreign direct investment in the manufacturing sector that most developing countries, such as the Asian Tigers of Hong Kong, Singapore, South Korea, and Taiwan, were transformed into developed countries. They went through rapid growth through industrialization since the 1960s when transnational corporations (TNCs) looked for areas with cheap labor and low costs for other things. Generally, Multinational Co-operations (MNC) or foreign firms are technologically advanced than local firms when investing in the host country. Technology transfer takes place when local firms adapt MNC's or foreign firm's technology. The existing competition of the host country may be affected in the presence of affiliates of MNC's or foreign firms. In such a situation, the industrial structure of the host country may change or restructure to compete with MNC's. According to [Dunning and Lundan \(2008\)](#), this spillover effect arises as a direct consequence of linkages between FDI and host country economic agents.

[Moussa et al. \(2019\)](#) pointed out that in most countries, multinational corporations train the local workforce they recruit to meet the exigencies of the work they are to do for foreign

companies. They also train the personnel of their partners upstream and downstream to reduce delivery time and cost, among other things. By so doing, MNEs transfer techniques, technologies, methods, innovations, and marketing strategies to local enterprises.

Also, FDI has the potential to improve the competitiveness of domestic manufacturing firms through its effect on competition. Competition from MNEs can negatively affect local enterprises, in case they lose part of their market shares, and their existence is threatened by foreign entrants (Wang and Blomström, 1992; Markusen and Venables, 1999). In fact, the presence of MNEs puts competitive pressure on domestic firms that compel them to become more efficient and competitive by modernizing and streamlining their production processes (Sjöholm, 1999). Competition between MNEs and domestic firms mounts pressure on the latter to optimally utilize their resources and technology so as to produce quality products in large volumes at a lower cost. Nonetheless, in most cases, the presence of MNEs weakens domestic enterprises, as well as their capacity to absorb the technologies emanating from FDI. As such, any inefficiency of domestic firms would be a hard blow to them because they can lose a significant part of their market shares to their foreign counterparts (Haddad and Harrison, 1993; Aiken and Harrison, 1999). So, they have a permanent pressure to improve their competitiveness. In short, domestic firms have to be competitive, or they perish.

Empirically, the relationship between FDI and the manufacturing sector growth has been widely investigated in developing and developed countries of the world. Some found a significant relationship between FDI and the manufacturing sector growth, while others found no significant relationship. Patience (2011) examined the impact of foreign direct investment on manufacturing output growth of West Africa. The study is conducted across the Economic Community of West African States (ECOWAS), which is the most popular regional economic community in Africa. Data was collected from banks' annual reviews. It was found that foreign direct investment contributes to manufacturing output growth in West Africa.

By studying the impact of FDI on the productivity of Lithuanian industries over the period 1996–2000, Javorcik (2004), reported that it is the upstream or vertical links derived from contacts between global firms and local businesses that generate the greatest benefits. However, these positive spillovers originate mainly from firms that are partially funded with foreign investments and not those totally owned by foreigners. Blomstrom and Wolf (1994) tried to determine if FDI repercussions on Mexican manufacturing were so higher to help local firms to trend to a productivity level that is similar to the American firms' one from 1965 to 1982. Their results showed a positive impact of foreign investments with significance in terms of local productivity growth rate. Aitken and Harrison (1999) investigated the effect of FDI on more than 4,000 domestic firms in Venezuela during the period 1976–1989. They have found a positive relationship between foreign equity participation and productivity in plants of less than 50 employees. Furthermore, they have found an adverse effect of FDI on the productivity of wholly domestically owned firms. Also, they have suggested that the net impact of foreign ownership on the economy is quite small. They could not find any spillover effect from foreign firms to domestic firms.

In an influential study, Chakraborty and Nunnenkamp (2008) analyzed the impact of FDI on economic growth as a whole and sector level for the time series data of India. The study found a significant causal relationship between FDI stock and manufacturing sector output and failed to find any causal relationship in the primary sector. Services sector FDI found as a growth promoter in the manufacturing sector through cross-sector spillovers. They confirmed the argument that the impact of FDI on economic growth does not depend only on the amount of FDI but also on its structural composition and type. Masron and Hassan (2016) investigated the impact of US FDI on the manufacturing sector of Malaysia for the period from 1999 to 2008. The study could not find positive spillover from FDI inflows to various industries in the manufacturing industry.

[Samantha and Liu \(2018\)](#) investigated the relationship between inward FDI and industrial sector performance of Sri Lanka at the aggregate level for the period 1980–2016. They used the Auto Regressive Distributed Lag (ARDL) model to identify the long-run relationship and short-run dynamics of the selected variables. ARDL bounds test verifies the existence of co-integration among the selected variables. The study failed to find a significant relationship between FDI and industrial sector growth of Sri Lanka in the long run, as well as in the short run. [Jayawickrama and Thangavelu \(2007\)](#) examined the influence of FDI on manufacturing growth of Singapore in a panel data sample of 14 manufacturing industries over 30 years, stretching from 1975 to 2004. They discovered a positive contemporaneous effect of FDI on the output growth of Singapore manufacturing industries. [Haskel et al. \(2007\)](#) examined whether inward Foreign Direct Investment boost the productivity of domestic firms in the UK and their regression result discovered that no evidence of spillovers was found on the domestic firms in the UK.

[Moussa et al. \(2019\)](#) evaluated the impact of Foreign Direct Investment (FDI) on the productivity of manufacturing firms in Cameroon. Cobb Douglass type production function was estimated using the Generalized Least Squares method for 1,269 enterprises in 24 branches of the country's industrial sector for the period spanning from 2005 to 2011. The findings show that FDI has a negative impact on the productivity of manufacturing firms. A 1 % increase in the productivity of foreign companies led to a 4.4% reduction in that of domestic firms. Also, a 1% increase in multinational enterprises reduced the sales growth of domestic firms by 0.10%. In Nigeria, [Obi-Nwosu et al. \(2019\)](#) examined the role of foreign direct investment in the manufacturing capacity for the period of 1984–2017. Using multiple regression analysis (OLS) models, the study discovered that FDI was able to impact the manufacturing capacity significantly.

On the relationship between outward foreign direct investment and the manufacturing sector growth, [Sauramo \(2008\)](#) analyzed the relationship between outward FDI and domestic investment using macroeconomic data for Finland over the period 1965–2006. He finds that outward FDI decreases the domestic investment rate by a one-to-one ratio. Similarly, [Al-Sadig \(2013\)](#) empirically examined the effects of outward FDI on domestic investment in developing countries. By using the data from 121 developing and transition economies over the period 1990–2010, the results suggest that FDI outflows negatively impact the rate of domestic investment. [Stevens and Lipsey \(1992\)](#), using firm-level data covering the domestic and foreign operations of seven US MNEs for a period of 16–20 years, show that there is a strong positive correlation between FDI outflows and domestic investment.

Data sources and definition of the variables

The annual data used in the study covers the period from 1975 to 2017 for the MENA regions. The data has been taken from World Development Indicators (2018) and the United Nations World Economic Situation and Prospects (2018). In order to examine the influence of foreign direct investment on the manufacturing sector growth in the MENA region, we examine the influence of both inward FDI (FDI inflows) and outward FDI (FDI outflows) on the manufacturing sector growth and a set of other control variables such as exchange rate, inflation rate, household consumption expenditure, financial development, and trade openness that have been proved by previous studies to have an influence on the growth of manufacturing sector. The manufacturing sector growth is measured in this study as the ratio of manufacturing value added to GDP.

Inward FDI consists of foreign entities investing in local economies, and hence, bringing in foreign capital. Inward FDI is expected to have a positive relationship with the manufacturing sector ([Blomstrom and Wolf, 1994](#) and [Jayawickrama and Thangavelu, 2007](#); [Aitken and Harrison, 1999](#)) as it will increase the level of investment in the host country's manufacturing sector and thus, raising their productivity. On the contrary, inward FDI could have a negative

influence on the growth of domestic manufacturing firms through intense competition as they could offer higher quality products and services. Most domestic manufacturers that are unable to withstand the stiff competition may be forced to go out of business, and hence, reducing the overall output of domestic manufacturing firms. Inward FDI is measured as a ratio of FDI inflows to GDP.

Outward FDI is a business strategy in which a domestic manufacturing firm expands its operations to a foreign country. This can take form as a greenfield investment, a merger/acquisition, or expansion of an existing foreign facility. The effects of outward FDI on the manufacturing sector may vary from one home country to another, depending on firms' underlying motives for investing abroad and on the characteristics of each home country's economy. For example, because capital outflows would transfer part of private domestic savings abroad, the effects of such outflows in countries with abundant savings and other forms of capital will differ significantly from the effects in countries with scarce capital (Al-Sadig, 2013). Outward FDI is expected to have a reducing effect on the manufacturing sector growth. Sauramo (2008) and Al-Sadig (2013) have found a negative relationship between outward FDI and domestic investment.

Stevens and Lipsey (1992) identified a mechanism through which FDI outflows may negatively affect the home country's domestic investment. They argued that firms seeking to invest abroad would transfer part of their capital abroad, which means that part of private domestic savings is shifted out of the home country. Thus, under conditions of an imperfect financial market and scarcity of financial resources, the financial liquidity available to finance new investment activities is reduced, and domestic firms will face difficulties in raising funds in the domestic financial markets. Therefore, based on this channel, FDI outflows discourage the home country's manufacturing sector growth, especially if firms finance their overseas activities internally. On the other hand, outward FDI could also have a positive relationship with the manufacturing sector growth when a domestic manufacturing firm expands its operation to a foreign country and then uses raw materials produced in its home country for production in the foreign country. In this case, the domestic manufacturing firms are encouraged to produce more goods that will serve as raw materials for the production of finished goods in a foreign country. For instance, a car assembling company based in Germany may expand its operation in South Africa and then uses car engine, batteries, tires, and other car parts produced by different manufacturing companies in its home country for assembling of cars in the foreign country, thereby stimulating the production of car parts in the home country. This scenario could be likened to the MENA region, where the majority of the countries are oil-producing countries. Most oil manufacturing companies could expand their oil refinery abroad, and hence, exporting crude oil abroad for refining. This helps to increase crude oil production in the home country. Stevens and Lipsey (1992) found a strong positive correlation between FDI outflows and domestic investment. Outward FDI is measured as a ratio of FDI outflows to GDP.

The exchange rate that is known as the rate at which one currency is exchanged for another is expected to have a negative relationship with the manufacturing sector growth. This is so because when the value of a domestic currency depreciates in relation to a foreign currency, export becomes cheaper, and import becomes dearer, and thus, domestic manufacturing firms will be encouraged to produce more for export and will invariably increase their productivity. Also, the exchange rate could have a positive relationship with the manufacturing sector growth such that depreciation of domestic currency will lead to a reduction in the output of manufacturing firms (Lawal, 2016). The general rule of negative relationship does not apply to countries that are highly dependent on the import of capital goods. Fluctuations in the exchange rate can cause instability in purchasing power, and hence, negatively impact investment in import of manufacturing inputs. Thus, depreciation in the exchange rate leads to the increased cost of imported inputs, which translates into a

high cost of production that lowers the manufacturing output and capacity utilization and vice versa. The exchange rate of the local currency unit per US dollar is used as a measure of the exchange rate.

The inflation rate is used to capture the influence of macroeconomic stability, and the expected sign of the coefficient is negative (Chaudhry *et al.*, 2013; Siyakiya, 2014; and Mawufemor *et al.*, 2016). A rise in the inflation rate reduces the demand for goods and services and profits of manufacturing firms. Inflation is measured by the consumer price index that reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.

Household consumption expenditure is measured as Households and NPISHs final consumption expenditure (% of GDP). Household final consumption expenditure is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. Higher household consumption expenditure encourages manufacturing firms to produce more, and thus, raises their output. The theory of acceleration that was developed by Carver and Aftalion states that an increase or decrease in the demand for goods leads to an increase or decrease in production. They argued that firms that are operating in the industry respond to this growth in demand by expanding production and also by fully utilizing their existing capacity to produce. Studies on the influence of FDI on the manufacturing sector growth have not controlled for household consumption expenditure.

Financial development is used in this study to capture the extent to which funds are made available to the manufacturing sector. Commonly used proxies of financial development include the ratio of broad money supply (M2) to GDP, which indicates the size of financial intermediation (Calderón and Liu, 2003; Hassan *et al.*, 2011) and the ratio of domestic credit to the private sector to GDP, which represents the actual resources that are channeled to the private sector (Hassan *et al.*, 2011; Menyah *et al.*, 2014). In this study, we used the ratio of domestic credit to the private sector to GDP as a measure of financial development. Financial development is expected to have a positive relationship with the manufacturing sector growth. The studies of Azolibe and Okonkwo (2020); Ogar *et al.* (2014), and Elijah (2018) confirmed a positive relationship between domestic credit to the private sector and the manufacturing sector growth.

Trade openness that measures the ratio of import and export to GDP may positively affect the manufacturing sector growth through technology and knowledge spillovers (Al-Sadig, 2013; Mahendhiran *et al.*, 2006; Chandran and Munusamy, 2009). The degree of openness to trade is expected to have an impact on the manufacturing sector as the import of foreign technology will improve the quality of production, and larger export will boost foreign exchange earnings for domestic manufacturing investors. However, it may also exert a negative effect on the manufacturing sector growth if consumers prefer imported products (Ndikumana, 2000).

The model and estimation procedures

The model of this study is a modified form of the model used by Al-Sadig (2013) and is stated as follows:

$$\text{MANVAD}_{it} = \alpha_0 + \alpha_1 \text{FDI}_{it} + \beta \sum \text{CV}_{it} \quad (1)$$

where: MANVAD is manufacturing value added as a percentage of GDP and is used as a measure of the manufacturing sector growth, FDI is foreign direct investment, and $\sum \text{CV}$ is a vector of control variables, which are comprised of the exchange rate, inflation rate, household consumption expenditure, financial development, and trade openness for the

representative countries. Both inward and outward FDI are employed in the model. The final equation may be written as follows.

$$\begin{aligned} \text{MANVAD}_{it} = & \alpha_0 + \alpha_1 \text{IFDI}_{it} + \alpha_2 \text{OFDI}_{it} + \alpha_3 \text{EXGR}_{it} + \alpha_4 \text{INFR}_{it} + \alpha_5 \text{HCEXP}_{it} \\ & + \alpha_6 \text{FD}_{it} + \alpha_7 \text{TRO}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

where; MANVAD_{it} = Manufacturing value added (% of GDP) for country i at time t , IFDI_{it} = Inward foreign direct investment (% of GDP) for country i at time t , OFDI_{it} = Outward foreign direct investment (% of GDP) for country i at time t , EXGR_{it} = Exchange rate for country i at time t , INFR_{it} = Inflation rate for country i at time t , HCEXP_{it} = Household consumption expenditure for country i at time t , FD_{it} = Financial development for country i at time t , TRO_{it} = Trade openness for country i at time t , ε_{it} = Error term.

The models are estimated via panel data analysis on the unrestricted specification. Subscript “ t ” stands for 43 years from 1975 to 2017, and “ i ” stands for 18 countries. For the purpose of this study, we used annual times series data spanning from 1975 to 2017 (43 observation) for the selected 18 Middle East and North African countries that are Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, and United Arab Emirates except for Djibouti, West Bank and Gaza, and Yemen due to unavailability of data for the variables.

For the estimation procedure, the study begins with a correlation analysis of the individual selected countries. For addressing the stationarity properties of the time-series, unit root tests are used to check the order of integration and to confirm the stationarity of the variables. The study uses [Levin et al. \(2002\)](#) test (LLC) and [Im et al. \(2003\)](#) (IPS). Next, cointegration analysis is performed to examine whether the variables are cointegrated (i.e., whether there are stable long-term equilibrium relationships among them) in order to avoid spurious regressions.

Once identified that there is a linear combination that keeps the panel variables in proportion to one another in the long run; then, the next step is to investigate the panel relationship among the competing variables. In order to check the extent of the relationship, the panel dynamic ordinary least square (DOLS) method provided by [Kao and Chiang \(2001\)](#) and panel fully modified ordinary least square (FMOLS) suggested by [Phillips and Hansen \(1990\)](#) are used. The panel DOLS includes advanced and delayed values in the cointegrated relationship to eliminate the correlation between regressors and error term. On the other hand, an FMOLS regression is used to present optimal estimates of cointegrating regressions. By keeping the fact that the OLS estimator is a biased and inconsistent estimator when applied to cointegrated panels, the study also used the “group-mean” panel FMOLS estimator developed by [Pedroni \(1999, 2001a, 2001b, 2004\)](#). An estimator of the FMOLS model not only generates consistent estimates of the β parameters in relatively small samples but also controls for the likely endogeneity of the regressors and serial correlation.

Analysis and discussion of results

[Table 1](#) shows the basic relationship between foreign direct investment and manufacturing sector growth for MENA countries over the period of 1975–2017. In the cross-sectional units, the two variables, i.e., inward FDI and outward FDI, seem to have a poor relationship with the manufacturing sector growth with a substantial number of countries reporting low and/or negative correlations. Most of the negative relationships were observed from the nonoil producing countries in the region. Because of the negative correlations in a few countries, the pooled (panel) correlation is only 0.013069 and 0.005435 (see bottom right of the [Table 1](#)).

The panel unit root test statistics, as shown in [Table 2](#), suggest that only manufacturing value added exchange rate and financial development are stationary at first difference. Therefore, we can conclude that the panel variables in our study are integrated at level zero, $I(0)$, and order one, $I(1)$.

| Country | Correlation between | |
|----------------------|--|---|
| | Inward FDI and manufacturing value added | Outward FDI and manufacturing value added |
| Algeria | 0.702735 | −0.308897 |
| Bahrain | −0.119089 | −0.237988 |
| Egypt | −0.166039 | 0.026404 |
| Iran | 0.156448 | 0.253302 |
| Iraq | 0.095622 | 0.273500 |
| Israel | 0.713486 | 0.534390 |
| Jordan | 0.691375 | 0.062987 |
| Kuwait | 0.294061 | −0.018435 |
| Lebanon | 0.468815 | 0.433537 |
| Libya | 0.650922 | 0.369570 |
| Malta | −0.392858 | −0.011527 |
| Morocco | −0.638329 | −0.772058 |
| Oman | −0.117445 | 0.103411 |
| Qatar | 0.444905 | 0.157669 |
| Saudi Arabia | 0.001452 | 0.490949 |
| Syrian Arab Republic | 0.215558 | 0.154547 |
| Tunisia | 0.119426 | 0.148854 |
| United Arab Emirates | 0.377495 | 0.274609 |
| Panel | 0.013069 | 0.005435 |

Source(s): Author's Calculations

Table 1.
Correlations between
foreign direct
investment and the
manufacturing sector
growth in the Middle
East and North Africa

| Variables | | At level | First difference |
|-----------------------------------|-----|---------------|------------------|
| Manufacturing Value added | LLC | (−1.29836) | (−23.5576)*** |
| | IPS | (−0.77581) | (−21.1970)*** |
| Inward FDI | LLC | (−2.50881)*** | — |
| | IPS | (−5.24908)*** | — |
| Outward FDI | LLC | (−4.10303)*** | — |
| | IPS | (−6.77173)*** | — |
| Exchange rate | LLC | (5.44254) | (−11.9237)*** |
| | IPS | (1.29684) | (−11.5533)*** |
| Inflation rate | LLC | (−17.4853)*** | — |
| | IPS | (−12.0944)*** | — |
| Household consumption expenditure | LLC | (−2.31390)*** | — |
| | IPS | (−3.16787)*** | — |
| Financial development | LLC | (2.16805) | (−13.8354)*** |
| | IPS | (1.94664) | (−14.7936)*** |
| Trade Openness | LLC | (−0.20448)* | — |
| | IPS | (−2.33669)*** | — |

Note(s): *** and * represents the rejection of the null hypothesis of nonstationary at 1% and 10% of significance level, respectively. Automatic lag length is based on AIC. LLC = Levin, Lin, and Chu and IPS = Im, Pesaran, and Shin

Source(s): Author's Calculations

Table 2.
Panel unit root test
Result

Since not all the variables are integrated of the same order, a cointegration test is performed to determine whether the variables have a long-run relationship. The cointegration test for the manufacturing growth model is based on the Kao (Engle-Granger Based) test. The result of

the cointegration test in [Table 3](#) shows that all the variables are jointly cointegrated and have a long-run relationship.

[Table 4](#) presents the results of the estimation for manufacturing sector growth under the panel DOLS and FMOLS model. The first model comprises the entire sample of Middle East and North African countries; the second model excludes the eight high-income countries with the most of FDI and manufacturing value added being Bahrain, Israel, Kuwait, Malta, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. They are excluded because their high FDI and manufacturing value added may distort results in one direction; thus, they are identified to elucidate clear patterns among the variables that may not be apparent in the rest of the sample. However, in model one; Inward FDI is positive and significant in both the DOLS and FMOLS. This shows that inward FDI is positively influencing the manufacturing sector growth in the MENA region. But in model 2, where we excluded the high-income countries, inward FDI becomes insignificant, although it maintained its positive relationship with the manufacturing sector growth. This positive and significant relationship could be attributed to the oil-rich nature of the region and remains a center of attraction of FDI inflows. Most FDI inflows into the region are usually in the oil and gas manufacturing sector. This agrees with the findings of [Blomstrom and Wolf \(1994\)](#); [Jayawickrama and Thangavelu \(2007\)](#); and [Aitken and Harrison \(1999\)](#).

Contrary to expectation, in model one, outward FDI exhibits a positive and significant influence on the manufacturing sector growth in both the DOLS and FMOLS model, but it is more significant in the DOLS model. But excluding the high-income countries in model 2, it is negative and insignificant. This positive and significant relationship shows that investments made by the region in other countries of the world have a positive and significant influence on the growth of domestic manufacturing firms. This is consistent with the findings of [Stevens and Lipsey \(1992\)](#) that outward FDI has a strong positive correlation with domestic investment, but however, it did not support the work of [Sauramo \(2008\)](#) and [Al-Sadig \(2013\)](#) that outward FDI has a negative relationship with domestic investment. This also supports the suggestion that outward FDI could also have a positive relationship with the manufacturing sector growth when a domestic manufacturing firm expands its operation to a foreign country and then uses raw materials produced in its home country for production in a foreign country. In this case, the domestic manufacturing firms are encouraged to produce more goods that will serve as raw materials for the production of finished goods in a foreign country. It is not so surprising as the majority of the MENA regions are made up of the oil-producing countries, where most domestic oil manufacturing companies expand its oil refineries abroad, and hence, exporting crude oil from its home country to abroad for refining and subsequent distribution to both home country and abroad. This overseas expansion helps to increase crude oil production and manufacturing sector output in the home country.

Furthermore, the control variables exchange rate has a negative and insignificant influence in the DOLS model, whereas it is positive and insignificant in the FMOLS model. However, it exhibits a strong negative influence on the DOLS model. However, in model 2, it exerts a strong positive and significant influence on the manufacturing sector growth. This negative relationship shows that when the value of a domestic currency depreciates in relation to a

Table 3.
Kao (Engle-Granger
based)
cointegration test

| | <i>t</i> -Statistic |
|---|---------------------|
| ADF | (-3.094194)*** |
| Residual variance | 60.55898 |
| HAC variance | 54.93247 |
| Note(s): *** represent significant at 1% level of significance. Automatic lag length is based on AIC | |
| Source(s): Author's Calculations | |

| Variable | Model 1 | | Model 2 | |
|-----------------------------------|------------------------|------------------------|------------------------|------------------------|
| | DOLS | FMOLS | DOLS | FMOLS |
| Inward FDI | 0.219134** (1.097074) | 0.705800* (0.453733) | 1.677051 (1.139082) | 0.841394 (0.531275) |
| Outward FDI | 11.67696** (4.613034) | 2.505458* (1.227330) | -4.603314 (7.031365) | -0.670537 (1.616615) |
| Exchange Rate | -26.78146 (28.05899) | 15.02403 (10.32633) | 1.735031*** (0.626176) | 1.984885*** (0.330067) |
| Inflation Rate | 1.827791** (0.823307) | 0.040314 (0.270728) | -0.006945 (0.120553) | 0.023424 (0.044687) |
| Household Consumption Expenditure | 0.071978** (0.130415) | 0.108183*** (0.070680) | 0.077961* (0.043151) | 0.076699*** (0.025483) |
| Financial Development | 0.428918*** (0.131082) | 0.161260*** (0.062851) | 0.003042 (0.164681) | -0.047933 (0.084586) |
| Trade Openness | 0.112932*** (0.059375) | 0.026145 (0.028507) | 0.025040 (0.040489) | 0.055760*** (0.022857) |
| Number of Observations | 720 | 756 | 400 | 420 |
| Number of Countries | 18 | 18 | 10 | 10 |

Note(s): *** ** and * represent significant at 1%, 5% and 10% level of significance, respectively. Standard errors are reported in brackets. DOLS = panel dynamic ordinary least square method and FMOLS = panel fully modified ordinary least square. Model 1 = Full sample DOLS and FMOLS estimation, Model 2 = estimation excludes the eight high-income countries in the DOLS and FMOLS estimation

Source(s): Author's Calculations

Table 4.
DOLS and FMOLS
regression results

foreign currency, export becomes cheaper, and import becomes dearer, and thus, domestic manufacturing firms will be encouraged to produce more for export and will invariably increase their productivity. The inflation rate has a positive influence on the manufacturing sector growth in both estimation models. However, it is more significant in the DOLS model than the FMOLS model. But in model 2, it has an insignificant influence. This positive relationship shows that a rise in the inflation rate that is a measure of macroeconomic instability does not have a reducing effect on the manufacturing sector growth in the MENA region.

Household consumption expenditure has a positive and significant influence on the manufacturing sector growth in both models 1 and 2. This positive relationship between household consumption expenditure and manufacturing sector growth authenticates the acceleration theory developed by Carver and Aftalion, which states that increase or decrease in demand for goods leads to an increase or decrease in production and hence, firms that are operating in the industry respond to this growth in demand by expanding production and also by fully utilizing their existing capacity to produce.

Finally, financial development is positive and significant in both DOLS and FMOLS models showing the effectiveness of the financial sector in mobilizing funds from the surplus sectors and channeling it to the manufacturing sector, and it supports the findings of [Azolibe and Okonkwo \(2020\)](#); [Ogar et al. \(2014\)](#) and [Elijah \(2018\)](#). But excluding high-income countries, it is insignificant in influencing manufacturing sector growth. Trade openness has positive relationship with manufacturing sector growth in both models. But this relationship appears to be significant in the DOLS model. This positive relationship supports the claims made by [Al-Sadig \(2013\)](#); [Mahendhiran et al. \(2006\)](#) and [Chandran and Munusamy \(2009\)](#) that trade openness may positively affect manufacturing sector growth through technology and knowledge spillovers.

Conclusion and policy recommendations

The article empirically assessed the influence of foreign direct investment on manufacturing sector growth in the MENA region using panel data of 18 countries covering the period of 1975–2017. The study intends covering all the 21 countries in the MENA region. But due to unavailability of data in some countries (Djibouti, West Bank and Gaza, and Yemen), it was limited to only 18 countries of Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, and the United Arab Emirate.

Both inward and outward FDI, together with other control variables such as exchange rate, inflation rate, household consumption expenditure, financial development, and trade openness, were used to determine its influence on manufacturing sector growth. The study employed [Levin et al. \(2002\)](#) and [Im et al. \(2003\)](#) panel unit root test, which suggests that variables are stationary at the level and first difference. Furthermore, Kao's cointegration test was applied to examine the long-run relationship among the variables. The empirical results of cointegration confirmed that there exists a long-run relationship among the variables. Both the DOLS and FMOLS were used in estimating the short-run relationship. The results of the DOLS and FMOLS indicate that both inward and outward FDI influences the manufacturing sector growth positively. But when we excluded the eight high-income countries from the model, outward FDI became negative and insignificant while inward FDI was positive but insignificant. This shows that much of the manufacturing sector growth in the MENA region is driven by investment made by foreigners in the region and the investment made by the region in other countries of the world. [Stevens and Lipsey \(1992\)](#) had earlier proposed that outward FDI has a reducing effect on the host country's manufacturing sector growth when firms finance their overseas activities internally, thereby creating a scarcity of financial resources for the domestic manufacturing firms. Thus, our findings made a strong new

proposition that aside from this negative proposition, outward FDI could also have a positive influence on the manufacturing sector of a country through effective utilization of domestic raw materials that are produced locally for the production of goods in a foreign country. This practice helps to encourage domestic production.

In view of these findings, it is recommended that MENA countries should concentrate more on making policies that will encourage effective utilization of domestic resources for outward foreign direct investment in other countries of the world as it has the capacity to boost the manufacturing sector growth. Also, policies that will attract more inflows of FDI in the region should be encouraged. Both inward and outward FDI should be considered as an integral part of MENA economic policy in order to spur the manufacturing sector growth.

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