The Impact of Stock Market Development on Economic Growth in Jordan

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Abstract

The strong development of stock markets is reflected in acceleration in the number of IPOs and a very sharp increase in transaction volumes (amounts of securities traded). To understand the effects of stock market development on Jordan's economy, this research adopted the use of secondary time series info. Based on the descriptive statistics approach adopted, there are specific findings that define the overall objectives of the study. The findings show that the stock growth and private sector credit expansion optimistically contributes to the economic prosperity and development of the Jordanian economy.

Moreover, the research findings also indicate that a foreign direct investment, which also influences the country's stock, has an outcome on the country's economic development in the long run. Further, the research findings also show that the economic development of Jordan is not affected by the domestic credit awarded to the private sector. However, the findings also show that trade involving stock has a minimal effect on the development and growth of the Jordanian economy. Overall, the research reveals that the FDI, the total stock value of trade, and the nationwide credit to the private sector have an influence on the economic growth of a country.

Keywords: stock market; economic growth; Jordan's economy.

Introduction

Stock markets play an important role in the economic development process of a country. They can be defined as the confrontation between supply and demand for financial securities. The main function of these markets in Jordan is to mobilize savings from agents with financing capacity and make them available to agents in need of financing. Cave, Chaudhuri, Kumbhakar (2020) already referred to the fundamental role played by the financial sector in economic development. His analyses were reinforced by the theoretical work of (Tsaurai 2018). They laid the foundations for the economic analysis of stock markets and consequently inspired economic policy recommendations for international institutions and developing countries. These markets have developed over the last decade in most parts of the world despite the recent financial crisis of 2008.

The field of finance encompasses markets with diverse characteristics and functions. The divide between direct and indirect finance was introduced in the literature, for example, by Pan and Mishra (2018) to distinguish between bank credit finance and securities issue finance. In the case of financial markets, a distinction is also made between the primary market and the stock market (or secondary market). The primary market is the market for the issuance of securities while the secondary market is only for the exchange of securities that have already been issued.

The factors determining the development and emergence of these stock markets have been the subject of numerous studies. In a context of economic globalization and the interdependence of stock markets, the need to capture the levels and pace of evolution of these markets appears important. To this end, several authors have paid particular attention to this issue. Mamun *et al.* (2018) examined the macroeconomic determinants of stock market development in 15 countries, including both industrialized and developing countries.

Market capitalization as a percentage of GDP was used as a measure of the development of this market and panel data approaches with fixed effects were used. The results reveal that the main macroeconomic determinants of stock market development were the year lagged values of real income, savings rate, development of financial intermediaries (liquid liabilities as a percentage of GDP, share of private sector credit in GDP) and stock market liquidity - quoted stock values as a percentage of GDP (Hoque, Yakob 2017).

Yartey (2008) examined the institutional and macroeconomic determinants of stock market development using panel data from 42 emerging economies, 9 of which were African (Botswana, South Africa, Nigeria, Morocco, Tunisia, Egypt, Zimbabwe, Ghana, Kenya). Dynamic Panels, more specifically GMM (Generalized Method of Moments), were used to investigate these determinants. Stock market development was measured by market capitalization as a percentage of GDP. The results show that market capitalization lagged by one period as well as macroeconomic factors such as income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity are important determinants of stock market development in emerging countries (Manasseh *et al.* 2017).

Puryan (2017) followed this up with an empirical investigation of the empirical determinants of the development of bond markets in emerging Asian and Latin American countries. He therefore used a dynamic panel model in which the bond capitalization variable as a percentage of GDP was used as a variable of bond market development. For the explanatory variables, GDP per capita, the degree of trade openness, inflation, the investment environment and the fixed exchange rate regime were chosen. Apart from inflation, which has a negative effect, the other variables have a positive effect on the development of bond markets.

Cherif, Gzdar (2010) have identified the macroeconomic and institutional factors that explain the development of the stock market in 14 MENA (Middle East and North Africa) countries including Morocco, Tunisia and Egypt. Using fixed and random effects panel data and the use of instrumental variables, they showed that income level, savings rate, stock market liquidity and interest rate influence stock market development. The results also showed that the stock market and banking sectors are complementary rather than substitutes. Thus, it was found that the institutional environment as measured by a composite political risk index does not appear to be a driving force for the region's market capitalization.

This article responds to this concern by setting itself the objective of researching the factors that influence the development of stock markets; particularly those in Jordan. In practice, the main objective of this article is to analyze how the stock market growth affects the economic development in Jordan through determining how changes occur in the Jordanian stock market. In the main time this article investigates the consequence of FDI on the Jordanian economy. Then evaluates the influence of domestic credit on the Jordanian economy and lastly examines whether stocks traded total value affect the Jordanian economy.

1. Empirical Literature

1.1. Stock Market Development and Economic Growth

Banks have evolved towards no intermediation financial activities. A growing share of the revenues of large and rapidly expanding banks now comes from commissions and other types of non-interest income, while a smaller proportion of their funding comes from traditional deposit activities (Demirgüç-Kunt, Huizinga 2010). The growth of these non-intermediation services suggests that traditional measures of financial development may no longer be adequate (if they ever were) to assess the services provided by the financial sector.

Laeven *et al.* (2013) introduce financial innovation into a classic Schumpeterian growth model used by Aghion *et al.* (2005), and show that financial innovation is a key driver of economic growth. Their model predicts that financial innovation (or the rate at which financial systems improve their ability to select entrepreneurs) affects the speed at which a given country converges towards the global economic frontier. Using their model with data, Laeven *et al.* (2013) use the percentage of years, between 1960 and 1990, during which a country had a private credit bureau as a proxy for financial innovation.

According to Laeven *et al.* (2013), the presence of private credit bureaus is a good parameter for their model, which emphasizes the importance of information in determining credit allocation. Their results, based on a representative sample of 56 countries for the period 1960-1995, confirm that the presence of private credit registers is associated with a faster speed of convergence. They also observe that when they take into account financial innovation, the level of financial development does not have a significant effect on stable growth or the speed of convergence.

Kneer (2013) shows that only private credit bureaus have an influence. Given that public credit registers collect less information and offer a narrower range of services than their private counterparts, the fact that the presence of public registers does not affect the speed of convergence is consistent with the view of Kneer (2013) that public credit bureaus are less well suited to the financial innovators at the centre of their model. Laeven *et al.* (2013) use as another proxy for financial innovation the growth rate of credit to the private sector and conclude that this new variable is strongly related to the speed of convergence.

Beck *et al.* (2014) jointly measure the effect of intermediation and non-intermediation services provided by the financial sector. Their strategy is to use the traditional measure of financial intermediation (outstanding credit to the private sector) with a new indicator of the size of the financial system calculated as the share of value added of the financial system in GDP. The idea is that by taking intermediation and total value added of the financial sector together, they can recover the effect of non-intermediation services through the effect of a change in size while keeping the intermediation variable constant.

When intermediation and size are included in separate cross-sectional regressions for the period 1980-2007, both variables are positively correlated with growth. However, when Beck *et al.* (2014) consider intermediation and size together, they find that size is no longer statistically significant (intermediation remains statistically significant in cross-sectional regressions). In regressions of panel data, neither intermediation nor size is significantly correlated with growth. On the other hand, intermediation is negatively correlated with volatility (a result found in the cross-sectional regressions) and size is positively correlated with volatility (a result that corroborates the findings of Demirgüç-Kunt, Huizinga 2010 that non-intermediation services increase risk).

Beck *et al.* (2014) conclude that there is no evidence for the view held by the financial sector that finance can be a growth sector in itself. A third stream of the new empirical literature attempts to understand the dark side of finance through the impact of growth on the distribution of talent. The idea that the financial sector can distort the distribution of talent has been raised by Tobin (1984) and modeled by Bolton *et al.* (2011). Anecdotal evidence shows that in many advanced economies, the skill level and relative wages in the financial sector have risen sharply, and that these changes (including skill levels) are associated with financial deregulation (Philippon and Reshef 2013).

Kneer (2013) shows that high wages in the financial sector can indeed have negative effects on non-financial firms. Specifically, she uses KLEMS data for a sample of 13 countries and shows that financial liberalization (in particular policies to promote the development of securities markets) tends to attract skilled labour to the financial sector, and that this greater absorption of talent into the financial sector is detrimental to the productivity of industries that, for technological reasons, rely relatively more on skilled labor.

1.2. Stock Market Determinants

Philippon and Reshef (2013) study the macroeconomic factors determining the development of the stock market from GMM where market capitalization as a percentage of GDP was used as a dependent variable. The study was carried out in 19 European countries over the period 1995 - 2011. It was found that income, the monetization ratio (the ratio of M3, also known as liquid liabilities to GDP), the liquidity ratio (the total value of shares traded on the stock exchange as a percentage of GDP), the savings rate and the inflation rate have effects on the development of the stock market. Monetization ratio and inflation have negative effects while income, liquidity ratio, savings rate have positive effects on the development of the stock market (Cherif and Gazdar 2010).

On the other hand, the relationship between the financial sector, the development of the banking sector and economic growth has been the subject of many more detailed studies, including the work of (Loayza, Ranciere 2006). According to these authors, financial liberalization is the only effective way to ensure economic development and therefore any policy to promote financial sector liberalization would boost economic growth.

Kemboi and Tarus (2012) study the relationship between markets (stock exchange and banking) and economic growth. They conclude that there is a causal relationship between stock market development and economic growth and that the causality can go from financial development to economic growth or vice versa. It can also be bi-directional. According to these authors, the results may vary from one country to another, from one period of study to another and depending on the stock market development indicator used.

Yartey (2008) examined the contribution of the financial sector to economic growth. With a sample of 82 countries, these authors do not validate the hypothesis that the development of the financial system has a positive influence on growth, either through the mobilization of savings or through the quality of its allocation, which is a paradox compared to Mc Kinnon's studies. For them, this paradox can be explained by a representation of the role of financial development in the form of threshold effects associated with multiple equilibria, which are accounted for in the fixed effects of regression and misspecification.

Henry (2000), studies the impact of stock market liberalization on the development of economic activity based on a sample of 11 developing countries that have liberalized their stock markets. He concludes that stock market liberalization impacts economic growth through a boom in private investment. Indeed, according to this author, the average growth rate of private investment in the three years just after stock market liberalization exceeds the average of the sample by 22%. This work is confirmed by the analyses of Gupta, Yuan (2009) who

examined the effect of stock market liberalization on industry growth in emerging markets.

Levine (2002) studies the impact of stock markets and banks on economic growth using the GMM method on Panel data. He concludes that stock markets and banks have a positive influence on economic growth and is thus consistent with the findings of Mc Kinnon (1973) and Shaw (1973). This is in line with the work of Levine (2002), but also with Levine (2005), who points out that financial intermediaries, through the functions they play, stimulate growth through capital accumulation and factor productivity.

2.3. Foreign Direct Investment (FDI)

The internalization of a company can take different forms: exporting, setting up a marketing subsidiary, owning a production unit (by creating or buying out a local company), selling a license to a foreign partner or a subcontracting agreement with a local manufacturer. The choice between these different modes of internationalization depends on several criteria: degree of maturity of the product (Ethier and Markusen 1996), respective costs of market penetration according to the different modes (Blonigen 2001), market structure (Horstmann and Markusen 1992). These different approaches and their extensions emphasize the fact that the choice of the mode of internationalization results from a microeconomic logic specific to each firm.

The decision to set up abroad and the form it takes depend not only on the strategy of the firm, but also on the advantages of the host territory. Such a conceptualization was initially developed within the framework of the Oli paradigm (Dunning 2001). More precisely, the firm decides to set up a production unit according to four main determinants: the size of the market, the costs of the factors of production, the number of local and foreign firms already present, the different attractiveness policies pursued by the local authorities (Hung 2004). Thus, the choice of location is a function of the combination of the advantages of the firm and the host zone.

The notion of attractiveness then appears at the heart of the analysis of the location of FDI. The quest for greater economic competitiveness implies an implicit division of labor between multinational enterprises and governments. The former, in search of greater profitability, determine the location of their activities according to internal characteristics (production costs and conditions, market potential, etc.). For their part, the local authorities try to enhance the value of their territory in order to attract foreign investors.

The internal factors of the firm make it possible to answer the question "why a firm, in order to access the international market, decides to establish abroad rather than to export, to sell a license to a foreign partner or to sign a sub-contracting agreement with a local manufacturer". Indeed, the presence of intangible assets specific to the firm (such as technology, know-how, *etc.*) makes market transactions difficult because of market failures related to these assets (Blonigen 2005). *For example*, in the case of a license agreement, the license buyer underestimates the value of the asset until its specificity is revealed, whereas the license seller does not want to fully reveal the asset until the contract is signed. Under these conditions, the optimal decision for the firm seems to be to internalize the transaction by creating its own production subsidiary.

In matter of fact, as a major tool for economic reform and openness, Jordan was considered one of the major and leading countries to recognize the significant value of FDI (Mas'ud *et al.* 2017). Jordan faces long time scarcity in resources for meeting up challenging growths in the GDP and national revenues. Nevertheless, there is wide and clear knowledge and understanding of the beneficial outcomes for incorporating international capital inflows in its economic activities so as to improve the country's social and economic conditions (Al-Froukh 2019).

External factors help answer the issue pertaining to "why does a multinational firm choose to establish a subsidiary in one country and not in another? "More specifically, it is a question of examining the exogenous factors that may affect the firm's location decision. At this level of analysis, the location criteria of a FDI can be confused with the attractiveness factors of their host countries. There is a general consensus in the literature on the external determinants of the choice of location of multinational firms (Shapiro and Globerman 2001).

FDI is generally attracted by the fundamental economic characteristics of host countries: market size and level of real income, cost and skill level of labor, political and economic stability, trade policy liberalization, exchange rate movements, taxation policies, *etc.* (Shapiro and Globerman 2001). The quality of institutions and infrastructure also affects the decision on where to locate FDI, particularly in developing countries (Blonigen 2005). Indeed, the network of local infrastructure (public goods) depends largely on the functioning of national institutions. Moreover, poor quality of institutions necessary for the proper functioning of markets (and/or corruption) increases transaction costs in the host territory. Using various corruption indices, Wei (2000) shows that the level of corruption is strongly and negatively correlated with FDI. Finally, tax incentives have only a weak influence on the choice of location of multinational firms (Blomström, Kokko 2003).

The relative importance of the different factors of attractiveness makes it possible to identify two forms of FDI (Markusen, Markus 1999): the vertical model based on the differences in factor endowments and whose principle consists in re-exporting the products to the country of origin of the multinational firm, and the horizontal model based on the motivations of access to the local market. Gravitational models have been widely used in empirical work on foreign trade and on the analysis of the location of multinational enterprises to determine the type of FDI. The classical specification of this type of model expresses trade (or FDI) flows between two countries as a function of GDP levels in each country and the distance between the two nations. Broader formulations incorporate additional variables such as the difference in wage cost levels between the two countries or language as an indicator of cultural proximity neighboring countries (Eckholm *et al.* 2003). The relative importance of the different variables helps to identify the type of multinational firm model. For example, the role played by the size of the market in both countries argues in favor of the horizontal model while the difference in labor costs points to a vertical type of investment. Recent work highlights a new form of FDI ("slant model") whereby a multinational firm makes an FDI in a host country which will be considered as a "production platform" in order to export to a group of Bergstrand, Egger (2004).

Through the effective use of using the Autoregressive Distributed Lag Model (ARDL) in Jordan context, Oudat *et al.* (2019) studied the relationship between economic development and foreign direct investment for a timeline from 1992 to 2013 and distinguished a significant relationship that exists between variables within a long run and short run period. Different opinions were listed from other scholars regarding the effectiveness of foreign direct investment on economic growth. Agrawal (2015) for example discussed the FDI contribution toward economic growth as dependent on a local country wide situation and thus on every other country.

Competition between countries to attract FDI certainly helps improve a country's economic conditions when governments make efforts in improving labor productivity, economic growth, providing tax incentives, etc. However, this competition can also cause problems when the effects of FDI in terms of job creation and technological diffusion, for example, fall short of expectations (Oman 2000). Under these conditions, the benefits linked to FDI for a country may be insufficient to justify the costs incurred by the national authorities in promoting the territory in terms of tax incentives, for example. Hence, the interest for a country to evaluate its competitive positioning in relation to the evolution of its own attractiveness factors and in relation to competing economies.

1.4. Domestic Credit to Private Sector

Domestic credit to the private sector refers to the financial resources provided to the private sector by financial companies, through loans, purchases of non-assimilated securities, trade credits and other debtors, which establish a claim for repayment (Aipoh 2019). For some countries, these claims include credit to public enterprises. Finance corporations include monetary authorities, deposit banks, finance companies for which data are available, including companies that do not accept transferable deposits but incur liabilities such as time and savings deposits, as well as finance and leasing companies, lenders, insurance companies, pension funds and foreign exchange companies. Performance scores are distributed from 0 to 100. The highest score reflects the best situation (Avdjiev *et al.* 2018).

The domestic credit for the Jordanian private sector was 78.2% in 2019. Between 2006 and 2019, this score experienced a steady decrease with a yearly average of 0.63%, even though, it grew before that in 1972 from 17% to 90.5% in 2006 (Jordan Times, 2020). The period leading up to the 2008 international financial crisis was marked by an overabundance of liquidity worldwide and a rapid expansion of credit, especially to the private sector. In the aftermath of the crisis, banks reduced their lending to the private sector in an effort to clean up balance sheets damaged by falling asset prices, absorb a growing number of non-performing loans and, more generally, reduce their risks by deleveraging (Rousseau, Wachtel 2011).

Advanced countries have sought to counter the recession and shore up bank balance sheets through a massive injection of public funds and measures to loosen credit, but lending to the private sector has not increased. After averaging about 7% per annum until mid-2008, bank credit growth slowed in established markets and then turned negative at the end of 2009. The United Kingdom experienced the largest decline in 2009 (about 20%). In the United States, credit was down almost 10% year-on-year in early 2010. The euro area followed a similar trend (Cherif, Gazdar 2010).

The improvement in financial conditions has not boosted credit to the private sector for several reasons. First, the worsening economic situation has led to a decline in the demand for credit, as firms have reduced production and households have reduced consumption. Second, in the face of increased uncertainty, deteriorating financial conditions and rising loan losses, banks have tightened lending conditions and their balance sheets are still fragile. They are falling back on quality, preferring to invest in government bonds rather

than lend to the private sector. Finally, uncertainties about future regulation may discourage them from lending to the private sector (Philippon, Reshef 2013).

Within the group of emerging and developing countries, Eastern Europe has experienced the most pronounced slowdown in credit growth, having benefited from a considerable inflow of foreign capital and transnational lending before the crisis. When the crisis erupted, credit growth collapsed and has still not started to recover, partly due to the cessation of foreign financing to the banking sector. In Latin America, sub-Saharan Africa, the Middle East and North Africa, credit growth followed more or less the same pattern, with rates ranging from zero to 5% at the end of 2009 (Cherif, Gazdar 2010).

In emerging and developing Asia, by contrast, credit to the private sector does not appear to have suffered from the financial crisis. In emerging and developing Asia, however, credit to the private sector does not appear to have been affected by the financial crisis, and bank credit growth in these countries even increased during the crisis and has only recently started to decline. It should be noted, however, that this development has been strongly influenced by China, where bank credit has been growing steadily since 2005 and reached 35% growth at the end of 2009, thanks to the country's strong economic growth prospects and asset appreciation (Panizza 2012).

1.5. Stocks Traded Total Value

The total value of stocks traded is the total number of stocks traded, both domestic and foreign, multiplied by their respective matching prices (World Bank 2020). In order to achieve a more complete view of market activity, stock traded value is split into three main categories of trades according to the means or facility used to perform the operation (Bilal *et al.* 2016).

In the Jordanian context, stock market total value traded to GDP (%) was reported in 2017 at 6.0595% based on the development indicators of World Bank collection, collected from official sources. As of February 2021, Jordan - Stock market total value traded to GDP - actual values, historical data, forecasts and projections were sourced from the World Bank (Trading Economics 2021).

In fact, as stated by Matadeen (2019), one of the most reliable and determining factor for stock market progress is how liquid the market. He further argued that the more liquid the market is, the better the probability of returns on funds invested, consequently, heightening funds distribution and also lasting development. Alrabadi, Kharabsheh (2016) in line with Matadeen (2019) indicated that by increasing the proportion of funds stock in the economy, it will encourage constant development as much more investments will be driven, living conditions will be upgraded followed by rapid national advancement.

Rezina *et al.* (2017) moreover stressed the fact that when the value of stocks traded rises over a particular time period, it signifies that the capital exchange also rises thus advancing the economic development of that nation. This implies for Matadeen (2019) that the more the movement of securities in the stock market, the more funds are available and distributed to profit making ventures and in turn surging the advancement of the stock market.

Stocks traded total value has been confirmed in various studies to either positively impact economic development or have a unidirectional and bidirectional linkage to economic growth (Zhongming *et al.* 2018, Bayar *et al.* 2014, Bilal *et al.* 2016). Hence this study will adopt the total value for stocks traded as a measure of stock market progress.

2. Jordan Case

2.1. Jordan's Economic Situation

Jordan is a lower middle-income country with a population of 10 million inhabitants for a GDP of 44.6 billion USD (2019). The economy is based on services, notably financial services and tourism, as well as expatriate transfers, particularly from the Gulf. Industry (textiles, pharmaceuticals, fertilizers) represents less than 20% of the GDP. The mining sector (potash, phosphates) is the 2nd largest export sector. As for agriculture, it consumes 60% of the water available in this dry country but only contributes to 5% of the GDP.

While the growth rate has hovered around +2% since 2010, Jordan should in 2020 record its first recession for 30 years at 3% of GDP due to the shock caused by the Covid-19 pandemic. The IMF anticipates a rebound in growth from 2021 at +2.5% and bases its forecasts on the hypothesis of a recovery in tourist numbers from the second half of the year.

The budget deficit excluding grants should reach 9.1% in 2020 due to a 10% drop in state revenue in 2020 coupled with a stabilization of expenditure. The deterioration in the budget balance mechanically affects the public debt, which should reach 88.4% of GDP at the end of the current financial year. According to the IMF,

Jordan's financing needs should, however, be covered in 2020 and 2021 thanks to international aid and the latest Eurobonds issue in July 2020.

Before the Covid-19 crisis, Jordan's external balances had stabilized, as shown by the level of the current deficit (-2.3% in 2019 against -6.9% in 2018) and the evolution of the Central Bank's reserves ($15.4bn or 10 months of imports of goods and services). While the improvement in the trade deficit that occurred in 2019 could continue in 2020 (-25.4% at the end of the first half of 2020), the current account deficit should, however, suffer greatly from the fall in tourism receipts (anticipated at -75% over the year 2020) and the announced drop in the repatriation of money from Jordanian workers abroad (-12%). The IMF estimates that the current account deficit could rise from 2.3% in 2019 to 6.8% this year. At the same time, the foreign exchange reserves of the Central Bank have remained stable at the beginning of the year and cover nearly 8 months of imports.

2.2. Domestic Policy

Jordan is a parliamentary monarchy where the King has prerogatives such as the appointment of the Prime Minister, the Chief of Staff of the armed forces and the directors of the security services. Legislative power is exercised by Parliament, divided into a House of Representatives, elected by universal suffrage every 4 years, and a Senate appointed by the King.

The last Jordanian legislative elections were held on 10 November 2020. Following the example of the previous legislative elections of 20 September 2016, then described as "well managed and inclusive" by the European Union's electoral observation mission, they led to the formation of a parliament with a majority of tribal elected representatives, businessmen and notables.

In June 2018, the Hashemite Kingdom experienced major strikes and protests following the government's announcement of new tax reforms. A government, led by Omar Razzaz, was appointed on 14 June 2018 following these protests. In the context of the ongoing health crisis, a new government led by Bisher Khasawneh was appointed on 12th October of 2020.The fight against the Covid-19 pandemic, the revival of the Jordanian economy and the fight against corruption are the main objectives of this government.

2.3. Foreign Policy

Jordanian diplomacy is determined by a complex geographical situation due to the conflicts in its neighborhood. In a regional environment marked by crises, Jordan is striving to preserve its stability. The UNHCR lists two million registered Palestinian refugees, 17% of whom still live in ten camps throughout the territory. Since 2011, the number of Syrian refugees is also very significant (670,000 according to the UNHCR). The Iraqi community is also large (60,000 refugees according to the UNHCR).

In this difficult context, Jordan has based its foreign policy on three pillars. The first is the alliance with the United States. In 2018, a memorandum of understanding was signed between the two countries, providing for American aid of USD 6.3 billion over 5 years. A free trade agreement was signed in 2001, the first between Washington and an Arab country. The second is the choice of peace with Israel. Jordan signed a peace treaty with Israel in 1994 (Wadi Araba agreement). The third pillar is the relationship with the Gulf countries, notably with Kuwait, the United Arab Emirates and Saudi Arabia, which is the other major economic partner. The relationship with the Cooperation Council for the Arab States of the Gulf is the subject of a reinforced partnership.

2.4. Economic Indicators

In recent years, the Jordanian economy has been hit hard by the combined impact of the international financial crisis, the Arab Spring, the crisis in Syria and Iraq, as well as the Covid-19 crisis, on its foreign trade and tourist flows. Its growth rate was 2% in 2019. The unemployment rate reached 19% in the same year.

The Jordanian economy is based on services, notably the financial and tourist sectors as well as expatriate transfers, particularly from the Gulf. Industry (textiles, pharmaceuticals, fertilizers) represents nearly 20% of GDP. Jordan has undertaken a process of diversification of its sources of supply and the development of its production of renewable energies. The scarcity of its water resources is also a difficulty which it has to face, especially concerning agriculture.

The Jordanian budgetary situation is marked by a high level of indebtedness which reached 95.2 of GDP in 2019. It is still too early to measure the real impact of the health crisis on the Kingdom's finances. The kingdom receives significant budgetary support from its main partners (IMF, WB, United States, Gulf countries, EU, Japan, and France). Following the granting by the IMF on 3 August 2012 of a credit line of 2 billion dollars over three years, Jordan has embarked on a process of structural reform of its economy and public finances.

The IMF had approved at the end of August 2016 a loan of 723 million dollars to Jordan for the period 2016-2020. In March 2020, the IMF adopted a new loan of 1.3 billion dollars over four years. The presence of 670,000 Syrian refugees registered by the UNHCR also weighs on the country's infrastructure (education, health in particular) and resources (water, energy), as well as on the employment situation and the property market.

Summary of the country's economic situation based on IMF - World Bank:
- GDP: $43.7 billion (2019)
- GDP per capita: $4330.3 (2019)
- Growth rate: 2% (2019) Unemployment rate: 19% (2019) Inflation rate: 3.3% (2017)
- Fiscal balance (as % of GDP): - 2.5% (2017) Public debt (as % of GDP): 94.2%.
- Current account balance (% of GDP): -8.4%.

3. Data Description and Methodology

The study adopted a quantitative research strategy through the use of secondary time series data for the years ranging from 1989 to 2018 spanning 30 years. Furthermore, the data for stocks traded total value is only available from 1993. Although data is considered to be balanced, the study faced problems of missing data in stock traded variable was available only from 1993. However, we have employed a method to help us compensate for the missing value, which is 3 years moving average, in which we study the last three years to forecast the missing value. According to Hayes (2019), this is done by assigning coefficient to missing value as per the following equation:

Missing Value = w1*(value of Y-1) + w2*(value of Y-2) +w3*(value of Y-3) +w4*(value of Y-4)

We further compensated missing values by a proxy weight starting from 0.5 for Y-1, 0.3 for Y-2 and 0.2 for Y-3, and 0.1 for Y-4. This generates a probability of 50% for the missing value to be similar to previous year, 30% for Y-3, 20% for Y2 and 10% for Y1.

All data was collected from the World Bank database which encompasses of statistics from numerous organizations recognized in the globe. Annual data was applied and summed up using the weighted average approach. Descriptive statistics of the data were checked to have an overview of the data, followed by a correlation matrix to check for correlation between variables. Next, the graphical representation of the respective independent variables and dependent variables to examine trends will be undertaken. Then, the unit root test was undertaken to observe the stationarity of the data. This is followed by an autoregressive distributed lag (ARDL) bounds test technique as a cointegration method applied to scrutinize both the short-term and long-term association between the dependent and independent variables. Lastly, the cumulative sum test was adopted to confirm the stability of the model designed in the study.

4. Tests Analysis

4.1. Unit Root Test

In order to effectively conduct a cointegration test, there exist a very necessary condition, and that is to ensure that all variables are stationary at the level or order one. In this circumstance, augmented Dickey Fuller (ADF) test, that has been suggested by Dickey and Fuller (1979) was undertaken to establish the stationarity of the variables in the study. The below table provides a summary of the unit root test for the data.

Table 1. Unit root test using the augmented Dickey-Fuller test

Variable	T - Variable	Alpha	At Level	1st Difference (Δ)	Order of Integration
FDIGDP	T - Statistic	0.05	-1.97777	-5.394287	I(1)
	T - Critical	0.05	-2.96777	-2.971853	
STGDP	T - Statistic	0.05	-1.86863	-5.157955	I(1)
	T - Critical	0.05	-2.98623	-2.981038	
DCGDP	T - Statistic	0.05	-2.33496	-5.251591	I(1)
	T - Critical	0.05	-2.97185	-2.991878	
GRGDP	T - Statistic	0.05	-3.46243	-	I(0)
	T - Critical	0.05	-2.97626	-	

Source: Farah Jarrar Eviews (2019)

As per the analysis provided by the ADF test, the level of confidence imposed is expressed by alpha which indicates 95% confidence interval level as shown in the above table. Only one variable, the dependent variable in our model, which is GRGDP was observed to be stationary where its *T*-statistic was less than the *T*-critical value, and thus the order of integration for this data set was considered to be I(0). For the other independent variables, the *T*-statistic was greater than the *T*-critical value signaling non-stationary data values and thus the first difference of these data sets was considered. The results showed that all the *T*-statistics for these variables at first difference were less than the *T*-critical value, indicating all the three variables represented by FDIGDP, STGDP, and DCGDP were stationary and hence the order of integration for these variables was confirmed to be I(1).

After we have conducted the long run form, in addition to the bound test for testing the co-integration, we can observe from the result that the *F*-statistic is 13.12653, greater than I(1) in all significant levels. Meaning that a co-integration exists between the variables, the case with *T*-statistics is similar, this is due to the fact that the value is 0.646113, and we reject the null hypothesis. In this sense, these results suggest that there is at least one long run relationship between the variables. Consequently, a regression can be set up between economic growths, and the variables.

4.2. Autoregressive Distributed Lag (ARDL) bounds test

Belloumi (2014) noted that the cointegration process of using ARDL bounds test is more useful than other cointegration processes formerly established by Engle & Granger (1987) and Johansen, Juselius (1990) and provided three explanations which are; ARDL bounds testing is applicable to variables assimilated in order zero, order one, and those that are assimilated as a fraction. Then the method of ARDL is effective than the other methods when the size of the sample is either small or limited. Lastly, the method has the capability of obtaining impartial approximations of the long-run model (Belloumi 2014). Other benefits to ARDL are that the application of the method does not require variables to be of the same order of integration, and also, the technique eliminates the issue of variables that are not available (Wang *et al.* 2019).

In view of the benefits stated and with the limited size of sample, the technique of ARDL bounds test is a better approach to discover the short-term and long-term association between financial market development variables and the process of economic growth in Jordan. Nevertheless, to observe the long-term association of the variables, the study applied the Pesaran and Shin (1998) methodology that permits the adoption of variables in order zero and one.

By using the ARDL linear conversion, the Error correction model (ECM) is formulated where equation 3 is transformed to equation 4 as below.

$$\Delta GRGDP_t = \sum_{i=0}^{n} \mu^0 \, \Delta GRGDP_{t-1} + \sum_{i=0}^{n} \mu^1 \, \Delta FDIGDP_{t-1} + \sum_{i=0}^{n} \mu^2 \, \Delta STGDP_{t-1} +$$

$$\sum_{i=0}^{n} \mu^3 \, \Delta DCGDP_{t-1} + \gamma_0 \, GRGDP_{t-1} + \gamma_1 \, FDIGDP_{t-1} + \gamma_2 \, STGDP_{t-1} + \gamma_3 \, DCGDP_{t-1} + \omega_t \quad (4)$$

where: $GRGDP_t$ represents the progress in economic development denoted by GDP, $FDIGDP_t$ shows the foreign direct investment, $STGDP_t$ presents the stocks traded total value, $DCGDP_t$ is the domestic credit to private investors, Δ signifies a first difference operator, β_0 indicates a constant term, γ_j presents long-term coefficients, μ_j represents short-term coefficients, ω_t represents the error term, and i denotes the lag length.

The succeeding null hypotheses below are tested against the alternative hypothesis for the long-term relationship:

H0: γ_1 to γ_3 = 0 …… No cointegration

H1: γ_1 to $\gamma_3 \neq 0$ …… Cointegration   (5)

Additionally, to establish the short-term relationship against the alternative the following null hypotheses are set.

H0: μ_1 to μ_3 = 0 …… No relationship   (6)

H1: μ_1 to $\mu_3 \neq 0$ …… Relationship exists

Wald-F Test Coefficient Check

From the below Table 2, the tabulated critical values are I(0) which denotes the lower bound and I(1) is the upper bound. The upper bound at 1% is shown as 4.84, at 5% it is 3.63 and at 10% it is 3.1. Since the computed F-statistic for the ARDL model is 13.12533, a value higher than either of the upper bounds at all significance levels, the null hypothesis is rejected indicating that cointegration exists between the variables and that there is a long-run association between the variables in the study. The result of the CECM regression thus implies that there is a long-run association between FDI, stocks traded total value, and domestic credit to the private sector, and economic growth.

Table 2. Wald-F Statistic

Levels Equation				
Case 1: No Constant and No Trend				
Variable	Coefficient	Std. Error	*t*-statistic	Prob.
STGDP	1.083350	1.563538	0.692884	0.5042
DCGDP	0.133522	0.204723	0.652210	0.5290
FDIGDP	-6.597929	9.663032	-0.682801	0.5102
EC = GRGDP - (1.0834*STGDP + 0.1335*DCGDP - 6.5979*FDIGDP)				
F-Bounds Test		Null Hypothesis: No Levels relationship		
Test Statistic	Value	Significance	I(0)	I(1)
		10%	2.01	3.1
F-statistic	13.12653	5%	2.45	3.63
K	3	2.50%	2.87	4.16
		1%	3.42	4.84

Source: Farah Jarrar Eviews (2019)

By using Equation 3, the long-run linkage was calculated and is displayed in Table 4 above. From the table, the P- values for all the independent variables namely; STGDP, DCGDP, and FDIGDP, show a value greater than 0.05 confirming the existence of cointegration and Equation 3 can be estimated as expressed in Equation 9 below.

$$GRGDP = 1.0834\ STGDP + 0.1335\ DCGDP - 6.5979\ FDIGDP \qquad (9)$$

From Equation 9, it can be observed that 1% increase in stocks traded total value results to 1.08% upsurge in economic growth. Also, domestic credit to the private sector is positively statistically significant in swaying economic growth. Though the effect is minimal where 1% increases in the amount of domestic credit to private sector leads to 0.001% rise in economic growth. On the other hand, FDI is seen to be negatively significant on economic growth where 1% increase in FDI translates to -6.6% in economic growth, signaling a high negative impact on the economy of Jordan.

4.3. Conditional Error Correction Model (CECM) Regression

Before the CECM was undertaken, the number of time lags was determined according to Schwarz criterion where two periods were considered for GDP, one period for STGDP, and two periods each for DCGDP and FDIGDP measures. Thus, Equation 7 below was adopted for the CECM regression and Table 4 below displays the results for the CECM regression undertaken.

$$D\ (GRGDP)t = C1\ D(GRGDP)t\text{-}1 + C2\ D(GRGDP)t\text{-}2 + C3\ D(FDIGDP)t + C4\ D(FDIGDP)t\text{-}1 + C5\ D(FDIGDP)t\text{-}2$$
$$+ C6\ D(STGDP)t + C7\ D(STGDP)t\text{-}1 + C8\ D(DCGDP)t + C9\ D(DCGDP)t\text{-}1 + C10\ D(DCGDP)t\text{-}2 +$$
$$C11\ GRGDPt\text{-}1 + C12\ FDIGDPt\text{-}1 + C13\ STGDPt\text{-}1 + C14\ DCGDPt\text{-} \qquad (7)$$

Table 3. Conditional error correction model regression results

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
GRGDP(-1)*	0.074936	0.115979	0.646113	0.5328
STGDP(-1)	-0.081182	0.016931	-4.794793	0.0007
DCGDP(-1)	-0.010006	0.007730	-1.294358	0.2246
FDIGDP(-1)	0.494421	0.148587	3.327486	0.0077
D(GRGDP(-1))	-0.793137	0.170771	-4.644370	0.0009
D(GRGDP(-2))	-0.353563	0.074788	-4.727528	0.0008
D(STGDP)	-0.014315	0.010422	-1.373545	0.1996
D(STGDP(-1))	0.043324	0.009659	4.485558	0.0012
D(DCGDP)	0.090785	0.072508	1.252070	0.2390
D(DCGDP(-1))	-0.137900	0.074041	-1.862468	0.0921
D(DCGDP(-2))	0.123652	0.053766	2.299818	0.0443
D(FDIGDP)	0.243159	0.091012	2.671711	0.0234
D(FDIGDP(-1))	-0.034520	0.091885	-0.375683	0.7150
D(FDIGDP(-2))	0.206049	0.072419	2.845227	0.0174

Source: Output of CECM regression computed.

From the summarized results in Table 5 above, majority of the variables reflected statistical significance at 5%, but numerous variables were noted not to be statistically significant at 5% which included GRGDP (-1), DCGDP (-1), D(STGDP), D(DCGDP), D(DCGDP(-1)), and D(FDIGDP(-1)) represented as GRGDPt-1, DCGDPt-1, D (STGDP)t, D(DCGDP)t, D (DCGDP)t-1, and D(FDIGDP)t-1 respectively in Equation 7. Thus the following Equation 8 is a reflection of Equation 7 after substituting for the values obtained from the CECM regression computed. Equation 8 provides the cointegration equation.

D(GRGDP)t = -0.793137(GRGDP)t-1 - 0.353563 (GRGDP)t-2 + 0.243159 (FDIGDP)t +
0.206049 (FDIGDP)t-2 + 0.043324 (STGDP)t-1 + 0.123652 (DCGDP)t-2 +
0.494421FDIGDPt-1 - 0.081182 STGDPt-1   (8)

The results for the co-integration test as per Eviews are presented in the Table 4: After we have conducted the long run form, in addition to the bound test for testing the co-integration, we can observe from the result that the *F*-statistic is 13.12653, greater than I(1) in all significant levels. Meaning that a co-integration exists between the variables, the case with *T*-statistics is similar, this is due to the fact that the value is 0.646113, and we reject the null hypothesis. In this sense, these results suggest that there is at least one long run relationship between the variables. Consequently, a regression can be set up between economic growth, and the variables.

Table 4, The results for the co-integration test

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GRGDP(-1)*	0.074936	0.115979	0.646113	0.5328
STGDP(-1)	-0.081182	0.016931	-4.794793	0.0007
DCGDP(-1)	-0.010006	0.007730	-1.294358	0.2246
FDIGDP(-1)	0.494421	0.148587	3.327486	0.0077
D(GRGDP(-1))	-0.793137	0.170771	-4.644437	0.0009
D(GRGDP(-2))	-0.353563	0.074788	-4.727528	0.0008
D(STGDP)	-0.014315	0.010422	-1.373545	0.1996
D(STGDP(-1))	0.043324	0.009659	4.485558	0.0012
D(DCGDP)	0.090785	0.072508	1.252070	0.2390
D(DCGDP(-1))	-0.137900	0.074041	-1.862468	0.0921
D(DCGDP(-2))	0.123652	0.053766	2.299818	0.0443
D(FDIGDP)	0.243159	0.091012	2.671711	0.0234
D(FDIGDP(-1))	-0.034520	0.091885	-0.375683	0.7150
D(FDIGDP(-2))	0.206049	0.072419	2.845227	0.0174

* p-value incompatible with t-Bounds distribution.

Levels Equation Case 1: No Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
STGDP	1.083350	1.563538	0.692884	0.5042
DCGDP	0.133522	0.204723	0.652210	0.5290
FDIGDP	-6.597929	9.663032	-0.682801	0.5102

EC = GRGDP - (1.0834*STGDP + 0.1335*DCGDP -6.5979*FDIGDP)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	13.12653	10%	2.01	3.1
k	3	5%	2.45	3.63
		2.5%	2.87	4.16
		1%	3.42	4.84
Actual Sample Size	24		Finite Sample: n=35	
		10%	-1	-1
		5%	-1	-1
		1%	-1	-1
			Finite Sample: n=30	
		10%	-1	-1
		5%	-1	-1
		1%	-1	-1

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	0.646113	10%	-1.62	-3
		5%	-1.95	-3.33
		2.5%	-2.24	-3.64
		1%	-2.58	-3.97

Source: Farah Jarrar Eviews (2019)

5. Results

The statistical findings confirmed a relationship between FDI; stocks traded value and domestic credit on economic growth in Jordan. FDI factor scored a positive coefficient (0.243159), meeting a 10% significance level, showing a statistically significance. This is consistent with the fact that Jordanian economy is based on investment, foreign aid and grants, and not basically on domestic credit and stock traded value.

According to authors such as Oudat *et al.* (2019), Muhammad *et al.* (2018) FDI was found to be positively related to economic growth. Agrawal (2015) stated that the influx of FDI to economic progress is dependent on the nation's position, this is consistent with findings and as Al-Froukh (2019) has argued that Jordan has incorporated international capital inflows in its economic endeavors, in order to improve economic and living standards of its people, meaning that Jordan standing is not opposing Foreign direct investment and aid.

Further, Samantha, Haiyun (2017) argued that FDI's positive influence depends on the effective use of funds, management proficiency and other related factors that may influence the adoption of FDI. This is consistent to the case of Jordan in terms of what (Mas'ud, Manaf, Saad 2017) has argued, that FDI is considered as a major mechanism for economic reform in Jordan, which includes proper exploitation of funds, efficient management and reduction of corruption. On the other hand, Chigbu *et al.* (2015) debated that foreign investment is usually completely utilized instead of complimenting local possessions. Moreover, international influxes aid to bring in unsuitable technology, alter the dispersal of local earnings and influence a wider network of unproductive and unethical state officials in emerging nations (Chigbu *et al.* 2015). This is frankly relatable to the case of Jordan, because the environment that hosts investments, hosts corruption, accountability and bureaucracy, in addition to the vague and unclear laws and legislations regarding exploitation of international inflows of capital.

Additionally, in the long run, domestic credit to the private sector was positively related to economic growth. Similar to the study undertaken by Timsina (2014), while Olowofeso *et al.* (2015) and Mushabab (2015) found positive relations between bank credit and economic growth. Also, Korkmaz (2015) and Alrabadi, Kharabsheh (2016) confirmed a link between bank credit and economic growth. Whereas Emecheta, Ibe (2014) found minimal bank credit to influence economic growth positively which is relevant to the banking sector status in Jordan, this is in accordance with our findings about DCGDP's coefficient which was 0.090785 and has a probability greater than 10%, meaning that it doesn't not have a significant statistical impact, this suggests that domestic credit to the private sector had a marginally positive impact on the economy of Jordan.

Further, in this study Stocks traded total value was found to have a negative influence on economic growth in Jordan. As per our results, STGDP coefficient was -0.014315, and probability greater than 10%, meaning that its impact is not statistically significant. These results oppose with various research that has found different findings such as Bayar *et al.* (2014), Osho (2014), Bilal *et al.* (2016), and Prats, Sandoval (2016).

Overall, all variables of study were positively related to economic growth, where FDI showed the highest impact, followed by domestic credit to the private sector. Then stock traded total value had the least impact. These results confirm the practicality of the tested financial sources where FDI in the short run increases employment rates through increasing the degree of available funds for investment while on the other hand, the stock traded total value are mainly intended for long-term investment though also, stocks could provide firms with short-term financing.

Conclusion

This article attempted to investigate the relation between development of stock market and Jordanian economic growth. Since Jordan's economy is growing slowly, it is somewhat reasonable to consider that stock market has an impact on economic growth. To meet this end, we used a methodology and employed proxies for measuring stock market development and economic growth presented by stock traded value, domestic credit and Foreign direct investment and GDP growth rate. The determinants adopted to represent stock market development were mainly based on the view that adequate capital to undertake investments is the foundation of economic growth and as such both foreign and local sources of funding were applied which included FDI, stocks traded total value and finally domestic credit to private sector.

Our empirical findings suggested that stock market has a negative effect on economic growth in the case of Jordan, due to the fact that the FDI proxy showed the most significant contribution to Jordanian economy. We attempted to draw the line between FDI, stock traded value and domestic credit, and this is because FDI impact different channels of the economy, due to the granting entity and the political objectives usually associated with FDI's.

Gaining full advantages from stock market development to serve the purpose of growth in Jordan may look complex because of the Jordan's economic structure slowly changing towards being more inclusive instead of heavily relying on more involvement of foreign aid and investment to achieve developmental goals. In such circumstances, it sounds difficult for Jordan to develop an economy in which stock markets liquidity act as a major player to fund the Jordanian market, hence, the contribution of stock market to economy growth in Jordan

will remain limited. Additionally, in the case of Jordan banking sector, we noticed a slight impact on economic growth which was prevalent in the role banks has played in reducing the effects of the global financial crisis in 2008, yet the Jordanian banking sector does not have considerable impact as we would expect it to be.

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