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## Economic Growth and Foreign Direct Investment in the Context of Financial Development: Evidence from Jordan

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Luma Al-Qudah<sup>1</sup>, Barbara Piontek<sup>2</sup>, Judit Oláh<sup>3</sup>

**Abstract:**

**Purpose:** The objective of this study is to analyze the relationship that exists among economic growth and FDI in Jordan empirically, and the role of financial development in shaping this relationship.

**Design/Methodology/Approach:** This research used the process of deductive reasoning approach, associated with quantitative research, supported by empiricism and positivism as philosophical positions. Growth Indicators, FDI, financial development and other control variables data that covered the period between 1993-2018 were used. The analysis method of Johansen's co-integration will be applied to figure out if the relationship between economic growth, FDI and financial development exist.

**Findings:** The Johansen's co-integration has found out that there is a long-term relationship between FDI, financial development and economic growth. Also, interaction between stock market financial development indicators and FDI was statistically evident.

**Practical Implications:** Our research contributes to the literature by examining if FDI is growth inducing through networks of financial development, and other factors that could drive growth alongside with FDI. Research shows professionals that a well-developed financial market will improve FDI's spillover impact on economic growth. A well-developed stock market will speed up capital accumulation activities and output growth by providing sufficient liquidity services that improve linkages between domestic and foreign investors.

**Originality/Value:** The novelty of the research is to determine the correlation between FDI and Economic growth in Jordan which should be accounted in the long-term development of all developing countries. At the same time, this study is a step forward towards analysing the relationship that exists among economic growth and FDI in Jordan.

**Keywords:** Economic growth, FDI, financial development.

**JEL Codes:** C58, E44, F43, F40, G00.

**Paper type:** Research study.

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<sup>1</sup>Ihrig Károly Doctoral School, University of Debrecen, Debrecen, Hungary,  
e-mail: [luma.qudah@econ.unideb.hu](mailto:luma.qudah@econ.unideb.hu);

<sup>2</sup>WSB University, 1c Cieplaka str., 41-300 Dąbrowa Górnicza, Poland,  
e-mail: [bempiontek@gmail.com](mailto:bempiontek@gmail.com);

<sup>3</sup>Corresponding author, WSB University, 1c Cieplaka str., 41-300 Dąbrowa Górnicza,  
Poland, e-mail: [juditdrolah@gmail.com](mailto:juditdrolah@gmail.com)

## 1. Introduction

At present, one of the key components for growing and developing the countries' economy is the Foreign Direct Investments (FDI) (Adams, 2009; Borensztein *et al.*, 1998; Jašková, 2019). A considerable impact on the capacities productivity of the host country is created by capital, technology, marketing expertise, management systems and other externalities, which are considered as external resources of the FDI (Caves, 1996a). Due to the ongoing geopolitical circumstances, levant countries' economy has always been affected by the political upheavals in the Middle East, the constant economic and demographic pressures cause an economic and financial instability in the region (Kliestikova *et al.*, 2018). However, a progressive economic liberalization policy has been developed in Jordan, which attracts and encourages capital inflow to the country (Oudat *et al.*, 2019).

Numerous studies revealed that FDI can positively influence development and economic growth such as Borensztein *et al.* (1998), Ehimare (2011), Grančay *et al.* (2015), Meyer and Meyer (2020), Ślusarczyk (2018), not only boosting productivity and technological development, but it can also lower unemployment and the difference between gross domestic savings and desired gross domestic investment. However, the FDI's effect on economic growth is still uncertain Görg and Greenaway (2003), Mura and Slezia (2015), the eventuality effects on economic growth and FDI relationship has been failed to be modelled. Relationship of economic growth and FDI depends on another dominant factors like the local conditions of financial markets. Moreover, the financial markets development degree has an explicit effect on FDI's influence on economic growth (Alfaro *et al.*, 2003; Badulescu *et al.*, 2018; Ślusarczyk and Kot, 2012). On the other hand, economic growth depends on other indicators such as the quality of the business environment Khan *et al.* (2019) or tourism and service, especially in the states which have many natural beauties (Kelić *et al.*, 2020).

According to the present financial markets channelling role in contributing FDI to development economics, the main aim of this article is to inspect the relationship that exists among economic growth and FDI in Jordan empirically, also, to investigate how financial development shape this relationship. Many studies explored the factors that might determine inflows of FDI to Jordan, (Abu Ghunmia *et al.*, 2013; Al-rawashdeh *et al.*, 2011; Kardoush, 2004). Those studies have subjected the relationship of FDI and economic growth present in Jordan to various methodologies to explore factors that might intentionally affect this relationship. As an example, research of Kardoush (2004) confirmed that location is one of the determinants of FDI. During their study, time series data of major locational factors have been analyzed whether they impact degree of FDI inflows to Jordan during the period of 2001-2009. Studies revealed that linear relationship existed between the infrastructure of the host country, the openness to foreign trade and FDI by the economy and domestic market size.

Indicators such as real economic growth, FDI and financial development were used as main dataset in this study. The availability of Jordanian data observations across the period of 1993 to 2018 was mainly the fundamental ground for choosing this period, the sample is made of time series data which consist of 26 observations. Other factors were used as control variables (drivers of growth and determinants of FDI), including: population growth, government consumption/GDP, inflation rate and trade openness. Statistical bulletin of World Bank's WDI was used to obtain the data.

This study utilizes the econometric method of cointegration analysis, where the use of Johansen's test of co-integration analysis to find whether a long-term relationship of economic growth, FDI and financial development have been existing. The remainder of the article is arranged in the following manner: The theoretical principles and empirical facts are set out in section 2, data and methods used in the analysis are defined in section 3, the results are discussed in section 4 and section 5 provides the conclusion.

## **2. Literature Review**

Literature has been engulfed with researches that echo how FDI is beneficial to domestic economy, namely that new products and processes can be introduced to domestic market by foreign companies, which lead to productivity improvements. The reasons for a company's presence in international markets can vary and have the reactive or proactive motivation, target markets can change from geographically and culturally closer to more distant ones, and different entry modes are implemented. It is necessary to study information about the laws on foreign investment in force in the territory of the desired country (Freixanet, 2014). Foreign companies can also stimulate the transfer of new technology and the diffusion of technical know-how and managerial skills. Zamir (2019) notes that knowledge exchange affects many aspects of a company, human capital in terms of employee learning and adaptability, on efficiency and innovation, which affects the added value of products, new products appear based on new knowledge.

In acknowledgment of these advantages, FDI's positive impact on economic growth will depend on absorptive capacities which has been suggested by derived literature on FDI (World Bank, 2001), also the developing of national functional financial markets is one of the key components of those absorptive capabilities (Alfaro *et al.*, 2004; 2009; Hermes and Lensink, 2003; Oláh *et al.*, 2019; Ślusarczyk and Kot, 2012). Expanding the capital accumulation, economic growth and technological innovation have been discussed and debated extensively in the position of well functioned financial markets (Boyd and Prescott, 1985; King and Levine, 1993a; 1993b; Schmitt, 1974). There is no doubt that economies—especially developing ones—need to attract more FDI although the influence of taxes and institutional environment are essential factors (Islam *et al.*, 2020; Vaz da Fonseca and Juca, 2020; Jindrichovska *et al.*, 2020).

## 2.1 History and Overview of FDI

"FDI can be defined as the net inflow of investments to a company that operates in a country different than that of the investor who made the investment, for the purpose of gaining a prolonged interest in management" (World Bank, 2001). Earlier FDI financial transactions were led predominantly by Great Britain to host countries in the form of money, this led the hosting country's economy to grow and develop globally. However, after a while, specially after the second world war, FDI started to decrease. Following the second world war, FDI transfers to host countries started to increase due to the birth of new technologies which were sold and spread globally (McINTYRE, 1982; Neuse, 1982).

UNCTAD (2018) United States recorded the highest amount of inflows and outflows over the years, which has led it to become as a dominant and pioneer leader in the provision of FDI outflows. This is due to the expanded operations of spreading awareness and branches of foremost US businesses and companies beyond their national boundaries, moreover, the US global involvement in extending resources and assistance to different countries through supplying manpower, technical know-how, funds and technology. Other developed countries such as China, Great Britain, Germany, France, Singapore and Japan have a significant impact globally by making astounding outflows to emerging and developing economies. In accordance with UNCTAD (2019), World Investment Report, current trends of FDI flows showed that developing countries' share of FDI inflows is 52% of the global total. Latin American flows drive to increase 2018 and 2019 while developing Asia flows have been slightly constant during the same timespan. The transition economies FDI inflows have jumped by 59% to \$54 billion and FDI inflows of developing countries fell by 2% to \$684 billion (UNCTAD, 2018).

FDI is considered a driving force for enhancing the performance of the economy amidst the insufficient investment base in transitional and emerging economies (Todorović *et al.*, 2019). From the UNCTAD perspective, FDI has been thought as a Strategic Policy response for Host Economic Development by UNCTAD (2003), this idea demonstrates the call for integrating and coordinating FDI regarding the recipient countries' competitive advantage and the corporate strategies of their firms. Accordingly, in order for FDI to be deliberated efficiently as a global response to the development of the economy, FDI should be tailored in line with the host country's circumstances (Rodrik, 2006).

UNCTAD (2003) nonetheless, a different school of thinking suggests that a liberalized economy that is unregulated might be less than beneficial and more detrimental to growth. For instance, to stimulate foreign investment, host economies should provide some incentives in order to attract FDI, such as applying tax incentives, subsidy regimes and all shapes of incentives, that may be unsustainable for the long term. Kumar (2009), believes that national policies at the host country

should be carefully formulated to align the interests in relation to FDI (Jayachandran and Seilan, 2010).

A lot of researches about FDI aim at offering clarifications about circumstances that affect FDI positively to let it behave as growth persuading or as detrimental or harmful to growth. The manner or nature of FDI inflows into and out of the economy is considered one of the predominant matters, moreover, one of FDI positive impacts on economic growth are externalities, such as large capital mobilization augmenting domestic investment and transfers of technology (Chakraborty and Nunnenkamp, 2008; OECD, 2002; UNCTAD, 2003). A study on India's postreform where sectoral FDI and impacts of causality were controlled in a structure of cointegration-model was adopted (Chakraborty and Nunnenkamp, 2008; Katekhaye *et al.*, 2019). This study argues that different sectors got effected differently by FDI, even the relationship that exists between growth and FDI shifted over different sectors. For instance, an endogenous relationship between productivity and FDI stock was found in manufacturing sector, however, there was lack of evidence of causal relationship existing in primary sector. A second evidence of spillovers inter-industry existed, one such flow between service sector and the industry sector (Prokop and Karbowski, 2018).

Regarding the development of financial markets, a paper that connects economic growth, financial markets and FDI proved mainly that countries with developed financial markets exhibit more positive earns from FDI. Alfaro *et al.* (2009), also established that analysis of FDI impacts in isolation yields results with equivocation (Fazaaloh, 2019; Lyeonov *et al.*, 2019).

## **2.2 A Snapshot of the Case Study: FDI in Jordan**

One way of assessing the investment attractiveness of the country is to analyze the various types of rankings, compiled and published by international organizations (Witkowski *et al.*, 2017). In the late nineties, foreign capital inflows started to get promoted in Jordan, (Laureti and Postiglione, 2005). In terms of attracting FDI inflows, Jordan can be considered as one of the top-three countries in the MENA region Mohamed and Sidiropoulos (2010), that has a constant and steady growing trend (Khrawish and Siam, 2010). One of the major elements of Jordanian FDI is the Arab FDI, making the average growth of FDI among the top in the region (Al-Muhtaseb, 2009). However, the political instability and unrest in the region have led to variations in these inflows (Al-Abdulrazag and Bataineh, 2007). A few clarifications were accommodated to the expansion of FDI in Jordan, including, the investors' trust in the economic system Al-Halalmeh and Sayah (2010), attractive investment atmosphere Al-Muhtaseb (2009), Promotion Law of Jordan Investment Al-Muhtaseb (2009), Al-Nuemat (2009), Khrawish and Siam (2010), financial strategies and economic policies in Jordan by Al-Abdulrazag and Bataineh (2007), and Iraqi capital flown in 2003 and 2004 (Mishal and Abulaila, 2007).

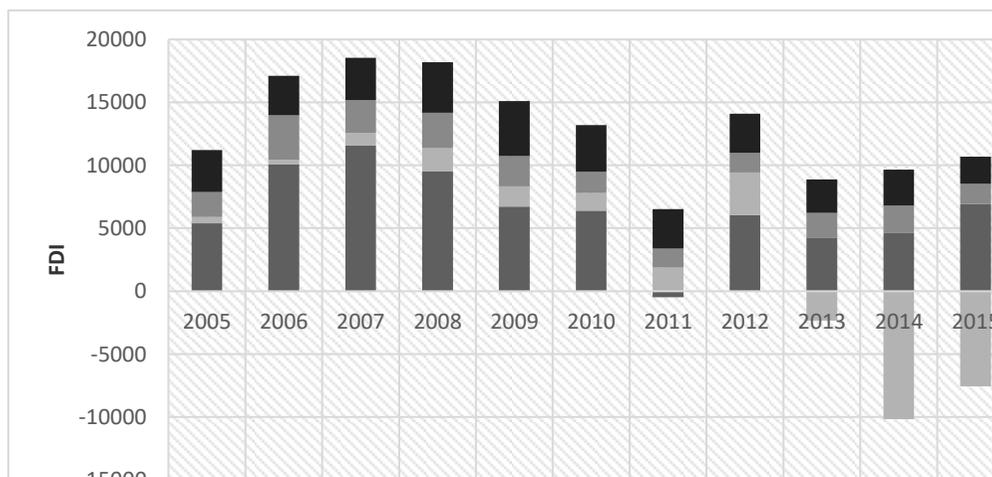
Mansur (2008), argued that FDI inflows performance in Jordan is below the other levant region countries, compared to its potentials. As a matter of fact, the environment of investing in Jordan still needs to a lot of improvements (Al-Nuemat, 2009). Table 1 and Figure 1 represent the FDI Inflows in US\$ Million to Jordan and other developing countries in the MENA region (stacked columns were used for comparison).

**Table 1.** Net Inflows of FDI to Jordan & MENA Region (In US\$ Million).

Year	Jordan	Iraq	Egypt	Lebanon
2005	1984.5	515.3	5375.6	3321.5
2006	3544.0	383.0	10042.8	3131.7
2007	2622.1	971.8	11578.1	3376.0
2008	2826.3	1855.7	9494.6	4002.0
2009	2413.1	1598.3	6711.6	4378.9
2010	1688.6	1396.2	6385.6	3708.4
2011	1485.9	1882.3	-483.0	3137.1
2012	1548.3	3400.4	6031.0	3111.3
2013	1946.8	-2335.3	4256.0	2661.9
2014	2178.4	-10176.4	4612.0	2862.6
2015	1600.3	-7574.2	6925.2	2159.3
2016	1553.0	-6255.9	8106.8	2568.5
2017	2029.7	-5032.4	7408.7	2522.4
2018	949.9	-4885.1	6797.6	2879.8

Source: UNCTAD Statistics.

**Figure 1.** FDI Comparison of levant countries FDI Inflows (Stacked Series in Columns).



Source: UNCTAD Statistics.

### 2.3 Trend Analysis of FDI Inflow to Jordan (1990-2018)

Table 2 presents FDI inflow statistics in Jordan during the period 1993-2018. Between 1999 and 2000, the FDI inflows jumped from US \$157 million to US\$914 million. Later, inflows sprang over US\$ 936 million in 2004, reaching the maximum in 2009 of US\$ 2400 billion. Foreign direct investment account for a small proportion of Jordanian's total GDP, however, accounting for 1.27% in 2005.

**Table 2.** *FDI Inflows to Jordan (1993-2018) (In US\$ Million).*

<b>Year</b>	<b>FDI</b>	<b>FDI/GDP</b>	<b>Year</b>	<b>FDI</b>	<b>FDI/GDP</b>
1993	-33.55	-0.933	2006	3544.01	-0.904
1994	2.85	-0.366	2007	2622.14	0.277
1995	13.31	-0.400	2008	2826.26	0.058
1996	15.51	-0.616	2009	2413.10	0.300
1997	360.93	0.134	2010	1688.60	0.106
1998	310.01	0.026	2011	1485.92	0.105
1999	156.40	0.055	2012	1548.31	0.017
2000	913.26	0.100	2013	1946.76	0.046
2001	273.62	0.347	2014	2178.45	0.230
2002	238.22	0.142	2015	1600.28	0.003
2003	546.97	-0.035	2016	1552.96	0.008
2004	936.81	0.157	2017	2029.72	0.016
2005	1984.49	1.278	2018	949.86	-0.018

*Source: UNCTAD Statistics.*

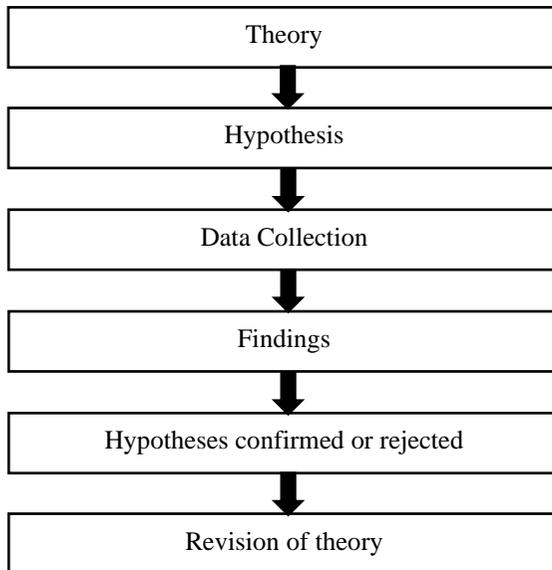
### 3. Research Methodology

This research used the process of deductive reasoning approach, associated with quantitative research, supported by empiricism and positivism as philosophical positions. Bryman (2008) recommends that quantitative researching is generally depicted to social life, by being fascinated with the utilization of estimation procedures. Therefore, the quantitative parameters vary from measuring the central tendency (mode, median and mean) to measuring the dispersion of a sample (variance and standard deviation), in addition to other statistical techniques such as correlation and regression analysis. The research strategy of quantitative research is objectivist and reductivism in nature. To accomplish the hypothesis capital aggregation might be boosted by financial development, which can lead to build up linkages between economic growth and FDI, this paper of economic growth and FDI will examine quantitative secondary data. Thus, the deductive approach in Figure 2 proves or disproves a given theory by analysing a collected data and unlike the inductive approach where data analysis will be followed by theory formulation (Saunders *et al.*, 2007).

Real economic growth measures and its sources, indicators of FDI, and stock financial development indicators are the main dataset used for the research. A time

series sample data which consist of 26 observations across the period of 1993 to 2018. World Bank's World Development Indicators (WDI) Statistics was used to obtain financial development data indicators and some controlling variables like inflation and population growth. The FDI information were collected using the UNCTAD's online database, which has net FDI inflows, both the outward and inward movements.

**Figure 2.** Deduction process



**Source:** Bryman (2008:10).

### 3.1 Description of Measurement Variables

**Growth Indicators:** Following Borensztein *et al.* (1998), real GDP per capita was used as dependent variables for the study, which can be obtained by finding the ratio of real GDP to the population. Studies such as Ayanwale (2007), and Dinda (2008) have used GDP per capita. Since using the absolute GDP in growth-FDI relationship have failed to mirror the buying power or income of the citizens, studies nexus has been contested in the literature, hence, becoming a poor indicator for foreign investors products of market potential (Chakrabarti, 2001; Nițescu and Murgu, 2019).

**FDI Inflows:** The net foreign investments inflows to acquire long term involvement in managing a company entity present in an economy that is different than the investing country is measured by the FDI. FDI, shown in the balance of payments “is the sum of reinvestment of earnings, the equity capital, and other short-term and long-term capital” (Mohamed Sghaier and Abida, 2013). This study adopted a model that focuses on the net inflows to the Jordanian economy.

*Financial Development Variables:* On a global scale, many significant studies have proved that economic growth can be positively correlated to financial development and capital accumulation (Beck and Levine, 2002; Cole, 1974; King and Levine, 1993a; 1993b; Levine and Zervos, 1998). According to literature, indicators of financial development are categorized in two groups: (a) Indicators that are market-based, (b) indicators that are bank based. Market-based indicators, which were adopted during this study, are mostly concerned with stock market. Stock market indicators were divided by Brasoveanu *et al.* (2008) into liquidity variable and size variable. Ratio of market capitalization to GDP is main supplant of size variable while trading volume/GDP and market turnover are main representors of liquidity variables (Levine and Zervos, 1998).

*Control Variables:* Various variables will be included in this study as control variables, such as: (1) Trade openness, “a measure of the ratio between trade (exports and imports) and GDP, the less restrictive and more open an economy is, the more FDI inflow it can attract and hence more growth” (Harrison, 1996; Yanikkaya, 2003). (2) Government Consumption which is an indicator of the size of the government and its aggregate expenditure. Some economic development models developed by Barro (2013) and Ram (1986) have shown that larger government size will make a positive contribution on economic growth. (3) Rate of population growth that is a measurement of the speed at which the population is growing. Economic growth can be potentially driven by higher population growth rate (Essien, 2016). However, the evidence is mixed since some studies revealed negative relationship among economic growth and population growth rate (Khordagui and Saleh, 2013). (4) Inflation Rate which is a measurement of macroeconomic stability. Recent studies show that a higher inflation rate is detrimental and counterproductive to economic growth (Barro, 2013; Fischer and Modigliani, 1978; Paul *et al.*, 1997; Smyth, 1994).

### **3.2 Description of Econometric Analysis**

Financial and economic time series often demonstrate trends argues that trends may be either deterministic (i.e., time-dependent) or stochastic (random but persistent long-lasting relationship) (Fabozzi *et al.*, 2014). Modelling changes in stochastic trends over time is imperative for revealing relationships between the economic variables. Cointegration can be also used for identifying common stochastic trends. When a long-term relationship exists, it means that economic variables are cointegrated. A framework for interpretation, estimation and inference can be provided by cointegration analysis.

This paper aims at testing the financial development route where FDI may be advantageous to growth, accordingly it is significant for the joint movement of economic growth, FDI and financial development indicators to be examined first (Johansen, 1988; 2003). Therefore, the analysis method of Johansen’s co-integration will be applied to figure out if the relationship between economic growth, FDI and

financial development exist. This paper adopted the Johansen's co-integration approach because it recognizes the more than one co-integrating relationship.

However, the Johansen's test subjects to some asymptotic characteristics, i.e., the use of large samples. Pesaran *et al.* (2001) said that results might not be reliable when size of the sample size is less than 30. However, the sample size used during this study is (T=25) which is smaller than 30, due to lack of data, the Johansen-Julius approach still will be used. It is essential to be able to describe the dataset and find the links between different variables before the full econometrical analysis is performed. Therefore, descriptive statistics is performed to find the numerical characteristics of the variables and be able to compare them (Saunders *et al.*, 2007). Results of descriptive statistics will summarize the sample in a structure of variables that form the basis of econometric analysis. The descriptive analysis is divided into two parts, first part includes a preliminary test of the dataset that performed unit root and univariate analysis. The second part analyzed multicollinearity and correlation of measurement variables found in this study.

## 4. Results and Discussion

### 4.1 Descriptive Analysis

It is essential to be able to describe the dataset and find the links between different variables before the full econometrical analysis is performed. Therefore, descriptive statistics is performed to find the numerical characteristics of the variables and be able to compare them (Saunders *et al.*, 2007). Results of descriptive statistics will summarize the sample in a structure of variables that form the basis of econometric analysis. The descriptive analysis is divided into two parts, first part includes a preliminary test of the dataset that performed unit root and univariate analysis. The second part analyzed multicollinearity and correlation of measurement variables found in this study.

#### 4.1.1 Characteristics of Measurement Variables

The section summarizes the results of the univariate analysis statistics carried out on variables of this study. Table 3 presents the characteristics of variables, mainly maximum and minimum values, mean and standard deviation.

**Table 3.** Characteristics of Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Real GDP per capita	2702.633	1110.759	1353.257	4241.789
FDI	1234.815	1018.275	-33.550	3544.006
FDI/GDP	0.005	0.422	-0.933	1.278
Market Turnover	5.73E+09	7.74E+09	3.50E+08	2.72E+10

<b>Trading Volume</b>	33.130	47.412	4.986	186.566
<b>Trade openness</b>	116.812	15.862	90.054	144.881
<b>Inflation</b>	3.338	2.941	-0.877	13.971
<b>Population growth</b>	3.529	1.367	1.761	5.476
<b>Government expenditure</b>	20.030	3.346	15.271	25.195

*Source: Authors' own composition.*

#### **4.1.2 Unit Root Test for Stationary**

Measurement before the full regression analysis is conducted, the stationarity of time series data should be determined (Shawa, 2014), this is because the variance and mean of time series stationary data should stay constant with time, therefore dubious results of regression could be evaded. However, if non-stationary time series dataset were used in regression, they can show spurious and misleading results. A method was developed by Dickey and Fuller (1979) and (1981) to test if variables have unit roots or not. An assumption was made that the variable in null hypothesis would have a unit root whereas in alternative hypothesis variable does not have a unit root. Representation of the hypothesis is found below, where H<sub>0</sub> is representing the null hypothesis and H<sub>1</sub> is representing the alternative hypothesis:

- H<sub>0</sub>:  $\delta = 0$ : Variable does have a unit root (non stationary) = I(1)
- H<sub>1</sub>:  $\delta \neq 0$ : Variable doesn't have a unit root (stationary) = I(0)

The null hypothesis would not be rejected when the total value of ADF test is less than the critical value. The ADF test results for the variables used in this study are represented in Table 4. Looking at Table 4, results have shown that six measuring variables are non-stationary, while three variables are stationary (Order of Integration I(0)). Results have shown that the value of Real GDP per capita (-0.807) is larger than values of all other critical values (-3.750, -3.000 and -2.630), therefore, unit root is present, null hypothesis of real GDP per capita cannot be rejected and an assumption of variable to be non-stationary is made, implying integrated order of one [I(1)].

**Table 4. Unit Root Test**

Variable	ADF Test Statistic Z(t)	Critical Value (1%)	Critical Value (5%)	Critical Value (10%)	MacKinnon ~ p-value for Z(t)	No of lags	Conc.
<b>Real FDI inflows</b>	-1.732	-3.75	-3	-2.63	0.4149	1	I(1)
<b>FDI/GDP</b>	-5.878	-3.75	-3	-2.63	0.0000	1	I(0)
<b>Real GDP per capita</b>	-0.807	-3.75	-3	-2.63	0.8171	3	I(1)

<b>Market Turnover</b>	-2.453	-3.75	-3	-2.63	0.1274	4	I(1)
<b>Trading Volume</b>	-1.872	-3.75	-3	-2.63	0.3454	1	I(1)
<b>Trade openness</b>	-1.120	-3.75	-3	-2.63	0.7070	1	I(1)
<b>Government expenditure</b>	-0.189	-3.75	-3	-2.63	0.9398	1	I(1)
<b>Population growth</b>	-4.069	-3.75	-3	-2.63	0.0011	4	I(0)
<b>Inflation</b>	-4.662	-3.75	-3	-2.63	0.0001	1	I(0)

Source: Authors' own composition.

#### 4.1.3 Multicollinearity Test

When a linear regression model is performed and the degree of correlation is high between variables, they are said to be multicollinear. Multicollinearity can be perfect or imperfect. If regressors are perfectly interrelated the multicollinearity is called perfect, also, regression coefficients with indeterminate independent variables and infinite standard errors are present in perfect multicollinearity (Gujarati, 2003). When regressors are imperfectly inter-related, multicollinearity is less than perfect and the regression coefficients have large standard errors, but still are determinate. This suggest inaccurate estimation of coefficients.

Montgomery and Peck (1982) noted that the following factors might cause multicollinearity: (1) inadequacies in the data collection method, (2) Constraining the specified model or the sampled population. Finding the regression when multicollinearity is present might be deceptive, because the percentage of standard errors happening would be higher. Estimating VIF (variance inflation factor) is one of the effective ways for detecting multicollinearity. Higher values of VIF indicates higher collinearity of independent variable. Kleinbaum *et al.* (1988) said that VIF value greater than 10, which will occur when  $R^2$  is above 0.9, this means that the variable is highly collinear. VIF and  $R^2$  values are shown in Table 5.

Looking at Table 5, five independent variables are found to be non-collinear, this is because they have a value of VIF smaller than 10, which is below the threshold. However, there are three variables that have a VIF value greater than 10, which means that if those variables were included in the regression calculations, multicollinearity might become a problem.

To sum it up, the value of the mean VIF is 15.22 for all variables, which is at the edge of the threshold. A common rule of thumb is that one should be worried with multicollinearity when the condition number is 15, and it becomes very serious problem if it is greater than 30 (Belsley *et al.*, 1980).

**Table 5. Initial Test of Multicollinearity**

Variable	VIF	1/VIF	R <sup>2</sup>
Market Turnover	45.03	0.0222	0.9778
Trading Volume	38.37	0.0261	0.9739
Trade openness	12.84	0.0779	0.9221
FDI	7.85	1.27E-01	8.73E-01
Government expenditure	7.35	0.1360	0.8640
Population growth	5.05	0.1981	0.8019
Inflation	3.48	0.2875	0.7125
FDI/GDP	1.82	0.5492	0.4508
Mean VIF	15.22		

*Source: Authors' own composition.*

It is necessary for the high values of VIF to be dropped, therefore two financial development variables were eliminated (Market Turnover and Trading Volume). This has led to a huge reduction in the Mean VIF value (2.79), as it can be seen in Table 6.

**Table 6. Final Test of Multicollinearity**

Variable	VIF	1/VIF	R <sup>2</sup>
Government expenditure	4.49	0.2227	0.7773
Trade openness	4.01	0.2496	7.50E-01
FDI	2.61	0.3830	0.6170
Population growth	2.51	0.3990	0.6014
Inflation	1.73	0.5792	0.4208
FDI/GDP	1.38	0.7225	0.2775
Mean VIF	2.79		

*Source: Authors' own composition.*

#### **4.1.4 Correlation**

“A numerical way of quantifying the strength of relationship that exists between two variables is finding the correlation” (Koop, 2009). The correlation value (r) found for two variables (X and Y), can have any value between 1 and -1, if r value was positive, this indicates that X and Y have positive correlation. Negative correlation exists when values of r is negative, if r is equal to zero, this means that X and Y has no correlation (Gujarati, 2003). The correlation values for all measurement variables found in this research can be found in Table 7. Low correlation between variables can be observed, with some exceptions. A strong positive relationship is exhibited between Real GDP per capita and real FDI (r=0.67), interpreting the presence of high economic growth during the study period in Jordan, which reflect that FDI has been highly growing. This lines with several studies which identified long-lasting positive relationship of economic growth and FDI (Egbo and Onwumere, 2011; HarunaDanja, 2012). Nevertheless, correlation does not express causality, other

underlying factors might cause or affect real FDI and GDP per capita's relationship (such as human capital, absorptive capacity of domestic institutions, institutional quality physical infrastructure, financial development). Nevertheless, for this study, real GDP per capita have negative relationships with all of trade openness ( $r = -0.36$ ), government consumption to GDP ( $r = -0.94$ ) and trading volume ratio ( $r = -0.01$ ). However, a positive correlation between Market turnover and real GDP per capita is found ( $r = 0.2$ ).

Interestingly, positive correlations are exhibited between real FDI and all financial development variables. The relationship with market turnover has been found to be strong ( $r = 0.77$ ), indicating that higher levels of financial development can be linked to FDI with higher values i.e. stock market development. This suggests that economies with developing financial markets are capable of attracting FDI and this might enhance financial development if FDI levels are rising. Nevertheless, this study did not include the FDI and financial markets development causality.

## 4.2 Empirical Analysis

After exploring the descriptive characteristics of the data, the long-run relationship between economic growth and FDI can be found. In this section, cointegration analysis was established. The cointegrating linkages of economic growth and FDI can be found by performing the Johansen's method, this method gives the number of cointegrating equations. Fabozzi *et al.* (2014), argue that for testing co-integration among multiple variables, Johansen's test is the most appropriate. Tsay (1984), Paulsen (1984) and Nielsen (2006) recommendations in STATA were followed. It should be pointed out that only the non-stationary variables are included, since cointegration can take nonstationary variables only, real GDP per capita, real FDI, market turnover, trade openness, trading volume and government expenditure. Looking at the results in Table 8, a null hypothesis without cointegration was detected in a model with two lags, which shows that at least one long run relationship existing between one of the measurement variables and real GDP per capita.

As there is minimum one cointegrating relationship found between the variables, which means a joint movement between financial development, FDI and economic growth is present. Hence, the analysis of Johansen's co-integration has found out that there is a long-term relationship between FDI, financial development and economic growth (Johansen, 1988; 2003; Meyer *et al.*, 2017). Interaction between stock market financial development indicators and FDI was statistically evident. This infer that development indicators of stock market have the tendency to shape economic growth and FDI relationship in Jordan. This implies growth benefits of FDI flows to Jordan are enhanced by the size of financial development present in the country. Results also show that market turnover and population growth are key positive drivers of growth in Jordan.

**Table 7. Correlation Matrix.**

	Real GDP per capita	FDI	FDI/GDP	Market Turnover	Trading Volume	Population growth	Trade Openness	Government expenditure	inflation rate
Real GDP per capita	1								
FDI	0.6615	1							
FDI/GDP	0.2160	0.2045	1						
Market Turnover	0.1977	7.56E-01	2.94E-01	1					
Trading Volume	-0.0139	0.6125	0.3167	0.9448	1				
Population growth	0.3703	0.4015	-0.1896	0.3077	0.1857	1			
Trade Openness	-0.3597	0.2645	-0.0197	0.6607	0.7370	0.3892	1		
Government expenditure	-0.9406	-0.5739	-0.1987	-0.1172	0.0146	-0.3946	0.3617	1	
Inflation rate	0.0787	0.3373	-0.1692	0.5475	0.4408	0.3146	0.5772	0.0510	1

*Source: Authors' own composition.*

**Table 8. Johansen's cointegration test**

Constant Trend		Observation Number =24			
Duration: 1995 - 2018		Lags =2			
Maximum rank	parms	LL	eigenvalue	trace statistic	critical value 5%
0	42	-1059.2273		124.7178	94.15
1	53	-1034.5925	0.87164	75.4483	68.52
2	62	-1015.6712	0.79336	37.6058*	47.21
3	69	-1004.0692	0.61972	14.4018	29.68
4	74	-997.62075	0.41572	1.5048	15.41
5	77	-996.86833	0.06078	0	3.76
6	78	-996.86833	0		

*Source: Authors' own composition.*

## 5. Conclusions and Future Research

This paper tested the FDI and economic growth relationship in Jordan and how the financial development's effect shaped this relationship. Moreover, the impact of other determinants of growth of Jordanian economy has also been considered. Over the years, developing countries have embraced FDI as an important strategy for economic growth. To the host country, growth capital, technological transfers, knowledge and productivity gains are considered main positive effects from FDI (Caves, 1996b; Chakraborty and Nunnenkamp, 2008; OECD, 2002; UNCTAD, 2003).

However, several studies have found that the host country needs to build absorptive capacities for the appropriation of FDI benefits World Bank (2001), that involve expanded financial markets (Abdul Bahri *et al.*, 2017; Alfaro *et al.*, 2004; 2009; Hermes and Lensink, 2003; Omran and Bolbol, 2003; Shah, 2016). This research, in particular, has highlighted that a well-developed financial market will improve FDI's

spillover impact on economic growth. A well-developed stock market will speed up capital accumulation activities and output growth by providing sufficient liquidity services the improve linkages between domestic and foreign investors (Beck and Levine, 2002; Levine and Zervos, 1998). The Government of Jordan need to implement and establish investment friendly and favorable macroeconomic policies to attract and sustain foreign investments.

This research provides a significant contribution to literature by examining if FDI is growth inducing through networks of financial development, and other factors that could drive growth alongside with FDI. Notwithstanding the contribution and significance of this study, still it had some limitations. First, the dataset used had relatively small number observations ( $n=26$ ) which had constrained in terms of methodological approach. When number of observations is higher (for example:  $n \geq 200$ ), other techniques might become possible to use. However, to overcome those challenges preliminary tests were used for unit root and multi-collinearity. Secondly, the non-inclusion of some influential variables for growth models is the second limitation in this study, such variables are: gross fixed capital formation, measures of quality of institutions, rule of law, bureaucratic quality, corruption, and political stability (due to missing or incomplete data). Therefore, the omission of such variables might increase the risk of biased results in the model.

Three areas will be focused on in future research. First, other absorptive capacities will be considered whether they enhance growth benefits of FDI or not, such as infrastructure development and human capital. Second, it will be fascinating to see which parts actuate more development benefits than the others, given that FDI flows to Jordan can be driven by other sectors. Finally, environmental and social spillover effects associated with FDI might be important to examine. On a global scale, it has proven that the environment and extractive industry activities are correlated. Therefore, the impact of this correlation should be accounted in the long term development of the Jordanian economy. However, the availability of data at disaggregated sectoral rates might constrain this.

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