Determinants of foreign direct investment in Jordan in light of the institutional fitness theory

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Abstract

This study aims to determine the extent to which the determinants of foreign direct investment impact foreign direct investment based on the institutional fitness theory in Jordan. foreign direct investment was applied to the annual time series in Jordan using the Autoregressive Distributed Lag approach from 1995 to 2020. The data on which the study was based were obtained through the World Bank database, the Central Bank of Jordan, and the Heritage Foundation website. Results showed that foreign direct investment inflows to Jordan remained fluctuating and did not achieve the desired level during the study period. In addition, the lending interest rate variable, which represents capital market fitness, is the most influential variable on foreign direct investment flows to Jordan. Its relationship with these flows is negative and strong. Furthermore, results indicated that the economic freedom index variable, which represents government fitness, is considered the second most influential variable in foreign direct investment inflows to Jordan, the economic freedom index variable was associated with a positive and significant relationship with these flows.

Keywords: foreign direct investment, determinants of foreign direct investment, indicators of institutional fitness, theories explaining foreign direct investment.

الملخص

تهدف هذه الدراسة إلى تحديد مدى تأثير محددات الاستثمار الأجنبي المباشر على الاستثمار الأجنبي المباشر بناءً على نظرية المواءمة المؤسسية في الأردن .تم تطبيق الاستثمار الأجنبي المباشر على السلاسل الزمنية السنوية في الأردن باستخدام برمجية Autoregressive Distributed Lagمن 1995 إلى 2020. تم الحصول على البيانات التي استندت إليها الدراسة من خلال قاعدة بيانات البنك الدولي، والبنك المركزي الأردني، والموقع الإلكتروني لمؤسسة Heritage Foundation. أظهرت النتائج أن تدفقات الاستثمار الأجنبي المباشر إلى الأردن ظلت متقلبة ولم تحقق المستوى المطلوب خلال فترة الدراسة .بالإضافة إلى ذلك، فإن متغير سعر الفائدة على الإقراض، والذي يمثل ملاءمة سوق رأس المال، هو المتغير الأكثر تأثيرًا على تدفقات الاستثمار الأجنبي المباشر إلى الأردن .علاقته بهذه التدفقات سلبية وقوية .علاوة على ذلك، أشارت النتائج إلى أن متغير مؤشر الحرية الاقتصادية، والذي يمثل ملاءمة الحكومة، يعتبر ثاني أكثر المتغيرات تأثيراً في تدفقات الاستثمار الأجنبي المباشر إلى الأردن، وارتبط متغير مؤشر الحرية الاقتصادية بعلاقة إيجابية ومهمة مع هذه التدفقات.

الكلمات المفتاحية: الاستثمار الأجنبي المباشر، محددات الاستثمار الأجنبي المباشر، مؤشرات المواءمة المؤسسية، **النظريات المفسرة** للاستثمار الأجنبي المباشر.

Introduction

Foreign direct investment (FDI) emerged as one of the most important macroeconomic activities. After World War II, multinational companies sought to obtain raw materials and oil from producing countries. In the 1970s and 1980s of the last centuries, direct investment flows

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across countries began to increase. The reason is the combination of factors, amongst which are the conclusion of free trade agreements, the developments in information and communication technology and the resulting ease of movement of capital across countries, in addition to the adoption by many countries of national strategies and programs to restructure public institutions towards privatization.

Hence, foreign investment plays an important role in providing financing, establishing local productive projects, and transferring knowledge and technological developments. Foreign investment also contributes to improving living standards, creating more job opportunities, and improving the skills and experience of local labor, thereby achieving competitive advantages in the field of export. Various countries worldwide, developed and developing alike, seek to attract this important resource in financing.

In addition, within the framework of countries' efforts to create an investment climate, the Organization for Economic Cooperation and Development experts have identified a set of rules through which countries can improve their investment climate. These rules are based on three principles: the need for harmony amongst policies related to investment preparation, ensuring transparency in the development and implementation of investment policies and laws, and continuous evaluation of the effects of policies related to the development of the investment climate. Several studies have proven that countries that have initiated reforms at the economic level to increase climate investment have been able to raise their share of the global FDI flows.

The Jordan state has sought, like other countries globally, to attempt to attract FDI. Particularly, the Jordanian economy suffers from many economic problems, most notably, slow economic growth, high indebtedness, high poverty and unemployment rates, public budget deficit, and balance of payments deficit. This event prompted the Jordanian economy to undergo six economic correction programs between 1989 and 2004. In addition to a series of economic packages and measures in response to the requirements of the International Monetary Fund and the World Bank, its overall purpose is to achieve macroeconomic stability and improve the competitiveness of the investment environment and the flow of FDI.

Study problem

The financing gap, represented by the insufficient financial resources available to finance investments, has negative effects on the Jordanian economy. Hence, this gap is one of the most prominent problems that the Jordanian economy suffers from. The most prominent

problems include the high rates of unemployment and poverty and the consequent decline in the rate of economic growth. The Jordanian government aims to reduce this gap by adopting a set of economic adjustment programs and a series of policies and laws to attract FDI flows. However, despite such efforts, these flows remained fluctuating and did not achieve the desired level. After the increase in FDI flows into Jordan from approximately 13 million dollars in 1995 to about 3.54 billion dollars in 2006, we find that it decreased again to roughly 760 million dollars in 2020. In this context, the importance of analyzing the various environmental factors from governmental, market and educational is highlighted, which could affect the provision of a favorable environment for FDI. Accordingly, the following main question can be asked:

What are the environmental determinants of FDI in Jordan in light of the institutional fitness theory of FDI?

Study hypotheses

This study is based on the following hypotheses:

The main hypothesis: Institutional determinants of FDI have an impact on FDI in Jordan.

The following sub-hypotheses are derived from this hypothesis:

The first hypothesis: Government fitness represented by the index of economic freedom has a statistically significant effect on FDI in Jordan.

The second hypothesis: The fitness of the capital market, represented by interest rate (IR) on borrowing, and domestic credit provided to the private sector, has a statistically significant effect on FDI in Jordan.

The third hypothesis: The fitness of goods and services markets represented by the inflation rate and degree of trade openness has a statistically significant effect on FDI in Jordan.

The fourth hypothesis: The fitness of markets in general, represented by the urban population, has a statistically significant effect on FDI in Jordan.

The fifth hypothesis: The fitness of education represented by university students statistically affects FDI in Jordan.

Importance of the study

This study draws upon the importance of FDI as one of the most important sources of external financing to provide the required financing for the establishment of local productive projects. Particularly, the Jordanian economy suffers from a high level of public indebtedness and even the possibility of its fading in the future. In addition, FDI is an important tool in measuring the attractiveness of the Jordanian economy. FDI has led to increased confidence in this economy, which is reflected positively in achieving more economic growth. This study also derives its importance from its attempt to provide a set of ideas and recommendations for investment decision-makers in Jordan to help them enhance the FDI levels.

Objectives of the study

The objectives of this study are as follows:

- Defining the concept of FDI and the theories explaining it.
- Determining the environmental determinants of FDI in Jordan in light of the theory of institutional fitness of FDI.
- Analysis of the reality of FDI in Jordan during the study period.
- Verifying the existence of an impact and a long-term relationship between the institutional determinants of FDI and FDI in Jordan during the study period.

Methodology and data

The theoretical and practical aspects of the study model were discussed to test the hypotheses of the study and achieve its objectives. The theoretical aspect deals with the theoretical background of the concept of FDI and the theories that explain this type of investment. For the applied aspect, annual data for the period (1995–2020) were used, which were obtained through the World Bank database, the Central Bank of Jordan, and the Heritage Foundation website.

Standard tests and econometric methods were performed to achieve the objective from the practical side. This process is to ensure that there is no unit root in the time series of the study variables and to avoid the problem of linear correlation and autocorrelation amongst these variables. The data follow a normal distribution. Then, after making sure that there is a degree of integration of the time series, the method used was the Autoregressive Distributed Lag

(ARDL) approach, which has the advantage of being usable irrespective of the degree of integration of the time series.

Theoretical framework and previous studies

Theoretical framework

Concept of FDI: There are many concepts of FDI, including the definition set by the World Trade Organization. It is an activity that involves the investor owning productive assets for the purpose of managing them in another country (host country). The Organization for Economic Co-operation and Development defines FDI as any investment activity that is stable in the country of origin and owns assets in the host country for the purpose of investment. It was also known by the publications of the United Nations Conference on Trade and Development. It is a foreign investment in fixed capital assets in countries with the aim of achieving a common benefit (investors and host country) (Shawqi & Muhammad, 2013).

Nazih (2007) defined FDI as those investments that are owned and managed by a foreign investor. His/her full ownership or ownership of a share guarantees him the right to manage. Then, Taher (2000) also defined FDI as a person or organization from a particular country investing his/her money in another country, whether through full ownership of the project or partial ownership, with the aim of achieving a return.

Theories of FDI

The economic literature indicated that there is a clear difference among the theories concerned with the interpretation of FDI, in terms of the factors that cause the emergence of these investments and the implications of those investments. Such factors and effects may be related to the host country of the investment or to the motherland, or those of foreign investment companies. The following are amongst the most important of these theories:

- Classical theory: This theory is based on the assumption that FDI involves many benefits. However, these benefits accrue mostly to multinational corporations and are based on a number of justifications (Al-Quraishi, 2007), including the following: the tendency of multinational corporations to transfer as much of their profits as possible to the home country rather than reinvesting them in the host country and the transfer of technology by these companies whose levels are not compatible with the requirements of economic development in the host countries. In addition, the

presence of foreign companies may affect the sovereignty and independence of the host country by creating economic and political dependence.

- The theory of imperfect markets: This theory is based on the assumption of the absence of perfect competition in the markets of developing countries, in addition to the lack of supply of goods in it. The availability of some aspects and elements of competitive strength makes foreign companies more able to compete with local companies in developing countries. Amongst the most important of these elements (Omar, 2003) are as follows: the technological superiority of foreign companies compared with domestic companies: providing management, productivity, and marketing skills to foreign companies, and achieving large volumes in production and benefiting from economies of scale compared with domestic companies.

- Monopoly advantage theory: This theory is based on the assumption that foreign markets are characterized by various consequences, including linguistic, legal and those related to different consumer tastes. These cases may be encountered by foreign companies, and thus, they incur additional costs. In light of these obstacles, foreign companies must have a special advantage that distinguishes them at least from competing local companies. This advantage may be technological, administrative, organizational and others, allowing them to face various obstacles and achieve higher profit rates (Markusen, 1999).

- Risk allocation theory: In 1975, Cohen focused on the idea of risk distribution in explaining the reasons for the occurrence of FDI. This theory is based on the fact that companies invest abroad to increase their profits by reducing the number of risks it faces. The risk reduction process takes place through the distribution of activities, as investment returns vary from one investment environment to another (Reda, 2007).

- The Institutional fitness of FDI theory: Developed by Saskia K. S. Wilhelms, this theory tries to find a kind of integration between the various theories of FDI. According to Makoni (2015), this theory refers to the country’s ability to attract and retain FDI through the availability of an appropriate degree of flexibility for the state to enable it to compete with other countries, exploiting available opportunities and overcoming risks (Wilhelms & Witter, 1998). A number of small countries with few resources

were able to attract levels of foreign investment flows that exceeded those attracted by large and resource-rich countries (Noureddine, 2010).

Accordingly, this theory found the reasons behind the variation in FDI flows to countries that are disproportionate to the size of the resources available to those countries. The theory of institutional fitness for FDI relates to four institutions, namely, government, markets, education, and sociocultural, according to Wilhelms and Witter (1998).

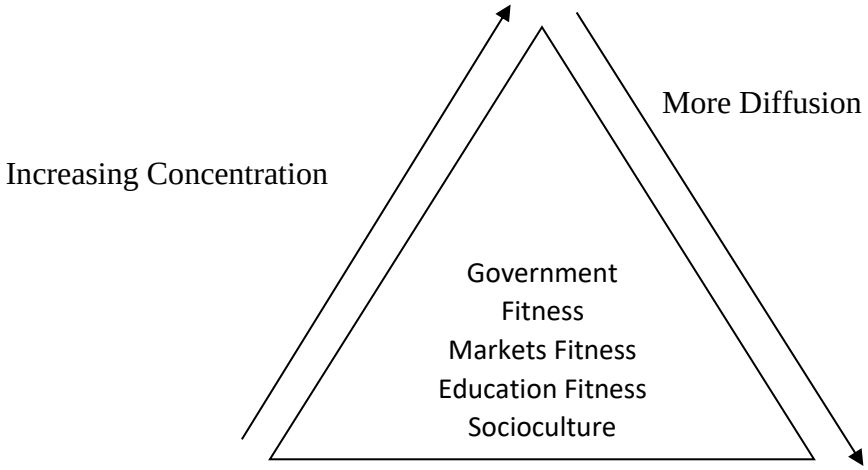


Figure 1. Pyramid of FDI Fitness Institutions

Concentrated at the bottom: diffusion, longer implementation time, (unwitting) permeation of other institutions.

According to the above form, Sociocultural Fitness indicates the extent to which the citizens of the host country accept foreign cultures. According to this theory, the high educational attainment in the host country contributes to the acceptance of foreign cultures more, thereby attracting more investments. Then, Education Fitness enhances creativity and innovation in human capital and contributes to creating an attractive environment for FDI in the host country. The Markets Fitness, according to the theory, is the market governed by organizational rules. It contains material and financial capabilities, thereby having the ability to attract foreign investment flows more than other countries. As for Government Fitness, according to theory, the formulation and implementation of policies put forward legal legislation in a planned manner and are independent of political pressures in the host country. Government Fitness can contribute to increasing the confidence of customers and their commitment to these policies and regulations, thereby attracting more foreign investment flows to that country.

Previous Studies

A number of studies at the local and international levels have examined FDI owing to its impact on the various economic activities of the host countries. The following is a brief review of some of those studies. Musonera et al (2010) empirically tested the institutional fitness theory by studying a sample of three African countries. The size of the population, the size of the economy, the development of the financial market, trade openness, infrastructure and other economic, financial and political risks had a significant impact on FDI to a greater extent than the impact on natural resources. World Bank (2003) attempted to assess the investment climate in Algeria by conducting a survey of a sample of 57 potential foreign investors from France, Italy, and Spain. This study concluded that the most important factors significantly attracting more FDI to Algeria was represented (market size and potential, competitiveness and labor cost, energy availability, and geographical and cultural proximity). Moreover, the most important obstacles to FDI in Algeria were represented in difficulties obtaining credit, poor investment infrastructure, rampant bureaucracy, and corruption.

Then, Fernandez et al (2020), attempted to identify the determinants of FDI in Jordan. It concluded that the factors that make Jordan an unattractive destination for FDI are its: inadequate infrastructure development, a high degree of corruption, increased income tax rates, political tensions in the region, and a low level of technology adoption and innovation. On the other hand, the factors that contribute to making it attractive are low corporate tax rates, and the low risk of property expropriation. and also, Elmosalamy and Abbas (2016) attempted to explore the determinants of the institutional environment for FDI in the Middle East and North Africa region during the period from 2006 to 2003. They found that human capital, infrastructure, and market openness are the main determinants of FDI in that region. Similarly, Ben-Taher and Giorgione (2009) dealt with the environmental determinants of FDI in the Arab Maghreb countries. The study concluded that the size of the market has a positive effect on attracting FDI. By contrast, the degree of openness index, inflation, and corruption index had a negative impact on FDI.

Moreover, Makoni (2018) primarily aimed to explore the relationship between FDI and institutional quality by studying a sample of nine African countries during the period from 2009 to 2016. The study concluded that in the absence of abundant natural resources, the development of institutional quality issues in the host countries positively affects attracting FDI. In the same context, Bengoa and Sanchez (2003) concluded that the institutional quality in the

host country has a positive and significant impact on FDI. Similarly, Stein and Daude (2001) concluded that the countries rank their governments at high levels according to different indicators of the quality of institutions to better attract FDI. This result is consistent with Lothian (2006) who concluded that countries with a high rating according to the index of economic freedom were able to achieve better results in attracting FDI.

In the same field, Dutta and Roy (2011) concluded that poor-quality institutions have a negative impact on the country's ability to attract FDI. This result is similar to the result of De Santis and Luhrmann (2009) They found that institutions of poor quality, high taxes, and high transaction costs restrict the freedom of foreign investors and reduce FDI.

Contribution of this study: After reviewing theoretical literature and previous studies, this study will determine the impact of FDI determinants on FDI according to the institutional fitness theory. To the knowledge of the researcher, this is also the only study at the level of the Jordanian state that investigated this subject. In addition, this study is the only one at the level of the Jordanian state that attempts to determine the effect of economic freedom, domestic credit to the private sector, urban population, and university students on FDI. Hence, this study will re-evaluate the impact of FDI determinants on FDI according to the institutional fitness theory in the Jordanian state. Therefore, this study is a scientific addition to the field of financial and economic research.

The development of net FDI inflows in Jordan

Figure (2) shows the evolution of net FDI flows to Jordan during the period (1995-2020). These flows are characterized by fluctuations ups and downs from time to time, affecting the Jordanian economy's performance in general. World Bank data indicate an increase in net FDI inflows to Jordan during the period (1995–2020) from approximately $13 million to $913 million in 2000, as shown in Figure (2). This contributed to an increase in the percentage of net FDI inflows from the GDP from approximately 0.3% in 1995 to 15.2% in 2000, as shown in Figure (3), in light of the Jordanian state's adoption of the privatization process and the principle of economic openness. In the years 2001 and 2002, net flows of FDI inflows to Jordan witnessed a kind of continuous decline, reaching approximately $299 and $239 million, respectively. This was followed by a decline in the percentage of net FDI from the GDP to approximately 4.3% in 2001 and 4.2% in 2002. The reason for this may be the region's instability before the Iraq-US war outbreak. Moreover, net investment flows witnessed a kind of continuous increase

during the period (2003–2006) to reach its highest value in 2006 at approximately $3539 million. This event raised the proportion of net FDI inflows from the GDP to approximately 33.2%. the reason behind this rise may be the reinvestment of revenues generated from the rise in global oil prices and Jordan attracting some investments in the wake of the outbreak of the Iraq–US war. From 2007 to 2020, these net investment flows began to decline to modest levels as it recorded approximately $751 million in the year 2020. This was followed by a decline in their percentage of GDP to 2.4%. This can be explained by several reasons: the small size of the Jordanian market, the rise in energy prices locally, the global financial crisis in 2008, the drop in global oil prices, administrative bureaucracy, and weak laws regulating the investment process. The multiplicity of tax bases, the high rates of most of them, and the low levels of labor efficiency.

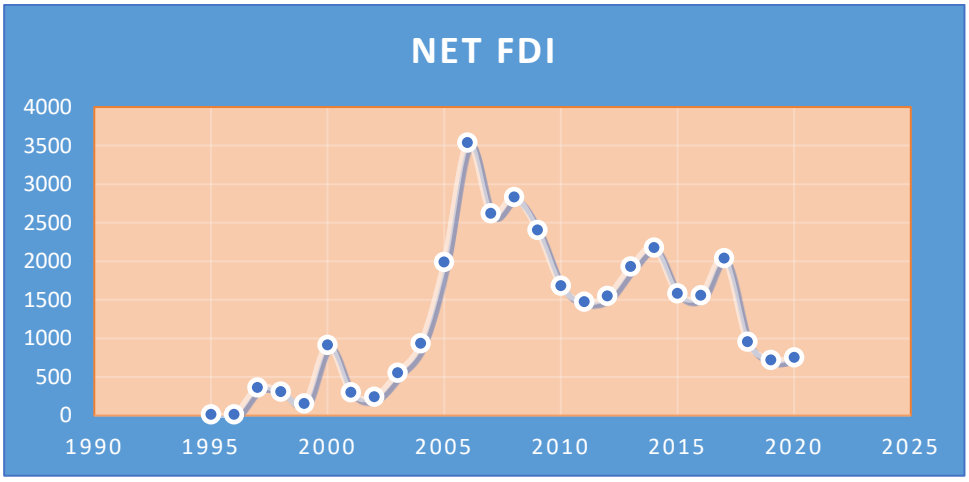


Figure 2. net FDI inflows to Jordan

* Source: Prepared by the researcher based on the World Bank database

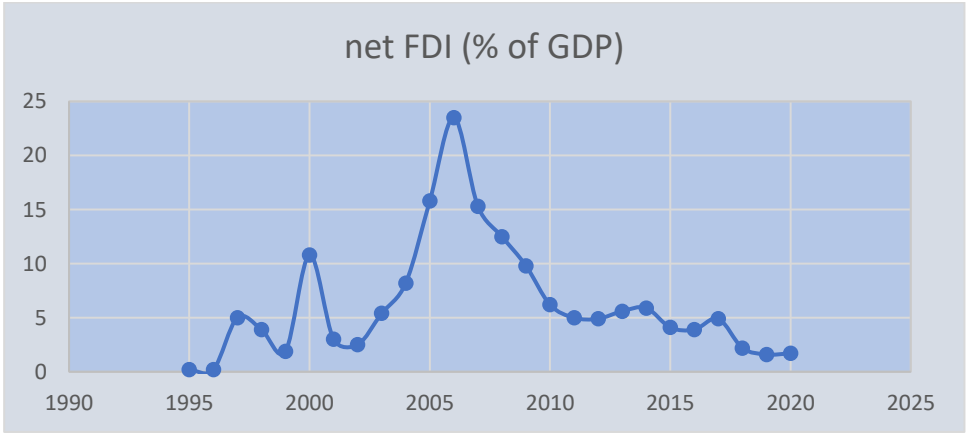


Figure 3. net inflow of FDI as a percentage of GDP.

Source: Prepared by the researcher based on the World Bank database.

Econometric model

This study relied on its interpretation of the determinants of attracting FDI on the institutional fitness theory. On this basis, the linear standard model was adopted below, which is based on the dependent variable of FDI. Moreover, a group of independent variables represents institutional fitness in the Jordanian economy, namely, governmental fitness, fitness of goods and services markets, capital market fitness, market fitness in general, and education fitness:

$$FDI=\alpha 0 + \beta 1ECOFRE +\beta 2\ IR+\beta 3\ CPS +\beta 4\ INF +\beta 5\ TO +\beta 6\ URPOP + \beta 7\ HE +\varepsilon i,$$

Where:

FDI = the inflow of FDI (% of GDP).

ECOFRE: index of economic freedom to express government fitness. It is issued by an institution (The Heritage Foundation) to measure the degree of government interference in the freedom of individuals to control their businesses and property. This indicator is based on components with equal weights (property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom). According to this indicator, countries are classified as follows: free (80–100 points), mostly free (70–79.9), moderately free (60–69.9), mostly unfree (50–59.9), and repressed (0–49.9). According to this indicator, Jordan is considered one of the moderately free countries. Its evaluation ranged from 60 to 69.9 points over the study period. As for the relationship between economic freedom and FDI, its sign is expected to be positive.

IR: the interest rate on loans and advances, To express capital market fitness, the high IR on borrowing leads to an increase in the cost of borrowing to finance projects. Hence, the economic feasibility of projects decreases, which leads to the reluctance of investors to borrow, thereby decreasing FDI. According to data from the Central Bank of Jordan, the IR for borrowing in Jordan is somewhat high, which ranged between 7.1% and 12.9% during the study period, with an annual average of 9.5%.

CPS: Domestic credit to the private sector by banks (% of GDP) to express capital market fitness. Local credit is a financing source for investment projects in times of need. The high level of this indicator reflects the size of the large financial surpluses available

in the country. In addition to the simplicity of the procedures taken to obtain the necessary financing, this constitutes an attraction factor for more FDI. According to World Bank data, the domestic credit to the private sector by banks (% of GDP) in Jordan ranged between 66.7% and 91.7%, with an annual average of 74.6% during the study period.

INF: Inflation rate to express the fitness of goods and services markets. The continuous rise in the rate of inflation makes it difficult to measure the value of production inputs and leads to the erosion of the value of investments. These results lead to the flight of investments abroad. Based on the World Bank data, the inflation rate in Jordan ranged between −0.9% and 6%, with an annual average of 3.1% during the study period.

TO: the degree of trade openness to express the fitness of goods and services markets. It is measured by dividing the total exports and imports by the GDP. This indicator reflects the volume of the country's dealings with the outside world in various fields. In addition, the rise of this indicator gives an impression to the foreign investor of the availability of great investment opportunities owned by the country, which constitutes a positive motive towards attracting more FDI. According to data from the Central Bank of Jordan, the degree of commercial openness in Jordan ranged between 55% and 106%, with an annual average of 79.5% during the study period.

URPOP: Urban population (% of the total population) to express the market fitness in general. The high level of this index makes it easier for foreign investors to exploit the most diversified and skilled workforce. According to World Bank data, this percentage in Jordan increased from 78% to 91%, with an annual average of 83.7% during the study period.

HE: Higher education (% of total) to express the education fitness. Its high level (% of total) is an indication of the increase in creativity and innovation of human resources in society, which contributes to increasing the production capacity of various investment projects, both local and foreign. Accordingly, the sign of the relationship between this ratio and FDI is expected to be positive. Data from the World Bank indicate that this percentage in Jordan ranged between 18% and 42%, with an annual average of 33% during the study period.

$\alpha 0$: is a constant term

β1,β2 ,β3 ,β4, β5, β6, β7: Represent the model parameters.

εi: the term error of the equation that must be added to the model to represent the rest of the variables that affect the model and were not included for specific reasons.

Standard study

In line with recent trends in time series analysis, a set of tests will be used to ensure the validity of the model for interpretation and the appropriate estimation method for the model.

Stationary test (unit root test) ADF

The stability of the time series of the study variables should be verified to avoid getting false regression and false results from using the study model, which requires a test (unit root test). One of the most widely used tests to measure the stability of variables is a test (augmented Dickey–Fuller) (Kanaan & Ansam, 2012). The standard software (EViews) was used to perform this test. Table 1 shows that the variables ECOFRE, INF, and CPS are stable at the level, whereas the variables FDI, IR, TO, URPOP and HE became stable after taking the first difference. This result confirms the rejection of the null hypothesis that there is a unit root in the time series of variables, accepting the alternative hypothesis of the stability of the variables at the first difference.

Table 1

UNIT ROOT TEST TABLE (PP)									
At level									
		FDI	**ECOFRE**	**IR**	**INF**	**TO**	**URPOP**	**CPS**	**HE**
With intercept	t-Statistic	−2.044	−2.170	−0.696	−4.506	−0.937	−1.450	−2.681	−2.457
	Prob	0.267	0.221	0.830	0.001	0.759	0.540	0.091	0.137
		No	No	No	*	No	No	***	No
With trend and intercept	t-Statistic	−2.022	−4.252	−1.718	−4.465	−1.192	−2.706	−2.637	−1.377
	Prob	0.561	0.015	0.712	0.008	0.890	0.243	0.268	0.845
		No	**	No	*	No	No	No	No
Non	t-Statistic	−1.204	0.344	−1.153	−1.762	−0.652	1.448	0.271	0.737
	Prob	0.202	0.776	0.219	0.088	0.424	0.959	0.756	0.867
		No	No	No	***	No	No	No	No
At first difference									
		FDI	ECOFRE	IR	INF	TO	URPOP	CPS	HE
With intercept	t-Statistic	−4.922	−4.392	−2.811	−9.239	−3.734	−2.851	−2.981	−5.068
	Prob	0.0006	0.002	0.071	0.000	0.0101	0.016	0.051	0.0004
		*	*	***	*	**	**	***	*

With trend and intercept	t-Statistic	−5.033	−4.662	−2.746	−9.024	−3.418	−1.051	−2.903	−3.982
	Prob	0.002	0.005	0.228	0.000	0.075	0.915	0.178	0.025
		*	*	no	*	***	no	no	**
Non	t-Statistic	−5.032	−4.413	−2.656	−.405	−3.755	−0.988	−3.005	−4.922
	Prob	0.000	0.0001	0.0102	0.000	0.0006	0.279	0.004	0.000
		*	*	**	*	*		*	*

⇨ **Notes: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively. No means not significant.**

Source: researcher's representation using EViews 10 program.

Co-integration test

The ARDL Long Run Form and Bounds Test is suitable to ascertain the long-term relationship among variables of this study. The results of Table 2 show the value of the cointegration test (value = 5.1066), which is greater than the upper limit I (1). Accordingly, the null hypothesis is rejected. In other words, the presence of joint integration indicates an impact of FDI determinants on FDI flows in Jordan.

Table 2

ARDL bounds test

Date: 02/08/23 Time: 01:59

Sample: 1998 2020

Included observations: 23

Null hypothesis: No long-run relationships exist

k	Value	Test statistic
7	5.1066	F-statistic
	Critical value bounds	
I1 Bound	**I0 Bound**	**Significance**
3.13	3.03	10%
3.5	2.32	5%
3.84	2.6	2.5%
4.26	2.96	1%

Source: researcher's representation using the EViews 10 program.

Test for the existence of the linear correlation problem:

Table 3 shows that there is no problem of linear correlation amongst the variables of the study, and this result confirms the accuracy and integrity of the model.

Table 3 Correlation test

	ECOFR	IR	INF	TO	URPOP	CPS	HE
ECOFR	1						
IR	−0.263	1					
INF	−0.349	0.041	1				
TO	−0.183	−0.179	0.589	1			
URPOP	0.445	−0.627	−0.090	−0.362	1		
CPS	−0.279	−0.378	0.270	0.495	−0.048	1	
HE	0.437	−0.671	0.175	0.380	0.552	0.324	1

Source: researcher's representation using EViews 10 program.

Autoregressive conditional heteroskedasticity (ARCH)

We notice through the test outputs in Table 5 that the value of Prob. Chi-Square (1) (0.5989) is greater than the value of Obs * R-squared (0.2767), which means that the alternative hypothesis is accepted, with homogeneity in the variances.

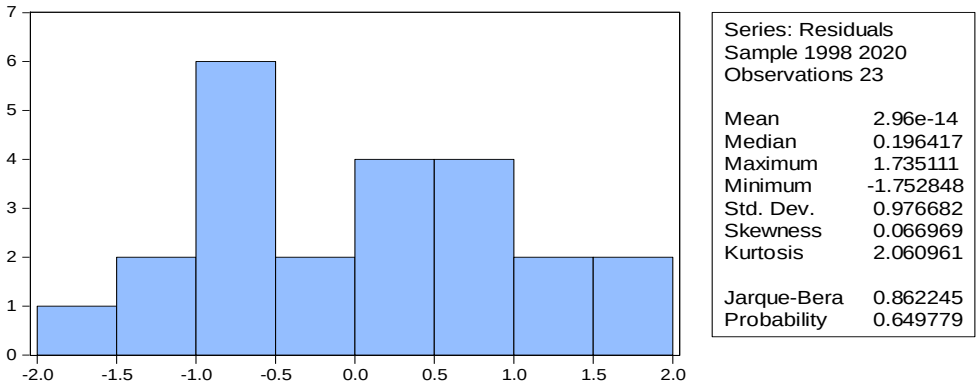
Table 5. Heteroskedasticity test: ARCH

F-statistic	0.2547	**Prob. F(1,20)**	0.6193
Obs*R-squared	0.2767	**Prob. Chi-Square(1)**	0.5989

Source: researcher's representation using EViews 10 program.

Histogram–normality test

Figure 4 shows that the probability value of Jarque-Bera is approximately 65%, which is greater than the level of significance (5%), and therefore, the data follow a normal distribution.



Source: researcher's representation using EViews 10 program.

After the estimated model passes the statistical tests for its parameters (first-order tests) and the standard tests for the residuals (second-order tests), the model is suitable for interpretation.

Estimating the study model

For this purpose, the ARDL model has been used. The results of the estimation in Table 6 show the value of Prob (F-statistic =0.024), which is less than the 5% level of significance. Thus, the model is considered statistically significant. As for the Adjusted R-squared, its value was approximately 67%. This result means that the selected independent variables, representing the determinants of FDI, explain 67% of the changes in FDI inflows to Jordan. This ratio is good and reflects the statistical quality of the proposed model.

As for the long-term estimation result, it can be concluded from Table 7 that all independent variables have a statistical significance at the 5% level except for higher education (HE). The reason may be the incompatibility of the educational outputs with the needs of the market, particularly for vocational graduates. The results of long-term estimation can be summarised in the following equation:

Cointeq = FDI-(1.205 ECOFRE - 2.949 IR+0.246 CPS - 1.180 INF+ 0.649 TO + 1.083 URPOP -0.403 HE - 84.437)

By reading the equation, the IR on loans and advances (IR) variable is the most influential variable on FDI flows to Jordan. Moreover, the relationship is negative and strong, as (b2 = −2.949). This result is consistent with the assumptions of economic theory. The economic freedom index variable (ECOFRE) is the second most influential variable in FDI inflows to Jordan, and its relationship is positive and strong (b1 = 1.205). The result of this estimate supports the hypotheses of economic theory. As for the other variables, the effect of the inflation rate (INF) was negative on FDI flows to Jordan, where (b4 = −1.18), and this result is consistent with the findings of Ben-Taher Hasan and Giorgione (2009). The variable proportion of the population of urban areas out of the total population (URPOP) positively affected FDI flows to Jordan, where (b6 = 1.083). The result of this estimate is consistent with the World Bank (2003) and Ben-Taher Hasan and Giorgione (2009). The relationship of trade openness (TO) with FDI flows to Jordan was positive (b5 = 0.649), and this result is consistent with the findings of Musonera et al. (2010). The least influential of the independent variables was the bank credit provided to the private sector (CPS), as it was associated with a positive

relationship with FDI inflows to Jordan (b3 = 0.246). This result is consistent with the hypotheses of economic theory. Then, higher education (HE) had no effect on FDI.

Table 6: Cointegrating form

ARDL cointegrating and long-run form
Dependent variable: FDI
Selected model: ARDL(3, 1, 1, 1, 1, 0, 0, 0)
Date: 02/07/23 Time: 21:56
Sample: 1995 2020
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(FDI(-1)	−0.150778	0.144306	−1.044853	0.3266
D(FDI(-2)	−0.374115	0.128105	−2.920376	0.0193
D(ECOFRE)	−2.062768	0.471733	−4.372744	0.0024
D(IR)	0.122413	1.120535	0.109245	0.9157
D(CPS)	0.325372	0.104081	−3.126144	0.0141
D(INF)	−0.880616	0.251893	−3.495995	0.0081
D(TO)	0.543753	0.108708	5.001961	0.0011
D(URPOP)	1.434025	0.302812	4.735696	0.0015
D(HE)	−0.533225	0.311902	−1.709588	0.1257
CointEq(-1)	−1.324618	0.172360	−7.685194	0.0001

R-squared	0.8802	Mean dependent var	−0.1435
Adjusted R-squared	0.6705	S.D. dependent var	4.1976
S.E. of regression	2.4095	Akaike info criterion	4.8449
Sum squared resid	46.4438	Schwarz criterion	5.5855
Log likelihood	−40.7172	Hannan-Quinn criter.	5.0312
F-statistic	4.1979	Durbin-Watson stat	2.2097
Prob(F-statistic)	0.0238		

Source: researcher's representation using EViews 10 program.

Table 7: Long-run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECOFRE	1.205199	0.299421	4.025104	0.0038
IR	−2.949149	0.656949	−4.489159	0.0020
CPS	0.245634	0.081224	3.024167	0.0165
INF	−1.180060	0.309835	−3.808672	0.0052
TO	0.649046	0.100160	6.480063	0.0002
URPOP	1.082595	0.224434	4.823660	0.0013
HE	−0.402550	0.252560	−1.593875	0.1496
C	−84.437270	25.098561	−3.364228	0.0099

Source: researcher's representation using EViews 10 program.

Conclusions

The study showed that FDI inflows to Jordan remained fluctuating and were below the desired level during the study period. After it increased from approximately 13 million dollars in 1995 to about 3.54 billion dollars in 2006, we find that it decreased again to roughly 760 million dollars in 2020. The results of the standard analysis showed that at the level of the variables representing capital market fitness, IR on loans and advances variable had a significant and negative effect on FDI inflows to Jordan. Meanwhile, the domestic credit to the private sector (CPS) was associated with a positive relationship with a significant impact of FDI inflows on Jordan. As for the variables representing the fitness of goods and services markets, the inflation rate (INF) has a significant and negative effect on FDI flows to Jordan, and trade openness (TO) is associated with a positive relationship with a significant effect on FDI flows to Jordan. With regard to the index of economic freedom (ECOFRE), which represents government fitness, the study concluded that it has a significant and positive impact on FDI coming to Jordan. The urban population variable (URPOP), which represents the market fitness in general, had a positive and significant impact on FDI inflows to Jordan. As for higher education (HE), which represents education fitness, the study found that it has no effect on FDI coming to Jordan, which contradicts the theoretical hypotheses of the study. The reason may be the incompatibility of the educational outputs with the needs of the market, particularly its need for trained professional graduates and not a large number of academy graduates.

Recommendations

Economic and financial policy decisions in Jordan should improve the attractiveness of the investment environment and enhance its sustainability through the following: reviewing and developing the legislation governing the investment process and following up on its implementation, reducing the manifestations of bureaucratic procedures, linking education outputs to the investment needs required by the Jordanian labor market, adjusting IRs on loans provided for investment activities, continuously reviewing tax rates imposed on investment activities, reducing energy costs for those activities and benefiting from international experiences that have achieved success in attracting foreign investment flows. the study also recommends conducting more research by adding variables not covered by this study, including exchange rate, energy costs, and tax rates, to support the findings of this study, and to provide more insights into the impact of institutional investment determinants on FDI.

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