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An Empirical Analysis of the Effect of Financial Sector Development on Economic Growth in Emerging Economies

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ABSTRACT

This research investigates the relationship between the development of the banking sector and the economic growth in one of emerging countries, namely Jordan for the period 1970 to 2021. We examine the impact of three primary financial indicators—private sector credit to GDP, bank deposit liabilities to GDP, and money supply to GDP—on economic performance. The empirical application of cointegration analysis and Vector Error Correction Models (VECM) reveals substantial long-term correlations between the financial development indicators and economic growth. The empirical results indicate that there is a strong and significant relationship between private sector credit, bank deposits and the long-term economic growth in Jordan. Granger causality studies indicate that there is a two-way relationship between bank deposits, financial deepening, and economic growth. On the other hand, analysis of private sector lending reveals a one-way causal flow towards economic growth. However, the short-run analysis provides a more intricate depiction, as certain models suggest that the immediate impacts of financial development on growth are either negative or insignificant. The time disparity observed underscores the intricate relationship between finance and economic growth. Furthermore, we observe that trade liberalization consistently is associated with a favorable effect on economic development in all models. The findings have significant ramifications for policymakers in Jordan and other developing economies, offering valuable direction for formulating focused policies to strengthen the banking sector's role in promoting sustainable economic growth. Our work adds to the wider discussion on the function of financial intermediation in promoting economic growth in emerging countries

INTRODUCTION

Research on the relationship between the development of financial sector and economic growth has received considerable attention in recent years. The role of the financial sector in fostering economic growth has been a subject of considerable interest for policymakers, researchers, and economists, where a robust and efficient financial system is essential for channeling financial resources to productive investments, facilitating savings, and promoting overall economic development. In recent years, numerous studies have focused on investigating the relationship between financial sector indicators and economic growth, seeking to understand the mechanisms through which the financial sector impacts the broader economy.

As one of the countries in the Middle East with a unique position for the study of the link between the growth of the banking sector and economic growth. Due to the fact that Jordan lacks many resources such as water, the government has endeavored to build an economy that relies on human resource and its financial structure. The analysis of the Jordanian experience enables a unique contribution to understanding the numerous interconnected factors that define the process of financial intermediation and its implications for macroeconomic performance.

The banking sector in Jordan has gone through remarkable transformation since the country emerged to independence. The role of the Jordanian banks in mobilizing savings, channeling resources and providing financial intermediation services can be traced back to the middle of the twentieth century up to the present time when it has developed into an advanced financial system. This shift has not occurred in isolation but along with other economic liberalization measures, change in legal structures and the overall evolution of the global financial system.

The economic history of Jordan, which has lately been in the phase of economic booms and troughs, can be used to understand the effect of banking sector development. There are certain events that have characterized the country's economic path such as the regional wars, oil price shocks, and refugee inflows among others, which have impacted the ability of the banking system to support the growth of the economy. It is therefore important to understand the strategies that have been adopted by the banking industry in order to address these challenges while at the same time increasing economic stability and growth in the developing countries in order to gain a more complex understanding of the role of finance in economic growth.

The purpose of this study is to examine the relationship between the banking sector and the overall economy in Jordan with the view of trying to identify the root of this relationship. Using such econometric techniques as cointegration and Vector Error Correction Models (VECM), we aim at establishing the long run relationships and short-run relationships between financial development and economic growth.

Our study focuses on three primary measures of financial development: the private credit to GDP ratio, the deposit money bank liabilities to GDP ratio and the financial sector development indicator (which incorporates the money stock as a percentage of GDP). These indicators, selected with regard to the theoretical significance and empirical significance, are used as a measure of several aspects of the banking sector dynamics. Thus, based on the analysis of these factors in the period of 1970-2021, we aim at identifying the tendencies, establishing the causes and consequences, and determining the role of the banking sector development in the Jordan's economic development.

This particular research had implications that went far beyond the academia. It is thus important to understand the importance of banking sector development for the emerging economies that want to sustainably foster their economic growth. The research findings from this study have implications for policy making on financial systems, monetary management and economic growth for Jordan and other Emerging markets. Additionally, the international financial institutions and development agencies may consider the presented findings as useful for modulating the support they provide to the financial sectors of emerging markets.

Furthermore, this study contributes to the on-going scholarly debate on the topic of financial deepening and its effects on the growth of the economy. As such, we gain incisive insights into how country-specific factors affect the finance-growth nexus in Jordan, which may present new problems or develop existing

theories. The implication of this study may have implications in explaining the role of banking sector development in other developing countries especially those in the Middle East and North Africa region.

In addition, our study contributes to the ongoing debate between the supply-leading and demand-following views in light of the financial development and economic growth nexus. Our research shall therefore help to make a useful contribution to the on-going discourse in the literature by examining the causal link between banking sector indicators and measures of economic growth.

To begin with the analysis of this particular topic, it is necessary to acknowledge the multifaceted nature and the complexity of the process of economic development. We are not naive to the realization that there are other factors that affect the economic development of a nation including human capital, technology, institutional factors and geopolitical risks among others even though our focus is on the banking sector. Therefore, our study seeks to disentangle the effect of growth in banking sector while considering these other factors.

In the next sections we will first provide a detailed discussion of the theoretical framework and the literature review that form the basis for our study. It is in the following section where we shall describe in detail the data used, the econometric techniques employed and the assumptions made in our analysis. The empirical findings of this study will be discussed in the following sections along with the analysis of the results and their implications. The last section of our work will contain the summary of the findings, policy implications as well as suggestions for further research.

With the view of contributing to the existing literature as well as the policy-making process, this study seeks to examine the relationship between banking sector and economic development in Jordan. In this paper, we aspiring to explain the strategies that can be employed in order to foster the financial development that has the potential to create sustainable economic growth in Jordan and other regions.

The current paper is organized as follows. Section 1 provides the discussion of the theoretical framework and literature review. The models are discussed in Section 2 along with the variables and methodology. The empirical findings are presented in Section 3. Final section concludes.

1. THEORETICAL FRAMEWORK AND LITERATURE REVIEW:

1.1 Theoretical Framework

The theoretical review of the literature on the relationship between financial development and economic growth has been done in detail. Financial Intermediation is the core of this study and it postulates that the work of the financial institutions especially banks is crucial in reducing the costs of information asymmetry in the economy. Through proper channeling of fund from the savers to borrowers, banks promote fruitful investments that foster economic growth, a view that has been supported by Diamond (1984) and Levine (1997). The current work aims at examining the role of the banking sector's development in Jordan to perform its intermediation functions. These are such as the expansion in branching networks, development of new financial products, and improvement in the risk evaluation process as pointed out by Al-fayoumi and Abuzayed (2009).

The endogenous growth theory, which has been proposed by Romer in 1990 and Lucas in 1988 provides another theoretical approach to analyze the link between finance and economic growth. This approach underscores the role of human capital, innovation and knowledge spillovers in driving long run economic growth. This paper aims at examining the possible effect of financial development in Jordan to endogenous growth models. In particular, we consider how this development may have promoted entrepreneurship and innovation by boosting credit availability or by increasing the effectiveness of resource allocation towards productive sectors through the creation of capital markets as suggested by Bencivenga and Smith (1991).

The hypotheses of financial repression proposed by Ronald McKinnon (1973) and Edward Shaw (1973) are based on the idea that the actions of the authorities in the financial sector, such as making the ceiling of interest rates or increasing reserve requirements, can prevent the advancement of financial

sectors and, therefore, limit the overall economic development. To this end, this study examines the timeline of financial policies in Jordan and assesses the effects of financial repression on the advancement of banking sector as well as its link with economic performance. This study also includes the evaluation of the impact of the financial liberalization policies to build upon the previous research of Al-Tarawneh and Al-Assaf (2018).

One of the major debates that are crucial in the analysis of the causal link between financial development and economic growth is the supply-leading and demand-following propositions as advanced by Patrick (1966). According to the supply-leading approach, the provision of the financial institutions and services precedes and results in demand by the clients that in turn supports economic growth. On the other hand the demand-following hypothesis postulates that growth in the economy is likely to create a demand for these services. Hence, the theoretical framework is the combination of both perspectives that we use in our empirical research on the possible causal linkages between the banking sector advancement and the economic growth in Jordan, where Al-Malki and Al-Assaf (2014) investigate this question.

The policies and the legal framework which govern the operations of the banking sector greatly affect the sector's contribution to the economy. Thus, the present paper aims at examining the changes in banking rules in Jordan, which occurred from the period of the country's independence up to the present, as described by Maghyereh (2004). The history of the Central Bank of Jordan has been characterized by a series of developments that include the founding of the bank in 1964, changes in its mandate in the areas of monetary policy and banking supervision (Central Bank of Jordan, 2021), the enactment of the Banking Law of the year 2000 and subsequent amendments.

There are prudential rules that are followed in the banking sector in Jordan and these rules have implications in the economy. The current study seeks to establish whether there is a correlation between capital adequacy requirements and lending capacity of the banks (Almarzoqi et al., 2015), the effects of liquidity regulation on the ability of the banks to manage their short-term commitments, and the impact of risk management procedures on the allocation of credit (Al-Shatti, 2014). All the above cited rules have been very vital in assessing the stability of the banking sector and its role in economic growth.

The competition policy in the banking sector greatly affects the performance of the sector as well as its financial contribution to the economic growth. The research questions are derived from analysis of the regulation of entry and exit of the banking industry (Jarrah, 2002), and measures to prevent monopoly and dominance (Al-Fayoumi & Abuzayed, 2009). Altogether, these factors define the conditions of competition within the banking sector of Jordan and the sector's potential to contribute to the country's development.

Achievement of financial inclusion remains a policy priority in many emerging markets such as Jordan. We discuss the efforts made by the country in the enhancement of financial inclusion and the effects that it can make on the economy. The paper is centered on the policies that have been put in place to enhance the provision of banking services to people who have limited or no access to such services (Central Bank of Jordan, 2017). These programs have great significance in enhancing the role of financial services and fostering the inclusive growth of economy.

The quality of corporate governance translates into the stability of the banking system and efficiency of its performance. Our work also reviews the literature on the growth of the corporate governance norms for banks in Jordan (Al-Baidhani, 2013), the role of the Central Bank in the improvement of the governance practices, and the impact of the enhanced governance on banks' performance and the economy (Al-Smadi & Al-Wabel, 2011). The presence of these governance mechanisms is very vital in ensuring that confidence is maintained in the financial sector and assure its effectiveness in contributing to the growth of the economy.

The importance of the cross-border banking operations can be understood from the fact that Jordan is located in the Middle East region. In this regard, our attention will be focused on the banking regulation of international banking operations in Jordan (Association of Banks in Jordan, 2019), the observance of Jordan's AML/CFT standards (Al-Hroot et al., 2017), and the impacts of these regulation on the country's integration into the global financial system and its economic growth prospects (Alshomaly, 2014). It is therefore important to look at these cross-border factors in order to understand the structure of Jordan's banking industry in the Middle East and the international financial systems.

In this context, through the analysis of the theoretical background and the institutional and regulatory environment we aim at providing a clear understanding of the environment in which Jordan's banking sector is operating and how this environment impacts on the link between financial development and economic growth. Thus, employing this systematic approach, we are in a position to situate our findings within the broader theoretical and organizational context and, thus, enhance the rigor and relevance of our investigation of the role of the banking sector for the economic development of Jordan.

1.2 Literature Review

The vast and expanding body of literature in this area can be categorized into two main categories. One the one hand, cross-country and panel data studies find that financial development has a favorable impact on output growth. However, according to Kar et al. (2010), the bulk of time series analyses find either a one-way or a two-way causal relationship between finance and growth.

Seetanah (2008) and Odhiambo (2010), among others, find that financial development and economic growth are positively and significantly correlated. Using two alternative financial development indicators and employing an ARDL technique for the case of Mauritius over the period 1952–2004. According to the findings, financial development has promoted economic growth throughout the long and short terms. Using three financial development indicators within an ARDL framework, Odhiambo (2010) investigates the causal link between financial development, investment, and economic growth. The findings show that economic growth generally has a significant impact on the development of the financial sector. The study also concluded that there is a clear unidirectional causal relationship between economic growth and investment, with investment driving Granger's financial development.

Another study by Al-Malki and Al-Assaf (2014) adopts the asymmetric cointegration method to examine the relationship among trade liberalization and the growth of the financial sector. The empirical findings indicate a long-run relationship between the variables using the Jordanian data, where it is found that financial development indicators have a significant effect on economic growth. Furthermore, the Granger causality test suggests that developing nations have a supply-leading rather than a demand-following causality pattern of development.

Another study by Guru et al. (2019), confirms a positive and statistically significant association between financial sector indicators, such as credit-to-GDP ratio, deposit-to-GDP ratio, and economic growth based on a panel data analysis. The paper suggests that a well-developed financial sector contributes to higher investment levels, increased access to credit, and improved financial intermediation, and hence affect economic growth. One more study by Asteriou & Spanos (2019) examines the impact of financial crisis on the relationship between financial development and economic growth for the case of 26 EU countries. The paper examines two distinct sub-periods before/after the crisis using multiplicative dummies. According to the empirical findings, financial development promoted economic growth prior to the crisis but slowed it thereafter.

Tariq et al. (2020) has estimated the non-linear nexus between financial development and economic growth in Pakistan for the period of 1980-2017 by employing threshold regression models. The empirical results indicate that economic growth reacts positively to financial advancement, but only when the level of financial development reaches a certain level of development. Beneath this level the effect of financial development on growth is negative. This suggests that there is a reversion of the effect of finance on growth in Pakistan which shows a U-shaped relationship. The study also shows that the levels of physical capital, labor and government spending have significant positive impact on economic growth while inflation and trade openness have no significant effects.

Abeka et al. (2021), however, focuses on the role of telecommunications that affects the link between financial development and economic growth in sub-Saharan African countries in the period of 1996-2017. Using econometric analysis, the study finds that improvement in telecommunications improves the impact of financial development on economic growth in these countries. In particular, the developments in the

mobile phones, fixed lines, internet, and broadband communication facilitate the expansion of the positive effects of a well-advanced financial system.

A more recent Olorogun et al. (2022) analyzed the relationship between FDI, financial development and economic growth in Nigeria in the period of 1970-2018. This paper employed various econometric techniques such as unit root tests, cointegration and Granger causality that showed that there is long-run equilibrium relationship between the variables. The empirical analysis revealed that FDI and financial sector liberalization indeed are a boon to Nigeria's economic development. Specifically, the study employed other financial development indicators from the banking and the financial sectors, the findings indicated that FDI has implication to the GDP which implies its importance in the advancement of the economy. It is found that there is a strong relationship between GDP and financial development in the banking sector with the possible indirect causality from the gross capital formation to the financial sector.

Several studies have highlighted the significant role played by the financial sector in shaping economic growth. Across various studies, evidence consistently supports the positive relationship between financial sector indicators, financial development, financial sector reforms, and economic growth. The current study employs time series data covering the years 1970–2021 to investigate the empirical relationship between financial development and economic growth in Jordan.

2. MODELS, DATA AND METHODOLOGY

2.1 Financial Development Indicators

Regarding the growth of Jordan's financial sector, we analyze the growth of the major financial sector indicators, which present the performance of the financial services provided by the financial sector, we provide a summary of the development of the financial sector in Jordan. According to Figure 1, there are four indicators employed in the literature to describe the development of the financial sector on several levels, which covers different aspects of banking development. The first two indicators are the most straightforward measures of financial development, particularly in the financial sector, because the ratio of money supply (MS) to GDP reflects the level of financial deepening and the ratio of credit extended to the private sector to GDP (PCY) indicates the increase of commercial banks' capacity to provide loans for investment.

The other measure, or BDY, measures the ratio of bank deposits to GDP and presents banks' capacity to generate loans through the financial system. According to King and Levine (1993), the fourth indicator (BLY) measures the importance of commercial banks' assets in the financial system and the bank liabilities of commercial banks as a percentage of GDP.

From the top panel of Figure 1, it is clear that PCY and MSY have gradually increased from 1970 to 2018. The percentage of money supply to GDP increased from 57% in 1970 to around 126% in 1991, according to the financial deepening indicator (MSY), which shows the performance of financial deepening in the Jordanian financial sector from the early 1970s to 1991. After that, the ratio decreased to roughly 124% and was significantly impacted by the effects of the Gulf Crises between 1992 and 1998. Over the years 2008 to 2021, the ratio varied about 116%. However, over the years 1970 to 2021, the average financial deepening ratio was 105%.

Khan and Senhadji (2000) argue that the PCY indicator offers more precise data regarding the role of financial intermediaries in funding the private sector and transferring funds from savers to borrowers. From 19% in 1970 to roughly 81% in 2021, with an average of 59% across the entire period, PCY has dramatically increased. It is worth mentioning here that, Chaudhuri and Smiles (2004), and others used similar variable in their studies, as a measure of financial deepening to determine the effect of the financial sector on economic growth.

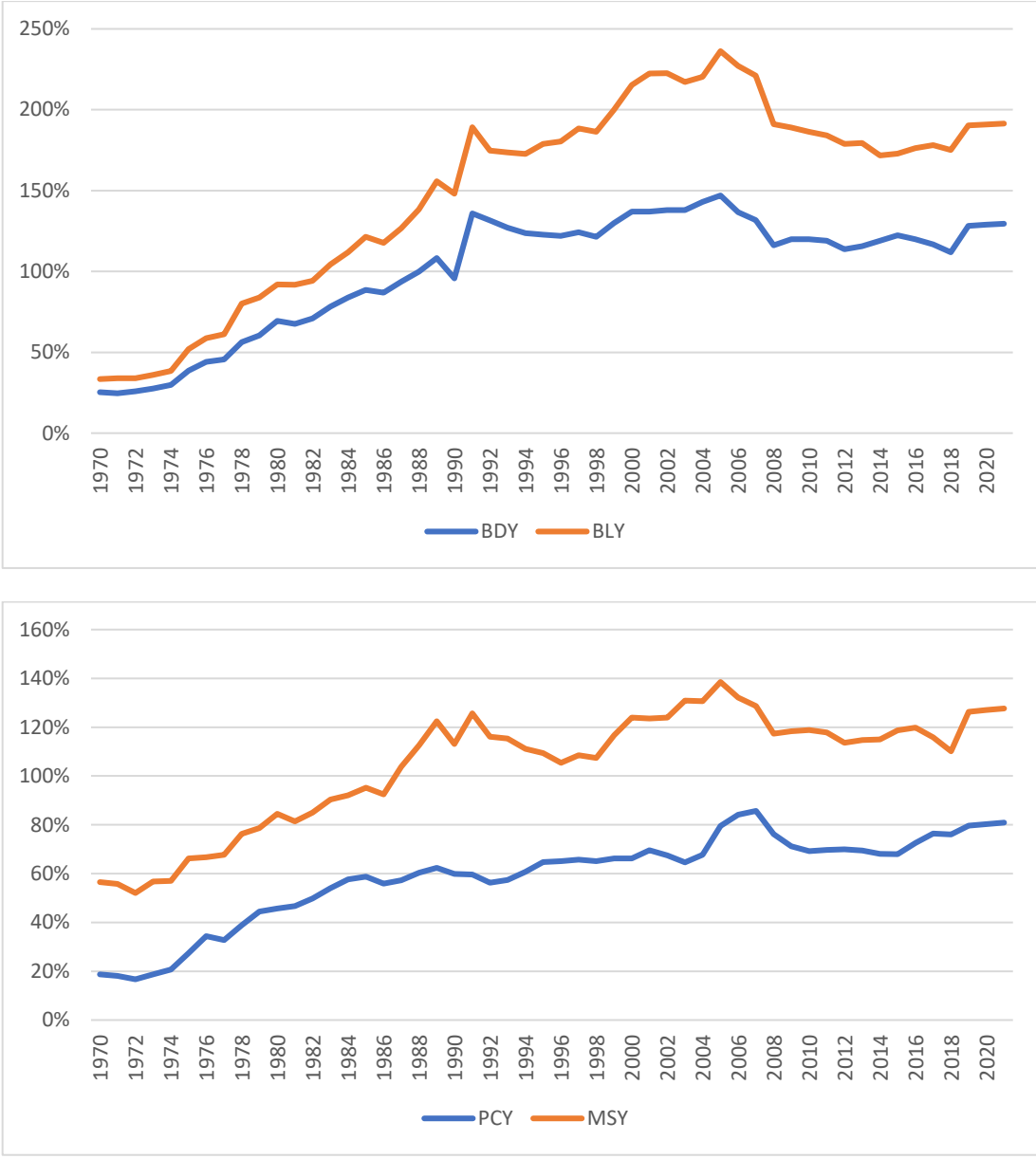

Figure 1. Indicators of major Financial Sector Development
Source: Central Bank of Jordan Database.

On the other hand, both BDY and BLY (the ratios of bank deposits and bank liabilities, respectively) have moved together for most of the years. The BDY ratio increased from 25% in 1970 to 108% at the end of 1980s. The financial crisis that occurred in 1989 has caused a precipitous reduction, which accounts for the decline in BDY after this year. Due to the first Gulf War, resulting in many Jordanian migrants return home and deposit enormous sums of transfers into the banks, as well as the drop in the gross domestic product values at that time, BDY has, nonetheless, suffered a high ratio of about 136%. In recent years, the percentage has been between 112% and 116%, which also indicates the contribution financial institutions have made to the growth of the financial system through encouraging internal saving. Over the period 1970–2021, the average ratio of all deposits to gross domestic product is nearly 99%. The bank liabilities ratio indicator (BLY), on the other hand, has a range of 35% to 236% and an average of 147% over the same time period.

According to the consistent rise in the most recent indices of financial industry growth, such as PCY, BDY, and MSY, it is obvious that the growth of commercial banks' economic role has significantly improved the Jordanian financial sector. Comparatively to many other emerging nations, Jordan's financial sector

has performed better. Jordan has strengthened regulations and supervision for banks, despite being relatively small, Al-Tarawneh & Al-Assaf, (2018).

2.2 The Models

In the empirical part of the study, we use a dynamic time series technique. The following augmented production functions serve as the foundation for the models used in this paper, which measure the impact of each financial development indicator on economic growth separately.

$Y_t = f (BDY_t , Inv_t , TO_t)$ Model (1)
$Y_t = f (PCY_t , Inv_t , TO_t)$ Model (2)
$Y_t = f (MSY , Inv_t , TO_t)$ Model (3)

Where BDY is the share of bank deposits to GDP, Inv is the percentage of investment to GDP, TO is trade liberalization, PCY is the share of private credit to GDP, and MSY is the share of money supply to GDP. Bank deposit liabilities (BDY) is calculated by taking the difference between total bank deposit liabilities minus currency in circulation divided by nominal GDP. Real GDP per capita is considered at constant prices (Y), used as a proxy for the dependent variable. Based on the framework of Vector Error Correction Model (VECM), these models will be estimated.
The previous functions can be transformed into the logarithmic forms as follows:

$Ln\ Y = \alpha_0 + \alpha_1 ln\ BDY + \alpha_2 ln\ Inv + \alpha_3 ln\ TO + \varepsilon_1$ ..... (1)
$Ln\ Y = \beta_0 + \beta_1 ln\ PCY + \beta_2 ln\ Inv + \beta_3 ln\ TO + \varepsilon_2$ ..... (2)
$Ln\ Y = \gamma_0 + \gamma_1 ln\ MSY + \gamma_2 ln\ Inv + \gamma_3 ln\ TO + \varepsilon_3$ ..... (3)

where αs, βs and γs are the model coefficients of the employed financial development indicators, investment and trade liberalization. α_0, β_0, γ_0 are constants and ε_{t1}, ε_{t2}, ε_{t3}, are error correction terms.

2.3 Variables and Data

In this study, annual data from 1970 to 2021 were employed. Given that data were readily available for all of the variables, the option of yearly data was selected. From 1970 to 2021, there were 51 annual observations included in the sample. The national currency is used to express all variables. The Central Bank of Jordan's Annual Reports were employed to extrapolate the ratios of bank deposits to GDP, private sector credit to GDP, and financial savings to GDP. The GDP is obtained from WDI, World Bank Group. Finally, the other variables are obtained from Central Bank of Jordan Databases.

3. EMPIRICAL FINDINGS

3.1 The Stationarity Tests

The PP and ADF tests are used on both the original series and the first differences of the series to determine the stationarity tests for the order of the integration of each variable. Therefore, both the level of the variables and their initial differences are subject to these tests. The alternative hypothesis, that the variable is stationary, is contrasted with the null hypothesis, which is that the concerned series includes a unit root. Table (1) reports the outcomes of these testing. The findings indicate that at 5%, the majority of the variables are integrated of order one, or I(1).

Table 1. Test Results FOR The Unit Root

Variables	*PP*				*ADF*			
	Level		*FD (Δ)*		*Level*		*FD (Δ)*	
	Cons	*Cons +Trend*	*Cons*	*Cons + Trend*	*Cons*	*Cons + Trend*	*Cons*	*Cons + Trend*
LY	-2.22 (3)	-1.92 (3)	-4.49 *(3)	-5.18*(3)	-2.86(2)	-1.97(2)	-3.91***(3)	-2.32(3)
LPCY	-2.61 (2)	-1.48(2)	-4.45*(2)	-7.06 *(2)	-3.07(4)	-2.49 (4)	-3.16 **(4)	-5.54*(4)
LBDY	-2.49(2)	-1.14(2)	-5.47*(2)	-6.15*(2)	-1.28(2)	-1.07 (2)	-5.11*(2)	-5.26*(2)
LMSY	-1.97(3)	-0.86(3)	-7.28*(3)	-7.84*(3)	-1.97(3)	-0.80(3)	-7.28*(3)	-7.79* (3)
LTO	-0.18(0)	-1.47(1)	-5.91*(0)	-5.33*(0)	-0.20(0)	-128(0)	-4.07**(0)	-4.63*(0)
Invr	-2.17(2)	-2.46(3)	-4.94*(3)	-4.77**(3)	-1.51(3)	-0.72(2)	-5.43*(3)	-5.28*(3)

- *(**), and *** denote reject at 1%(5%), and 10% based on the critical values.
- Lag lengths are indicated by the figures in brackets.

Source: own

The main findings in Table 1 show that the variables under investigation are cointegrated, that encourages the application of an Error Correction Model (ECM) to look at the relationship over the short term. The estimated findings using the Akaike information criterion (AIC) are shown in Table 2. Good fits are indicated by the corrected R2s of 0.951, 0.768, and 0.913, respectively. Additionally, it is evident from the generated F-statistics that the null hypothesis that indicates all regressions have zero coefficients is false. The error correction coefficients (ECMs), which show the predicted sign to be negative with a high level of significance (usually at the 1% level), are -0.194, -0.185, and -0.114.

The results showing a long-term link between the variables in each model are thus confirmed, which means that all financial development indicators affect the economic growth rates, however, the effects of total banks deposits and private-sector credit are higher.

Table 2. Error Correction Model Results

Var.	*Coeffs. AIC (1,2,0,0) Model 1*	*t-stat.*	*P- value*	*Coeffs. AIC (1,2,1,0) Model 2*	*t-stat.*	*P-value*	*Coeffs. AIC (2,1,2,1) Model 3*	*t-stat.*	*P-value*
ΔLBDY	-0.427*	-4.723	0.000						
ΔLPCY				-0.0712	-0.347	0.783			
ΔLCP1				0.164	1.427	0.174			
ΔLMSY							-0.152	-1.138	0.137
ΔLMSY1							0.183	1.687	0.174
ΔLMSY	-0.731*	-3.752	0.000	-0.947*	-4.436	0.000	-0.748**	-3.486	0.000
ΔLMSY1	0.135	1.437	0.103	0.179**	2.456	0.015	0.246**	2.146	0.027
ΔLTO	0.496*	4.247	0.000	0.674*	4.122	0.000	0.746*	3.749	0.000
ΔC	1.719*	4.226	0.000	6.734**	2.749	0.010	1.677**	3.274	0.017
ECM(-1)	**-0.194***	**-4.658**	**0.000**	**-0.165***	**-3.921**	**0.001**	**-0.114***	**-3.762**	**0.002**
R-square	0.951			0.768			0.913		
DW	1.85			2.07			1.92		

Source: own

Additionally, the findings shown Table 2 show that the empirical results of model one shows that the short-term impact of explanatory variables which represents the development in banking

sector on output found negative and large. Savings and investment ratio coefficients do not have the expected sign for a few of the independent variables, including PCY, and PCY(-1). For models two and three, the economic growth at the 5% level appears to be positively and significantly impacted by the investment ratio that was delayed by one period. The investment ratio with a one-period lag for model 1 appears to have a positive effect, but it is statistically insignificant. For all models, the trade liberalization ratio has a favorable and strong impact on economic growth (at the 1% level).

3.2 The Results of Granger Causality Test

According to Granger Causality test results shown in Table 3, for models one and three, there may be a bidirectional causative relationship between the ratio of bank deposits, the financial deepening ratio, and economic growth. The results of the causality test also suggest that there is a one-way relationship between private-sector credit and economic growth, with private-sector credit leading to economic growth.

Table 3. The Results of Granger Causality

Dependent Variable	*ΔLY*	*ΔLBDY*	*ΔLMSY*	*ΔLTO*	*Error Correct Term (-1) [t –stat]*
		χ^2			
Model 1					
ΔLY		41.72* (0.00)	14.457* (0.00)	9.523* (0.01)	-0.273 [-4.07]
ΔLBDY	18.378* (0.00)		11.147* (0.00)	2.421 (0.17)	0.517 [3.14]
ΔLMSY	3.463 (0.14)	1.777 (0.47)		3.189 (0.54)	0.344 [4.74]
ΔLTO	2.742 (0.42)	3.274 (0.19)	2.243 (0.49)		-0.226 [-4.37]
Model 2		**ΔLCP**			
ΔLY		11.273* (0.00)	0.748 (0.31)	2.473 (0.42)	-0.576 [-5.97]
ΔLBDY	3.432 (0.753)		12.456* (0.05)	1.258 (0.37)	0.642 [2.84]
ΔLMSY	9.963* (0.003)	0.168*(0.076)		0.819 (0.66)	0.296 [4.20]
ΔLTO	2.967 (0.374)	0.743 (0.72)	4.527 (0.38)		-0.175 [-2.23]
Model 3		**ΔLMSY**			
ΔLY		31.456** (0.03)	13.478* (0.00)	4.174**(0.03)	-0.475 [-4.26]
ΔLBDY	50.478* (0.00)		28.487* (0.00)	7.438**(0.04)	0.287 [5.88]
ΔLMSY	23.423*(0.00)	19.425* (0.00)		7.755**(0.02)	0.176 [2.76]
ΔLTO	5.962** (0.04)	5.745** (0.04)	4.789 (0.16)		-0.046 [-1.88]

Source: own

CONCLUSION

The current study employed the cointegration testing technique along with VECM estimations to investigate the empirical relationship between financial development and economic growth for the case of Jordan from 1970 to 2021. Three different financial development indicators were used in the investigation. three measures, specifically: the ratio of private credit to GDP, the ratio of bank deposit liabilities to GDP, and the ratio of financial deepening to GDP (money supply to GDP). The empirical findings show that financial development indicators positively influence economic growth in the long run for all models, with the exception of the financial development indicator for model 3, and that output and the share of investment have a weak negative relationship. Additionally, all models, with the exception of model 1, which is statistically significant, in the short run tend to show negative and insignificant effects of financial development indicators on economic growth. However, changes in the share of investment show a negative and large impact on growth of the economy in Jordan. At 5% level, the fraction of investments that are one period behind has a positive and large effect on economic growth, with the exception of model 1, which appears to have little impact. The supply-leading

and demand-following hypotheses for Jordan are supported by the causality findings. This conclusion contrasts with actual evidence already available in the literature, which points to a supply-leading rather than a demand-following causation pattern for development in emerging economies.

REFERENCES

Abeka, M.J., Andoh, E., Gatsi, J.G., Kawor, S. (2021), "Financial development and economic growth nexus in SSA economies: The moderating role of telecommunication development", *Cogent Economics & Finance*, Vol. 9, No. 1, pp. 1-24.

Al-Baidhani, A.M. (2013), "The effects of corporate governance on bank performance: Evidence from the Arabian Peninsula", *SSRN Electronic Journal*, Vol. 1, pp. 1-31.

Al-Fayoumi, N.A., Abuzayed, B.M. (2009), "Ownership structure and corporate financing", *Applied Financial Economics*, Vol. 19, No. 24, pp. 1975-1986.

Al-Hroot, Y.A., Al-Qudah, L.A.M., Alkharabsha, F.I.A. (2017), "The effect of the global financial crisis on the level of accounting conservatism in commercial banks: Evidence from Jordan", *International Journal of Business and Management*, Vol. 12, No. 2, pp. 151-159.

Al-Malki, A.M., Al-Assaf, G.I. (2014), "Investigating the effect of financial development on output growth using the ARDL bounds testing approach", *International Journal of Economics and Finance*, Vol. 6, No. 9, pp. 136-150.

Almarzoqi, R., Naceur, S.B., Scopelliti, A. (2015), "How does bank competition affect solvency, liquidity and credit risk? Evidence from the MENA countries", *IMF Working Paper*, No. 15/210.

Alshomaly, I.Q. (2014), "Bank diversification & the systematic risk of equity portfolio", *European Scientific Journal*, Vol. 10, No. 16, pp. 171-184.

Al-Smadi, M.O., Al-Wabel, S.A. (2011), "The impact of e-banking on the performance of Jordanian banks", *Journal of internet banking and commerce*, Vol. 16, No. 2, pp. 1-10.

Al-Shatti, A.S. (2014), "The impact of public expenditures on economic growth in Jordan", *International Journal of economics and Finance*, Vol. 6, No. 10, pp. 157-167.

Al-Tarawneh, A., Al-Assaf, G. (2018), „Does trade liberalization affect financial sector development in Jordan?", *International Journal of Economics and Business Research*, Vol. 16, No. 3, pp. 281-296.

Association of Banks in Jordan (2019). Annual Report 2019, Association of Banks in Jordan, Amman.

Asteriou, D., Spanos, K. (2019), „The relationship between financial development and economic growth during the recent crisis: Evidence from the EU", *Finance Research Letters*, Vol. 28, pp. 238-245.

Bencivenga, V.R., Smith, B.D. (1991), "Financial intermediation and endogenous growth", *The review of economic studies*, Vol. 58, No. 2, pp. 195-209.

Chaudhuri, K., Smile, S. (2004), „Stock Market and Aggregate Economic Activity: Evidence from Australia", *Applied Financial Economics*, Vol. 14, pp. 121-129.

Central Bank of Jordan (2017), *National Financial Inclusion Strategy 2018-2020*, Central Bank of Jordan, Amman.

Diamond, D. W. (1984), "Financial intermediation and delegated monitoring", *The review of economic studies*, Vol. 51, No. 3, pp. 393-414.

Guru, B.K., Yadav, I.S. (2019), "Financial development and economic growth: panel evidence from BRICS", *Journal of Economics, Finance and Administrative Science*, Vol. 24, No. 47, pp. 113-126.

Jarrah, I.M.W. (2002), *Efficiency in Arabian banking*, Bangor University (United Kingdom).

Kar. M., Nazlioglu, Agir, H. (2010), „Financial Development and Economic Growth Nexus in the MENA Countries: Bootstrap Panel Granger Causality Analysis", *Economic Modeling*, Vol. 28, No. 1-2, pp. 685-693, doi: 10.1016/j.econmod.2010.05.015.

Khan, M.A, Abdul Qayyum, Sheikh, S.A. (2005), "Financial Development and Economic Growth: The Case of Pakistan", *The Pakistan Development Review,* Vol. 44, Part II, pp. 819–837.

Khan, S.M., Senhadji, A.S. (2000)**, „**Financial Development and Economic Growth: An Overview", *IMF WorkingPaper* 00/209, Washington, D.C.

King, R.G., Levine, R. (1993), "Finance and Growth: Schumpeter Might be Right", *The Quarterly Journal of Economics*, Vol. 108, No. 3, pp. 717-737.

Levine, R. (1997), „Financial Development and Economic Growth: Views and Agenda“, *Journal of Economic Literature*, Vol. 35, No. 2, pp. 688-726.

Lucas, Jr. R.E. (1988), “On the mechanics of economic development”, *Journal of Monetary Economics*, Vol. 22, No. 1, pp. 3-42.

Maghyereh, A. (2004), “The effect of financial liberalization on the efficiency of financial institutions: the case of Jordanian commercial banks”, *Journal of Transnational Management Development*, Vol. 9, No. 2-3, pp. 71-106.

McKinnon, R.I. (1973), *Money and capital in economic development*, Brookings Institution Press.

Odhiambo, N.M. (2010), “Finance-Investment-Growth Nexus in South Africa: An ARDL-Bounds Testing Procedure”, *Economic Change Restructuring*, online, DOI: 10.1007/s10644-010-9085-5.

Olorogun, L.A., Salami, M.A., Bekun, F.V. (2022), „Revisiting the Nexus between FDI, financial development and economic growth: Empirical evidence from Nigeria“, *Journal of Public Affairs*, Vol. 22, No. 3, e2561.

Patrick, H.T. (1966), “Financial development and economic growth in underdeveloped countries”, *Economic development and Cultural change*, Vol. 14, No. 2, pp. 174-189.

Romer, P.M. (1990), “Endogenous technological change”, *Journal of political Economy*, Vol. 98, No. 5, Part 2, S71-S102.

Seetanah, B. (2008), “Financial Development and Economic Growth: an ARDL Approach for the case of the Small Island State of Mauritius”, *Applied Economics Letters*, Vol. 15, pp. 809-813.

Shaw, E.S. (1973), *Financial deepening in economic development*, Oxford University Press.

Tariq, R., Khan, M.A., Rahman, A. (2020), « How does financial development impact economic growth in Pakistan?: New evidence from threshold model », *The Journal of Asian Finance, Economics and Business*, Vol. 7, No. 8, pp. 161-173.