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"Trilogy" of FDI, Export, and Remittances: An Empirical Study on Jordan's Economic Development

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Abstract

One of the most difficult challenges facing the economies of developing and wealthy countries alike is the concern about economic development, particularly the issues of economic growth and unemployment. The study concentrated on the trinity of foreign direct investment, exports, and remittances because it is one of the most significant factors in international commerce and financial transactions and the main source of foreign reserves in Jordan. The study investigated the impact of foreign direct investment flows and foreign remittances in addition to exports on unemployment levels in Jordan in the period from 1982 to 2020, and unemployment was used as a representative variable for the economic development process. The study aimed to demonstrate the effect in the long run, and the auto-regressive distributed lags test (ARDL) was used as a tool for the standard analysis. The results showed that each of the three independent variables reduced unemployment in the long run, and the results showed a co-integration relationship in the long run. This study is considered one of the few and rare studies investigating this trio's impact on Jordan's economic development. Based on the results, the study presented recommendations for decision-makers.

Keywords

FDI, Remittances, Export, Unemployment, ARDL, Jordan

1. Introduction

Developing and developed countries alike sought to achieve economic development through various tools, the most important of which were increasing economic growth, reducing unemployment rates, improving the investment climate, attracting foreign direct investment, and increasing exports (Ajamieh,

2003). And also, one of the important tools for increasing the gross domestic product is to increase the inflow of remittances. Jordan is one of the developing countries that strives to achieve economic growth and focuses in its quest to achieve this on improving the investment climate through the enactment of many laws and regulations that reduce taxes imposed on foreign investments, grant incentives, reduce bureaucratic and administrative procedures, rehabilitate human capital, and improve the quality of education (Jordan Strategies Forum, 2017). Also, one of Jordan's most important policies in achieving economic development is pioneering exports, improving the trade balance, and relying on foreign remittances flowing into Jordan through qualified and trained Jordanians who work outside the country, especially in the Arab Gulf states (Economic and Social Council of Jordan, 2012).

One of the most important challenges that hinders economic development in Jordan is unemployment (Alalawneh & Nessa, 2020). The unemployment rate in Jordan reached 18% in 2018 and rose to 20% in 2020. It continued to rise, so that the unemployment rate in 2022 reached nearly 23%, which is one of the highest rates worldwide (Department of Statistics, 2022). Accordingly, in this study, unemployment was used as a representative indicator of economic development, and therefore the impact of foreign direct investment, exports, and remittances on the unemployment rate in Jordan was examined.

This study focused on investigating the impact of the trio of foreign direct investment, exports, and remittances on unemployment in Jordan during the period from 1982 to 2020. It used a modern methodology to achieve its objectives and focused on investigating the impact in the long term. One of the few and rare studies that combined this economic trio on the one hand with unemployment also made recommendations to decision-makers in Jordan in order to achieve economic development, reduce unemployment, improve the investment climate, increase exports, and be an introduction to other studies that use different economic variables and other analysis methodologies.

2. Literature Review

Economic literature studies the impact of the most important macroeconomic variables on economic growth and development. Therefore, we find many studies that aim to investigate the impact of foreign direct investment, exports, and remittances on the unemployment rate. Some results showed a positive effect, and others showed a negative effect. Among the most important of these studies is the study Alalawneh (2020), which investigated the impact of both foreign direct investment and human capital on economic growth and the productivity of the Jordanian worker. The results of the study showed that foreign direct investment increases economic growth in the long run. And also the study of (Alalawneh & Nessa, 2020), which relied on cross-sectional data for six countries in the Middle East and North Africa, as the study focused on investigating the relationship between foreign direct investment, exports, unemployment, and inflation in the short and long term and showed The results of the study show that

both foreign direct investment and exports reduce unemployment in the long run and that there is a bidirectional causal relationship between exports and foreign direct investment in the short term.

According to the study of Dritsakis & Stamatiou (2018), which also relied on cross-sectional panel data for 15 countries in the European Union, the study focused on finding Granger's causal relationship for each of exports, foreign direct investment, economic growth, and unemployment. The results of the study showed the existence of a two-way causal relationship between foreign direct investment and exports, as well as between exports and economic growth, a one-way relationship from foreign direct investment to unemployment, and a one-way relationship from exports to unemployment.

The study of Okeke (2021) examined the impact of foreign remittances on the unemployment rate, and by using two-stage least squares (2SLS) as a tool for standard analysis; the results showed that foreign remittances reduce unemployment in the long run, in addition to the existence of a one-way causal relationship from remittances to unemployment. Also, the study of Magableh et al. (2022) investigated the effect of education and foreign direct investment on the productivity of the Jordanian worker, and by using time series data and auto-regressive distributed lags (ARDL), the study showed that the effect of education and foreign direct investment increases the productivity of the Jordanian worker in the long run, while the effect in the short term is not significant.

On the other hand, the study by Dinh et al. (2019) examined the impact of foreign direct investment and foreign trade on labor markets and unemployment in 30 countries with low- to middle-income economies, and by using a set of statistical analysis tools, the results showed that the impact of foreign direct investment is positive. It has a low impact in the long term, and its impact is negative in the short term, but the impact of foreign trade is greater and stronger on reducing unemployment levels in the short and long term. Igant Stepanok's study (Stepanok 2016) linked the flexibility of labor markets to the impact of foreign direct investment on unemployment and worker productivity. The study showed that the impact of foreign direct investment is significant only in institutions that are flexible in their markets, and its impact is insignificant and negative in markets that are characterized by inflexibility.

Eventually, the study of Mohamed (2018) on the Sudanese economy used the vector autoregressive (VAR) model. The results of the study showed that foreign direct investment increases unemployment in Sudan and also reduces the flow of foreign direct investment to Sudan, and the researcher attributed this to the rigidity and inflexibility of labor markets in Sudan.

By reviewing previous studies, we note that the impact of foreign direct investment on economic development is affected by several factors, such as the flexibility of labor markets and the variables associated with foreign direct investment, such as exports, economic growth, foreign remittances, the tax burden, human capital, and education. What distinguishes this study from other

studies is its use of a modern methodology to achieve its objectives and a period of time that is considered long and sufficient to show the effect in the long term. In addition, this study is considered the first of its kind to investigate the impact of the "trilogy" of foreign direct investment, exports, and foreign remittances on the One of the most important indicators representing economic development in Jordan is unemployment, and therefore this study will be considered an addition to the economic library.

3. Methodology

The study relied on secondary data, and time series data from 1982 to 2020, and the data was taken from private web sources in each of the following institutions: The World Bank (Jordanian Gross Domestic Product) (World Bank, 2020), UNCTAD (the variables related to exports and foreign direct investment) (UNCTAD, 2020), and the Central Bank Jordanian (the variable of remittances flowing into Jordan) (Central Bank of Jordan, 2020a, 2020b), the Jordanian Department of Statistics and the Jordanian Ministry of Labor (the variable of unemployment) (Ministry of Labor, 2020). The economic model of the study was built based on various economic literature, previous studies, and traditional linear economic theory and according to the following mathematical formula:

$$\mathrm{UE}_t = \alpha \mathrm{FDI}_t + \beta \mathrm{EXP}_t + \gamma \mathrm{REMT}_t + \varepsilon_t \quad (1)$$

where:

UE: Unemployment rate.

FDI: Foreign direct investment flows (% GDP).

EXP: Export (% GDP).

REMT: Jordanians' remittances from abroad (% GDP).

α, β, γ: Parameters of the model.

t: Time period.

The standard mathematical model was subjected to several diagnostic tests in order to ensure that it was free of various statistical problems. The unit root test (the Augmented Dickey-Fuller test), the serial correlation test, the normal distribution test, and the heteroskedasticity test were used. And then, to ensure the existence of a co-integration relationship in the long run, the autoregressive distributed lag bound test (ARDLBT) was used and based on the results of the diagnostic tests and the co-integration test, ARDL was used as a standard analysis tool (Gujarati & Porter, 2009). The following flow chart shows the standard analysis methodology used in this study (**Figure 1**).

4. Empirical Analysis and Discussion

It is important to check the stationary of the data to make sure that there is a common, complementary relationship between the variables. To do this, the unit root test (Augmented Dickey-Fuller Test) (Dickey & Fuller, 1981) was used, and the results are shown in **Table 1** below:

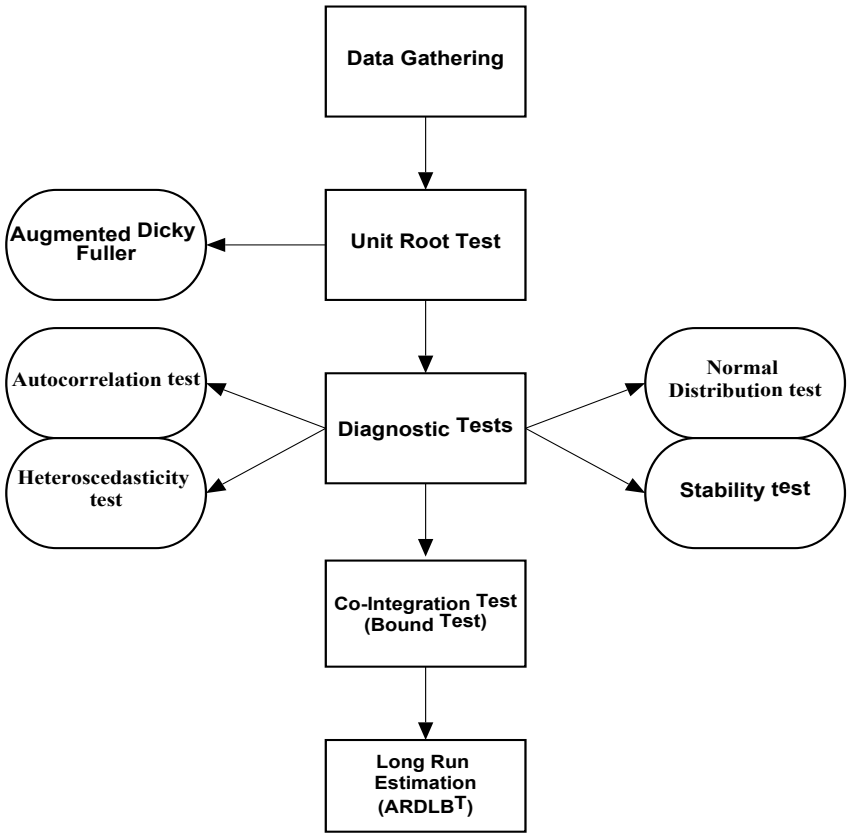

Figure 1. Methodology flowchart. Source: Own editing.

Table 1. Results of ADF unit root test.

Variables	Panel A: Level	Panel B: 1 st difference	Results
	Actual value	Actual value	
UE	−1.955	−5.522***	I(1)
FDI	−2.037	−6.267***	I(1)
EXP	−3.045**	−4.694	I(0)
REMT	−1.338	−4.523***	I(1)

Notes: Maximum lag order is set to two and optimal lag order (k) is selected based on Schwarz criterion in ADF test; *, ** and *** accordingly indicate rejection of null hypothesis at 10%, 5% and 1% significance levels; critical values are taken from the table prepared by MacKinnon (1996). Time period: 1982-2020.

The results of Table 1 show that each of the variables of unemployment(UE), foreign direct investment (FDI), and remittance (REMT) are not static at the level, and are static at the first difference (at 1% significant level). As for the export (EXP) variable, it is static at the level (At a 5% significant level).

Based on the results of the unit root and since the variables of the study are static at the first difference except for the variable of exports at the level, it will be used autoregressive distributed lag bound test (ARDLBT) to examine the co-integration relationship in the long run. The ARDL bounds testing approach

is a method of cointegration that was created by Pesaran et al. (2001) to test whether or not the variables in question have a relationship that exists over the long run. In comparison to the traditional cointegration tests, this process, which is a relatively new method, offers a number of significant benefits. To begin, the strategy is implemented regardless of whether the series being considered are I(0) or I(1). A straightforward linear transformation can be used to obtain the unrestricted error correction model (UECM) from the ARDL bounds testing. This can be done in two steps. This model exhibits dynamics in both the short run and the long run. Thirdly, the outcomes of the empirical studies demonstrate that the method is superior and yields consistent findings even with a limited sample size (Pesaran et al., 2001) (**Table 2**).

The variables' shared integration implies that they have an equilibrium relationship over the long term; hence the ARDL model was employed to estimate this relationship. The outcomes were as follows: (**Table 3**).

The standard analysis results shown in **Table 3** showed that the independent variables represented by foreign direct investment, exports, and remittances could explain the change in the dependent variable (unemployment) by approximately 80%, which indicates the explanatory power of the study model.

The relationship between direct foreign investment and unemployment was negative and statistically significant. Whenever the proportion of foreign direct investment in GDP increases by one unit, the level of unemployment in Jordan decreases by 0.002 units, this result is consistent with many economic theories that support the impact of foreign direct investment in increasing economic growth, qualifying human capital, increasing exports, reducing unemployment, and transferring technology from abroad. This result is also consistent with many previous studies, such as the study of Mukhtarov et al. (2019), which showed the positive impact of foreign direct investment on Jordanian exports, as well as the study of Alalawneh & Nessa (2020), which showed that foreign direct investment reduces unemployment in the Middle East and North African countries.

As for exports as a percentage of GDP, the results of the econometric analysis agreed with the logic of economic theories regarding the role of exports in promoting economic development, increasing economic growth, strengthening the trade balance, increasing the general budget, and thus increasing public spending and reducing unemployment. The results show that an increase in exports by

Table 2. The co-integration test results for ARDL (1, 2, 0, 0).

F-statistic	Significance level	Low bound	Upper bound
	10%	2.37	3.20
$FW = 4.67$	5%	2.79	3.67
	1%	3.65	4.66

Notes: The value of F-statistic = 4.67 is greater than Bound I1 and thus negates the null hypotheses (no long-run relationship exist) and there is a long term common integration among the variables.

Table 3. Results in the long term.

Panel A. ARDL Co integrating And Long Run Form			
Dependent Variable: UE Selected Model: ARDL (1, 2, 0, 0) Sample: 1982 2020 Included observations: 38			
Variables	Coefficient	St. error	t-statistic
FDI	−0.002*	0.0012	−1.788
EXP	−0.040***	0.0093	−4.340
REMT	−0.004***	0.0016	−2.788
Intercept	0.296	0.0338	8.744
Panel B. ARDL specification.			
ARDL (1, 2, 0, 0): Cointq = UE − (−0.002 * FDI − 0.040 * EXP − 0.004 * REMT + 0.296).			
Panel C. Residual Diagnostics and Misspecification test results for ARDL (1, 2, 0, 0).			
$\chi^2_{SC}(2)$ = 0.470 [0.629], $\chi^2_{ARCH}(1)$ = 0.91 [0.49], JB_N = 1.92 [0.38], $F_{statistic}$ = 24.43 [0.0000] R-squared = 0.83, Adjusted R-squared = 0.79.			

Notes: *, **, and *** indicate significant level at 10%, 5% and 1%, χ^2_{ARCH} denote Chi-squared statistics to test the null hypotheses of no serial correlation, no autoregressive conditioned heteroscedasticity, and; JB_N and F_{FF} indicate Jarque-Bera and F-statistic to test the null hypotheses of normal distribution and the significance probability of the model respectively, and; R-squared and Adjusted R-squared to indicates the ability of independent variables to interpret the dependent variable change.

one unit will reduce unemployment by 0.040 units, and this result is in agreement with many previous studies, such as the paper by Dritsakis & Stamatiou (2018), which tested the Granger causality relationship between exports and unemployment in 15 countries in the EU, and the results of the study showed the existence of a long-term causal relationship between the two variables.

Finally, the results showed that the variable of remittances had a significant and negative effect on unemployment, so an increase of one unit of remittances as a percentage of GDP reduces unemployment by 0.004 units. This result is consistent with some previous studies, such as the study of Pal et al. (2021), which investigated the impact of foreign remittances on unemployment and economic growth in high-, middle-, and low-income countries. The study showed that remittances have a positive impact on increasing economic growth and reducing unemployment in middle- and low-income countries. Because of the impact of these remittances on economic growth, consumption, and the speed of money circulation in the national market, Jordan is considered a low-income country that relies on foreign remittances, particularly those from Arab Gulf countries (Jordan Strategies Forum, 2018).

5. Conclusion and Recommendations

Economic development issues, especially economic growth and unemployment,

are among the thorny issues facing the economies of developing and developed countries alike. In this study, attention was paid to the trio of foreign direct investment, exports, and remittances because they are among the main elements of foreign flows and international trade (Todaro & Smith, 2015). In the last century, interest in these economic variables has increased as a key to economic growth and solving the problem of unemployment. We can summarize the results of the standard analysis in this study as the existence of a joint complementary relationship in the long run between each of direct foreign investment, exports, remittances, and unemployment, and that the growth of these three economic variables as a percentage of the gross domestic product leads to a reduction in unemployment in the long run. In varying proportions, we find that the impact of exports on reducing unemployment is greater than direct foreign investment and remittances. The results of the study were consistent with the results of many previous studies, such as the studies of Alalawneh & Nessa (2020), Mukhtarov et al. (2019), Alalawneh (2020), Dritsakis & Stamatiou (2018), and Pal et al. (2021).

Based on the results of the study, presents a set of recommendations for decision-makers in Jordan to pay attention to the investment climate and provide the necessary incentives for foreign investors, such as reducing bureaucratic and administrative procedures, reducing taxes imposed on foreign investments, and choosing the appropriate foreign investment type, which guarantees the qualification of national labor and non-competition the local investment and national employment. In addition to facilitating the export process, overcoming the obstacles that may face exporters, contributing to the promotion and marketing of national products, developing exports and enhancing their competitiveness in target markets, and developing the export skills and capabilities of Jordanian companies. And with regard to the remittances of Jordanian expatriates, the study recommends that the government work to maintain and increase the numbers of this category of expatriates through governmental agreements with other countries and provide these countries with Jordanian expertise, which in turn will achieve economic returns for Jordan. In the end, this study is considered an introduction to many future studies that may target other economic variables that affect unemployment, such as economic growth, government spending, financial depth, and other important variables, in addition to the use of different types of temporal data, such as cross-sectional panel data, and therefore standard statistical methods and different mathematical economic models.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the author.

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