The Impact of Foreign Indirect Investment in ASE on Foreign Reserves in Jordan: an Econometric Study during the Period (1995-2021)

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Abstract
This study aims to investigate the impact of foreign indirect investment in Amman Stock Exchange on foreign reserves in Jordan for the period from 1995 to 2021. The importance of the study stems from the fact that it focuses on foreign reserves, which represent the protective shield of the economy as one of the most important factors in the strength and stability of the economy as well as indicates the creditworthiness of countries and the extent of their ability to carry out international financial obligations. The study reveals the true role played by indirect foreign investments in foreign reserves in Jordan, as it is a vital channel for financing if used properly. To achieve the study's aim, the researcher used descriptive and econometric methods. The diagnostic tests applied were unit root tests for stationary, stability test and co–integration test. The Autoregressive Distribution Lag (ARDL) is employed for the Regression. The results showed that in the short-run, there was a positive impact of foreign indirect investment on foreign reserves, along with tourism revenue, external debt service and foreign direct investment, but in the long-run, foreign indirect investment had a negative impact on foreign reserves in Jordan. While workers' remittances and foreign direct investment had a positive impact. According to tourism revenue, the results indicated that there is no statistically significant relationship with foreign reserves in the long run. To reach a deeper understanding of the composition of foreign reserves in Jordan, other determinants of foreign reserves should be studied, such as the exchange rate, interest rates, imports determinants, in order to help decision makers, maintain a safe level of reserves.

Introduction

In the intricate tapestry of the global economy, foreign reserves emerge as the vibrant threads that weave together the fabric of a nation's economic stability and strength. They are more than just numbers; they symbolize a country's resilience, sovereignty, and capacity to navigate the unpredictable currents of international finance (Cerutti et al., 2019). As we embark on this scholarly voyage, we dive deep into the profound significance of foreign reserves and their intricate dance with foreign indirect investment, guided by the beacon of the Amman Stock Exchange (ASE). This journey promises to unravel the dynamics that underpin the economic prowess of nations and offers insights that will resonate in the highest echelons of economic discourse.

Foreign reserves, with their diverse holdings of gold, foreign currency, and special drawing rights, are akin to a nation's economic fortress. They stand as a critical barometer, signaling not just monetary health, but a nation's creditworthiness and its ability to honor international financial commitments (Ghosh et al., 2014). In an era marked by economic volatility, maintaining an optimal reservoir of foreign reserves is akin to bolstering the ramparts of a financial stronghold. Robust reserves act as shields against unforeseen economic tempests, as bulwarks against trade imbalances, and as sentinels guarding against the capricious whims of international capital.

Yet, in this intricate dance of economic resilience, foreign indirect investment takes center stage. It is not merely an actor but a crucial enabler. Foreign indirect investment breathes life into foreign reserves, providing a vital conduit for capital inflows that fortify these reserves (Bussière et al., 2015). This form of investment, characterized by the issuance and trading of securities in host country stock markets, possesses a global reach. It transcends boundaries, impacting not just individual nations, but the interconnected web of global financial markets (Dornbusch et al., 2019).

In the pursuit of understanding the efficiency of the Amman Stock Exchange (ASE), the study conducted by Elbarghouthi et al (2011) emerges as a valuable contribution. The ASE, as a critical component of Jordan's financial landscape, plays a pivotal role in shaping the nation's economic stability. This research delves into the intriguing question of whether the ASE operates as an efficient market. By scrutinizing the dynamics of the ASE, the study not only offers insights into the efficacy of the exchange but also provides a glimpse into the broader context of Jordan's financial market efficiency. The findings of this study, rooted in empirical analysis and rigorous examination, may hold implications for investors, policymakers, and stakeholders, shedding light on the efficiency and functionality of the Amman Stock Exchange within the realm of global financial markets.

This research endeavor embarks on a quest to unveil the intricacies of this relationship within the context of the ASE's financial realm. It holds a promise to advance our understanding of economic stability, not just as an academic pursuit but as a practical imperative for policymakers, investors, financial analysts, and stakeholders in Jordan's financial markets. With empirical analysis as our compass, we aim to contribute significantly to the realm of international economics, illuminating the path for informed decision-making in the ever-evolving global economy (Broner et al., 2016). Our mission is to cast light into the uncharted territories of economic resilience, guided by the stars of research excellence, and make waves in the highest ranks of economic scholarship.

The total value of a nation's hard currency holdings, gold reserves, and SDRs from the International Monetary Fund are considered to be the nation's foreign reserves. Foreign reserves are defined as those external assets that are easily accessible and under the control of the monetary authorities, which are central banks, to meet the needs of financing the balance of payments and to intervene in the exchange rate markets to affect the exchange rate of currencies. In addition to other relevant goals (International Monetary Fund, 2009), others have described it as one of the types of foreign exchange that the monetary authorities own, and they refer to the state's holdings of gold, foreign currencies, and SDRs with the IMF. It is used by the state to pay its debts and other external financial commitments in a manner similar to how people use bank accounts. Furthermore, they specified foreign exchange, gold, and government deposits at the IMF as the three main ways that foreign reserves build up (Todaro and Smith, 2015; Hatter, 1991). Three fundamental criteria determine the optimal level of foreign reserves in the economy of developing nations. The value of short-term indebtedness must first be covered by foreign reserves. Second, there has to be enough foreign reserves to cover imports for three consecutive months. Third, foreign reserves ought to be between 5-10% of the total money supply (Emmanuel, 2013).

The figure below represents Jordan's foreign reserves' adequacy. This was determined by the funding capacity of foreign reserves for three consecutive months of imports, where the solid line denotes the number of months that foreign reserves can fund imports. The dashed line illustrates the minimum limit that foreign reserves must finance in order to be at a safe level.

Graph (1): Jordan's foreign reserve adequacy and the minimum limit of foreign reserves (Month)
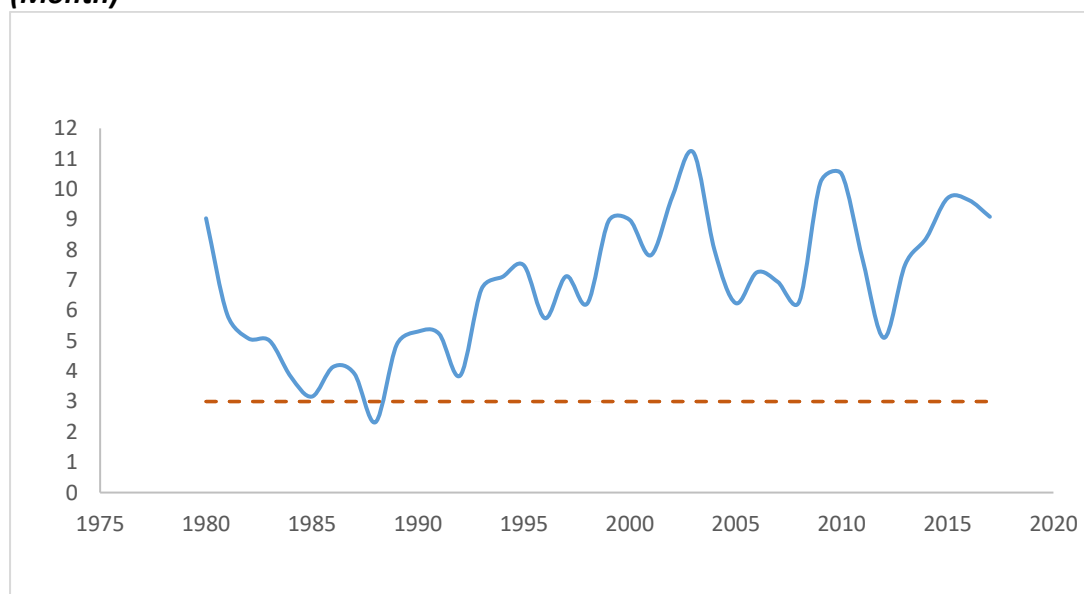
Source: World Bank

According to the above graph, foreign reserves were at their lowest in 1988, and their capacity to finance imports was for only about two months. This is because the Jordanian dinar fell to its lowest level in 1988, causing an economic catastrophe in 1989. Except for 1988, foreign reserves were never less than the bare minimum. Foreign reserves were at their finest shape during the research period in 2003 because it could fund for around 11 months. This is owing to the compensation of employees that Jordan received as a result of the Iraq war. The

average reserve adequacy was roughly seven months. This demonstrates that Jordan has a relative monetary and financial stability.

The primary purpose of the financial markets is to invest excess liquidity or untapped funds in the financial market in order to move money from surplus units to deficit units. Financial markets are a key tool for promoting economic development since they boost national saving, finance the process of economic development, and support higher economic growth rates, employment levels, incomes, and well-being levels (Magableh, 2013).

In Jordan, people began trading stocks and forming public shareholding firms in the 1930s. For the first time in history, a loan bond was issued in the early 1960s. As a result, an informal market for trading securities through offices that are not specialized in investing in securities has emerged. The Jordanian government was driven to consider establishing a market to oversee the issuing of securities and the way of dealing with them promptly and easily, in addition to safeguarding small savers, by developing a process for determining securities prices based on supply and demand dynamics. Following economic growth objectives, the formation of such a market was also called for. With the government assistance, several organizations began to plan for the formation of a regular securities market. Therefore, an informal market for securities trading developed in Jordan through undesignated offices. This prompted the government to seriously consider creating a market for the issuing and trading of securities. With the government assistance, the authorities involved began to plan for the creation of this market. Amman Financial Market was founded because of Temporary Law No. (31) of 1978 (Amman Stock Exchange, 2022).

According to Thankgad (2014), foreign indirect investment is a component of global capital movement that involves the profitable transfer of financial assets like stocks, bonds, and cash across international boundaries. It happens when investors buy securities in the host nation. When listed firms need capital, foreign indirect investment is required. In the stock exchanges, it offers its shares or other securities. Investors purchase these shares, which can be known as a subscription, since doing so grants them ownership rights in the firm. Numerous aspects of this form of investment include high liquidity, where the investor may readily and unrestrictedly join and leave the market. Furthermore, because of the flow of wealth into the host nation, foreign indirect investment raises the demand for the local currency. The substantial foreign reserves have a favorable impact on the value of the currency of the host nation.

Graph (2): Foreign Indirect Investment growth in Jordan
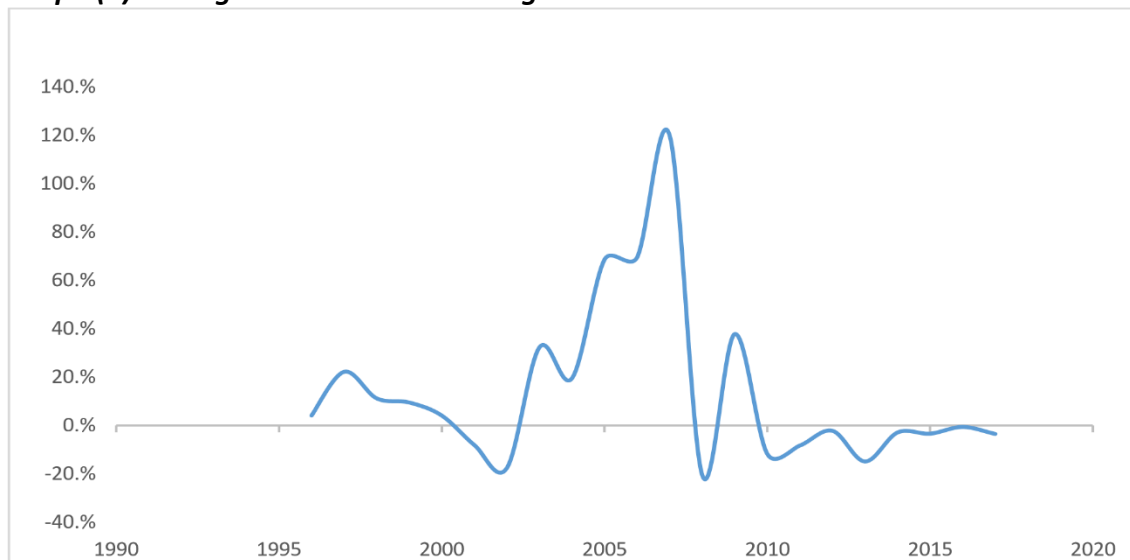
Source: World Bank

The figure represents the percentage of growth in foreign indirect investment in Jordan. Through the figure, we notice a clear fluctuation, as foreign ownership recorded the highest growth rate, reaching its peak in 2007, and growth was 120%, due to the economic boom where the Gulf countries were going through, resulting from the remarkable increase in oil prices and the exaggerated rise in domestic stock prices. However, the percentage of foreign ownership decreased significantly in the following year, and it recorded a growth that is the lowest since its establishment, affected by the global financial crisis, as growth declined by 20.5% in 2008. Nevertheless, ASE was the safest financial market that was least affected by the global crisis, while other stock exchanges recorded less growth, and the growth rate of indirect foreign investment averaged 13.9% during the study period.

Literature Review
Many studies have discussed the relationship between foreign reserves and foreign capital, Olokoyo et al (2009) examined the relationship between foreign reserves and a number of macroeconomic variables in Nigeria over the period 1970–2007 and came to the conclusion that there is a long-term correlation between foreign reserves and the selected macroeconomic variables of inflation, gross domestic product, economic openness, and inflow of foreign capital. The study demonstrated that the gross domestic product and trade openness had a favorable impact on Nigeria's foreign reserves, but the entry of foreign capital and inflation had a negative impact.
In a different research, the link between the growth of the stock market and foreign direct investment as well as foreign indirect investment and remittances was explored. This study covered the period from 1988 to 2011 in Pakistan, India, and Bangladesh. The study's findings indicated that remittances, direct foreign investment, and foreign indirect investment all contributed to the growth of the financial markets in Pakistan and India, and that direct foreign investment and remittances contributed to the growth of the financial markets in Bangladesh, while foreign indirect investment had a negative effect on that country's financial market development (Malik, 2013).
Akinwunmi and Adekoya (2016) examined how foreign exchange reserves are managed and how it affects Nigeria's economic expansion. The study found that management of foreign

reserves, on the one hand, and investment Direct foreign exchange, economic growth, and monetary policy, on the other, have a favorable link and are crucial to the Nigerian economy and must be maintained at the right levels. However, the research found a link between foreign reserves and local currency exchange rates and inflation that is unfavorable.

Akpan (2016) analyses the Nigeria's foreign exchange reserves and their effect on the country's macroeconomic climate during the period (2004-2014), some macroeconomic variables (gross domestic product, inflation, total trade volume, international investment, exchange rate, and unemployment) were utilized as independent variables and foreign reserves as a dependent variable. In addition, the OLS technique was employed to assess the influence of each. The study demonstrated the importance of foreign exchange reserves to Nigeria's macroeconomic environment development. It also showed that in order to determine the degree of efficiency needed to ensure macroeconomic stability in Nigeria, the Nigerian government must create procedures and plans for managing foreign reserves.

Chowdhury et al. (2014) discussed the typical examination of foreign exchange reserves in Bangladesh during the time (1972-2001), the OLS approach was employed. The study's findings indicated that a 1% rise in per capita GDP would result in an increase in foreign currency reserves as a percentage of GDP of 0.025%. The amount of foreign currency reserves as a proportion of GDP would rise by 0.368% for every 1% drop in the money supply. An increase in workers' remittances of 1% would result in a rise in foreign exchange reserves of 0.6271% as a percentage of GDP, demonstrating the strength of the connection with regard to worker remittances.

Gereziher and Nuru (2021) researched the determinants of foreign exchange reserve accumulation in Ethiopia, at the period (1981-2017), autoregressive distributed lag (ARDL) model was used. Besides, standard unit-root tests such as augmented Dickey Fuller (ADF) and Phillips–Perron (PP) tests are employed to check for the stationarity of the series. The results of the study showed that in the short run, foreign exchange reserve accumulation of Ethiopia is negatively and significantly affected by inflation rate and exchange rate. But, in the long run, inflation rate affects foreign exchange reserve positively and significantly. Additionally, in the long run, external debt affects foreign exchange reserve positively. Similar to its effect in the short run, exchange rate also affects foreign exchange reserve negatively in the long run.

Descriptive Analysis

Jordan, a nation grappling with resource scarcity, navigates a complex economic landscape reliant on diverse funding sources to fuel its development endeavors. This multifaceted financial ecosystem encompasses loans procured from affluent nations, benevolent support from Gulf States, and vital assistance from esteemed institutions like the World Bank and international organizations. Additionally, Jordan relies significantly on several pivotal pillars, including remittances from its diaspora workforce, the influx of tourism revenues, direct foreign investments, and the instrumental inflow of foreign indirect investment. Moreover, the Jordanian economy benefits from subsidies and financial support generously extended by advanced industrialized nations and Gulf states, collectively fortifying its economic foundations and aspirations.

There were several issues with the Jordanian economy. Due to the rise in government expenditure in the 1980s, the value of the Jordanian dinar fell in 1989. The fall in foreign aid to Jordan is due to a number of factors, including the low global price of oil and the low amount of money that Jordanian employees in the Arabian Gulf send home. Achieving

monetary stability has recently been a top priority for the Monetary Authority in Jordan as a result of the repercussions of regional and global crises. Monetary stability is one of the main factors for improving the investment environment (domestic and foreign), which is the main driver of economic activity. Therefore, the Jordanian government was forced to turn to loans, particularly international ones. As a result of Jordan paying its debts in foreign currencies, there was a scarcity of foreign reserves.

Model of the Study

Since they are used to identify the link between economic variables and their direction, econometric models are crucial for developing economic strategies. Economic theory and a number of other researches, including those by Akinwunmi and Adekoya, 2016; Chowdhury, 2014; and Olokoyo, 2009 were consulted in this study, and the following model was developed:

$$R = \beta 0 + \beta 1 REM + \beta 2 T + \beta 3 TB + \beta 4 DS + \beta 5 FDI + \beta 6 FII + \mu$$

Where R: Foreign reserves as a percentage of GDP. REM: Remittances of workers abroad through official channels as a percentage of GDP. T: Tourism receipts as a percentage of GDP. TB: trade deficit in absolute terms as a percentage of GDP. DS: External debt service as a percentage of GDP. FDI: Foreign direct investment as a percentage of GDP. FII: Foreign indirect investment, which is the percentage of foreign ownership in Amman Stock Exchange multiplied by the total market value as a percentage of the GDP.

Diagnostic Tests

Finding the best strategy for Econometric model analysis requires using diagnostic tests. Using a certain approach without doing diagnostic tests may cause a number of statistical issues, such as getting high values for each of (R2, F, and t), leading to the development of false findings for estimate.

The unit roots test findings showed that time-series of the studied variables were not static at the level. Time-series became static after taking the first difference at the significant level of 1%. Therefore, we reject the null hypothesis which states that there is a unit root at the first difference. The bounds test revealed the presence of cointegration between the variables studied, as the F-statistic value was smaller than the minimal I (0) value in two equations. Consequently, we accept the null hypothesis stating that there is no cointegration.

After conducting a test (CUSUM) to check the stability, it was found that the error curve was within the critical limits at the level of 5%, as shown in Figures (1) during the study period. Thus, there is no need to divide the period, as the study can be dealt with as one period of time.

Graph (3): CUSUM Test
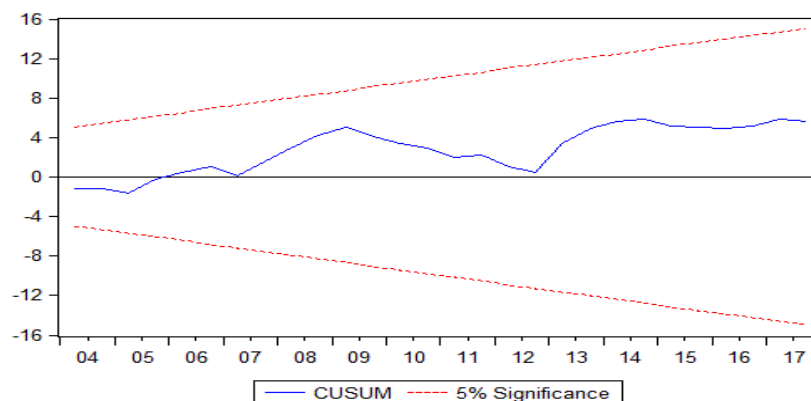
Results

The regression analysis reveals a substantial explanatory power of the independent variables on foreign reserves as a proportion of GDP, with a noteworthy R-squared value. Among the independent variables examined, workers' remittances, exports, external debt service, foreign direct investment, and foreign indirect investment exhibited statistically significant long-term relationships with foreign reserves, signifying their contributions to the dynamics of reserves.

Table (1)
The results of the long-term estimation of the model using the (ARDL) method
ARDL (1, 1, 1, 1, 1, 2, 1), Akaike Criterion

		Variable	Coefficient	T-statistic	Prob.
Long – Run		REM	3.077422	2.739531	0.0106
		T	0.788288	0.814544	0.4222
		X	-1.929726	-2.595420	0.0149
		DS	-1.286646	-2.983900	0.0058
		FDI	0.574771	1.768906	0.0878
		FII	-0.429033	-2.619977	0.0140
R^2	0.863833	F-Statistic			12.68790
Adjusted R^2	0.795750	Prob. (F-Statistic)			0.000000
S.E. of Regression	0.031045	Durbin-Watson Stat			1.639126

In contrast, international tourism did not demonstrate statistical significance within the model. Notably, foreign indirect investment exhibited a negative long-term relationship, indicating that an increase in this variable as a proportion of GDP corresponded to a decrease in foreign reserves, primarily driven by repatriation of earnings by foreign investors in the financial sector, as well as the utilization of local loans in foreign investments. Furthermore, during economic crises, such as the 2008 financial crisis, swift market reactions triggered capital flight, intensifying the negative impact on foreign reserves. These results shed light on the intricate interplay between economic variables and foreign reserve dynamics.

Table (2)
The results of the Short-term estimation of the model using the (ARDL) method

	Variable	Coefficient	T-statistic	Prob.
Short-run	REM Δt-1	-1.964849	-1.830512	0.0778
	TΔ t-1	2.478764	2.27707	0.0522
	XΔ t-1	0.877010	1.228402	0.2295
	DSΔ t-1	0.837202	2.014237	0.0537
	FDIΔ t-1	-0.787024	-1.618713	0.1167
	FDIΔ t-2	0.972256	2.447702	0.0209
	FIIΔ t-1	0.191093	1.770882	0.0875
	Contieq t-1	-0.101087	0.905758	0.001

The Error Correction Coefficient (ECT), having a short-term coefficient significantly different from 1%, adheres to the principles of econometrics. This suggests that short-term deviations from equilibrium adjust gradually by a fixed amount per year, indicating that it takes some time for short-term imbalances to return to long-term equilibrium. In addition, the results indicate that workers' remittances, international tourism flows, and foreign debt service were statistically significant at the 10% significance level in the short term. Meanwhile, both foreign direct investment and foreign indirect investment exhibited statistical significance at the 5% significance level in the short term. In contrast, the variable "exports" did not exhibit statistical significance in the short term, suggesting a limited short-term impact.

Discussion and Conclusion

The study embarked on an exploration to dissect the intricate relationship between foreign indirect investment within the Amman Stock Exchange (ASE) and its consequential impact on Jordan's foreign reserves. In the longitudinal analysis, foreign indirect investment revealed a pronounced negative effect on Jordan's foreign reserves, signifying a significant conundrum. Specifically, a discernible decline in foreign reserves relative to GDP was observed in response to increased foreign indirect investment, underscoring the nuanced nature of this relationship.

Contrasting this observation, the study unveiled a contrasting narrative concerning the contribution of overseas workers' remittances. Here, a notable surge in foreign reserves was observed in response to increased remittances, elucidating a positive connection. Additionally, the influx of foreign direct investment echoed a similar sentiment, emerging as a positive influencer in fostering an uptick in foreign reserves relative to GDP. This dynamic portrays the multifaceted interplay between foreign capital inflows and the nation's reserves. Shifting the focus to the short-term dynamics, the study spotlighted the beneficial impact of foreign indirect investment on Jordan's foreign reserves. An observable rise in foreign reserves relative to GDP accompanied an increase in foreign indirect investment, elucidating this symbiotic relationship. This connection was elucidated by the continuous flow of funds from foreign investors into Jordan, actively replenishing the country's foreign reserves.

Furthermore, international tourism revenues emerged as a potent driver in the short term, fostering a notable boost in foreign reserves as a proportion of GDP with an increase in tourism. However, in the realm of exports, statistical analysis yielded inconclusive results, signifying a unique facet of Jordan's economic landscape.

The servicing of external debt was marked by its favorable influence, as observed in the rise of foreign reserves. Likewise, foreign direct investment's impact remained positive, stimulating an augmentation in foreign reserves relative to GDP.

This study's findings align with the broader literature, collectively underscoring the pivotal role of foreign indirect investment in shaping the dynamics of foreign reserves. While offering insights into the intricacies of Jordan's financial landscape, this research resonates with similar studies, reinforcing the notion that foreign indirect investment's impact on foreign reserves is a multifaceted and pivotal element within the global financial mosaic.

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