Evaluating the Impact of Domestic Savings on Jordan's Economic Growth

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Abstract: - The interrelationship between the saving behavior of individuals in any economy and the country's economic growth has been a major focus of researchers and economists. Therefore, this current research is further highlighting the relationship by evaluating the impact of the saving behavior of individuals in Jordan on the growth of the Jordanian economy. Thereby, through using a quantitative research methodology, the current study concentrated on employing a set of statistical tests such as the Johansson co-integration test, the granger-causality test, and the augmented dickey fuller "ADF" test, as well as the regression analysis for the aim of finding out the impact of domestic savings on the growth of Jordanian economy. As a result, findings from this current study as well as the evaluation of the relationship indicated that the savings behavior of individuals in Jordan has a significant positive influence on the economic growth of Jordan. The findings indicate that savings stimulate production, investment, and employment, ultimately leading to the country's economic growth. Results from the autoregressive distributed lag indicated that the two variables not only indicate a strong positive and significant relationship with each other in the long run; while it is revealed to be significant and positive in the short term. The results indicated that the domestic savings (estimated through the gross domestic savings of the country) have a significant positive impact on the economic growth (measured through the gross domestic product) of the country. Moreover, it is found that GDS not only significantly influences the gross domestic product in the long run but it also significantly positively influences the gross domestic product in the short run as well. Relying on the above results, it is concluded that enhanced domestic savings will contribute significantly to economic growth because such capital accumulation will increase investments.
Additionally, the findings indicated that the increase in the level of domestic savings causes an increase in the economic growth of the country. However, although the level of contribution of GDS to GDP is already quite significant i.e. 0.635%, the Jordanian government must focus on introducing policies in the economy that should promote savings among the public. Moreover, this study also indicates that economies having enhanced savings rates can attract more FDI which significantly leads to the development of different sectors in the economy hence leading to economic growth. Furthermore, depending upon the findings of this current study, the research indicates that the domestic savings of the public in Jordan significantly contribute to the economic development of Jordan. Therefore, the government must focus on the promotion of domestic savings and must introduce different plans that must promote savings among the public. Current research is a significant contribution to Jordanian economic literature and also contributes significantly to the knowledge of the think tanks and concerned government authorities in Jordan so that they can design their policies accordingly. Economic development is essential for each country; therefore, factors identified as significant contributors to economic growth must be prioritized by the Jordanian government.

Key-Words: - Savings, Economic Growth, Investments, ADF

1 Introduction

The growth of the Jordanian economy is indicating a positive sign in recent times. Accordingly, it is reported to be expanded to 2.60 percent in the last quarter of the year 2021, which is continuously a fourth quarter of the economic expansion indicating visible growth in most of the sectors of the economy, [1]. By focusing on the last year's overall performance, it is indicated that in 2021 the growth was 2.2% more than the previous years.
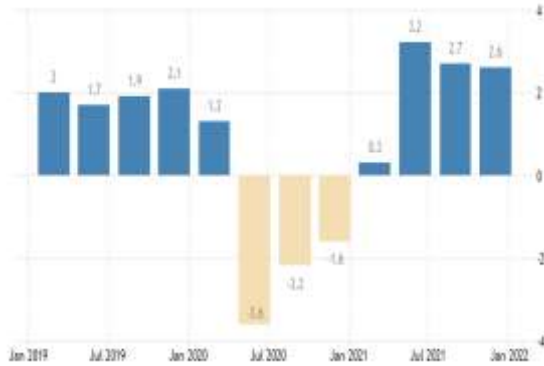
Fig. 1: Economic growth of Jordan in recent years.
Source: [1].

Although these growth signs are a pleasant indication of the whole economy, and the contribution of different sectors is also remarkable, the current study is mainly focusing on how individuals' saving behavior contributes to such economic development. Previous studies reported evidence regarding the savings of the country's economic growth, [2], [3], therefore current research focuses on the saving behaviors of Jordanians and how it is contributing to the economic development and growth of the country.

2 Literature Review

Savings enhance the capital accumulation in the economy which is further utilized for other productive purposes like production etc. As it is indicated by, [4], the major factor for the enhancement of capital in an economy is the increased savings of individuals. Hence developing economies should launch programs promoting the enhancement of domestic savings that must be further invested into other productive programs, [2]. Solow's model, [5], also emphasizes the point that increases in savings in an economy lead to the enhanced growth rate of the economy because enhanced savings lead to enhanced levels of capital as well as output in the economy. However, such growth is not for the long run, but for some time, the savings pattern of the country contributes significantly to its economic growth, [6].

[2], Argue that the association between the savings of a country and its economic growth varies from country to country. [3], Indicate that innovations in the country lead to growth, which requires local sectors to adopt and implement frontier technology.

However, each country could not catch up with the required technology through their resources; rather most of them require cooperation from foreign investors, especially the poor economies. Foreign investors' cooperation is needed for the development of required frontier technology while domestic entrepreneurs are required to cope with the local conditions, [7]. Therefore, in such countries, domestic savings are essential for innovation and hence growth because these savings accumulate the required capital that is put by the entrepreneur into their cooperative ventures, [8].

On the other hand, rich countries do not require the cooperation of foreign investors for having familiarity with frontier technology and hence also do not require foreign investments for innovations. Therefore, in such countries, domestic savings also do not matter a lot for economic growth, [3], [9], also report that economies requiring enhanced capital for the investments of innovation require enhancing the level of savings as well. Having greater levels of capital enable such a country to have enhanced levels of services and goods being produced in the economy.

[7], Reported the mutual long-term and bidirectional correlation between the domestic savings of Pakistan along with economic growth. However, the speed of adjustment is stronger in regard to savings as compared to the output in terms of the growth of the economy. Hence, it is found that increased levels of domestic savings in economies contribute significantly to the promotion of growth in such economies, [8], investigated the relationship between domestic savings and economic growth in Botswana and reported that domestic savings contribute significantly and positively to the economic growth of the country. Similarly, [10], investigated the relationship between economic growth and saving rates in Albania. Employing the Johansson co-integration test, the results indicate that economic growth and domestic savings have a significant long-run relationship, while the results are found to be stable in the short run. Therefore, it is suggested that governments must promote savings that lead to the attraction of foreign direct investments as well, [11].

Investigating the long-run relationship between GDP and gross domestic savings in Tunisia and Morocco, [6], reported that economic growth depends on the level of domestic savings in the economy. Similarly, [9], indicated a strong positive relationship between economic growth, savings, and FDI in the economies

of Asia, indicating that the FDI inflow increases with the increase in the level of domestic savings which ultimately results in the enhanced economic growth of the country.

Contradictory findings are also reported in this regard, [10], arguing that economic growth, indicated by the growth rate of GDP, granger causes savings, but the inverse relationship is not identified i.e. growth is not found to be granger caused by the savings. Evaluating the household data it is found that households having lower income save less than households having higher income levels. The authors argue that findings reported in previous literature indicating the impact of savings on economic growth may be overstated because their results do not indicate such findings, [10]. Hence, in light of the findings of all the above-mentioned previous literature, it is indicated that savings and economic growth have different relationships in different economies. Therefore, there is a need to study the relationship between these variables in different economies so that the policies could be designed according to the nature of the relationship in that economy. Consequently, current research aims at investigating the relationship between domestic savings and economic growth in Jordan.

3 Research Methodology

The main objective of current research is to find out the impact of savings on the economic growth of Jordan, so GDP (gross domestic product) is used as an indicator of the economic growth of Jordan, while GDS (gross domestic savings) %age of GDP is an indicator of the domestic savings in Jordan. The time span of the study is 1995-2020. Data is collected from the official records provided by the World Bank, [12]. The following figure represents the data graphically.
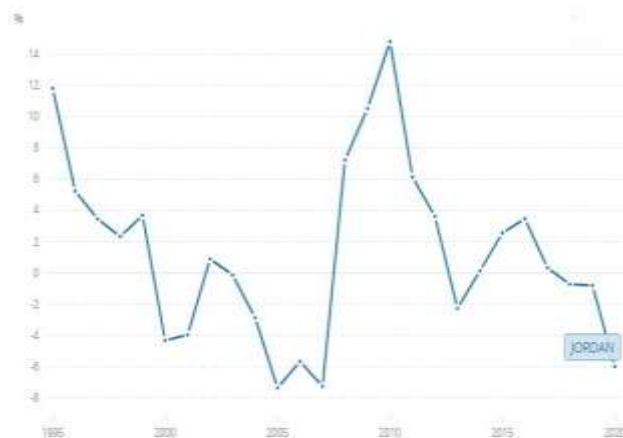

Fig. 2: GDS %age of GDP-Jordan Source: World Bank, [12].

The data is initially converted to their natural logarithm. The relationship between the variables of interest is investigated through ARDL (autoregressive distributed Lag model) in the following ways.

- **ARDL Co-integration Test**

The long-run relationship between the gross domestic savings and the gross domestic product is investigated through the ARDL bound test approach to co-integration, [13]. ARDL formula is found to be suitable to investigate the proposed relationship due to the following reasons; it allows for the different levels of lags for the dependent and independent variables of interest, however, the order of integration of the variables or their lag must not exceed from one. Moreover, the short and long-run relationships are evaluated at the same time and it also allows for a small sample size, [14]. Therefore, current research employs the ARDL approach to evaluate the relationship between economic growth and domestic savings. The model is specified as follows;

$$GDP = \int (GDS)$$

Where,

GDS = Gross Domestic Savings

GDP = Gross Domestic Product

If the existence of long-run relation is identified between GDS and GDP through the ARDL approach, then an equation of the ECM (error correction model) is created in the results. The coefficients of the ECM equation reflect the speed of the dependent variable to move toward equilibrium after having a significant

impact. The formula of estimation for the ARDL approach is explained as follows;

$$\Delta GDPt = \alpha o + \sum_{i=1}^{n} \beta 1 \Delta GDPt - i + \sum_{i=0}^{n} \beta 2 \Delta GDSt - i + \delta 1 \, lnGDPt - i + \delta 2 \, lnGDSt - i + \mu t \quad \dots (1)$$

Where, n is the length, $\beta 1, \beta 2$ indicate the run-short elasticity of theabove model, and $\delta 1, \delta 2$ indicate the long-term elasticity. ARDL's long-run bound test has the null hypothesis of the absence of a long-run relationship between the variables under study. The F statistics resulting from the ARDL bound test indicate whether the null hypothesis is rejected or not based on the upper and lower bounds of the critical values. The null hypothesis indicating no relationship between variables is not rejected if the F statistics resulting from estimation are lower than the lower bounds of the CVs, while it is rejected in case the resulting F statistics are beyond the upper bound of the CV which indicates the presence of a long-run relationship between variables. However, if the estimated value falls between the upper and lowers bound of the CVs then the results are inconclusive.

After finding the long-run correlation; the next step is to select the optimal lag length of the variables on the basis of different criteria including the Schwarz Bayesian Criterion (SBZ) or Akaike Information Criterion (AIC) then the resulting short-run and long-run coefficients are predicted. Equation (2) indicates the long-run form of ARDL;

$$lnGDPt = \alpha o + \sum_{i=1}^{n} \beta 1 lnGDPt - i + \sum_{i=0}^{n} \beta 2 lnGDSt - i + \mu t \quad \dots (2)$$

Equation (3) incorporates the term of error correction (ECT) that was employed in the short-run ARDL which depicts the short-term dynamics;

$$\Delta GDPt = \alpha o + \sum_{i=1}^{n} \beta 1 \Delta GDPt - i + \sum_{i=1}^{n} \beta 2 \Delta GDSt - i + \delta 1 ECT. \quad \dots (3)$$

Where ECT is the error correction term. These above-mentioned ARDL models are employed for indicating the relationship between gross domestic product, as an indicator of economic growth, and gross domestic savings. The absence of a relationship will indicate that domestic savings do not contribute to the economic growth of the country. However, if the relationship is found to be significant then it indicates that domestic savings have a significant impact on the economic growth of Jordan.

4 Results and Findings

4.1 Summary of Descriptive Statistics
Table 1reports the summary statistics for the two variables over the time frame under study.

Table 1. Descriptive Statistics

Stat.	GDS	GDP
Mean	8.734	38.69
Med.	6.21	26.83
Min.	4.18	16.91
Max.	9.41	44.5
Std. Dev.	0.6387	1.051
Skewness	0.0897	0.576
Kurtosis	1.465	2.043
Jarque-Bera	2.381	2.673

The results reported in Table 1 indicate that the skewness coefficients are positive and within the range of -0.5 to 0.5 and Kurtosis coefficients are less than 3, which means that distributions of the series have less extreme fewer outliers than the normal distribution and the distribution is fairly symmetrical, [5], [16].

4.2 ARDL (ADL) Bounds-Test
Initially, the long-run relationship between the variables under study is identified using the long-run bounds test. The test statistics resulting from the bounds test assist in the identification of the presence of long-run relationships or the co-integration among variables while inferences depend on the estimated values of the F statistics evaluated in light of the upper and lower bound values.

The results are shown as explained below:

Table 2. Long-Run Relationship between GDS and GDP

Model:
Gross Domestic Product = ∫(Gross Domestic Savings)
AIC (Akaike Information Criterion)
Lags: 8
Selected Model: (1, 0)

F-stats	Lower-Bound.	Upper-Bound.	Critical-V.	Decision
4.89	1.98	2.94	0.1	LR Relationship Present
	2.55	3.61	5%	LR Relationship Present
	2.88	3.99	1%	LR Relationship Present

CV= critical value, LR= long run.

The above model portrays the no. of lags for each variable, while it was only focused on the number of lags if a long-run relationship among variables is found. The above model indicates the presence of a long-run relationship between gross domestic savings with the Gross domestic product because F-statistics (4.89) falls beyond the upper bound value at the 1% significance level. The long-run co-integration form of the relationship is as follows;

Table 3. Long Run Co-integration

DV: LRGDP				
Independent Variable	Coefficients	Std. Error	t-stats	Prob.
GDS	0.6349	0.00891	3.0413	0.0056*
Constant	5.4285	0.5421	11.982	0.000*

***, **, * indicate significance level at 10%, 5%, 1%.

The results of the long-run relationship indicate that gross domestic savings have a significant positive impact on the gross domestic product of Jordan at a 1% critical value. The coefficient of GDS is significant and positive (0.6349) which shows that 1% in domestic savings causes an almost 0.635% increase in GDP. Hence, it indicates that the domestic savings in Jordan significantly contribute to the economic growth of the country through an increase in the gross domestic product of the country. Further, the short-term effect of domestic savings (GDS) on economic growth (GDP) is indicated by the short-run model (vector error correction model), reported in table 4.

Table 4. Short run estimates; Error correction Form

Variable	Coefficient	Std. Error	t-statistics	Prob.
D(GDS)	0.00310	0.000586	-3.1873	0.0053
Coint-eq. (-1)	0.08312	0.02150	6.1513	0.000
Coint-eq = LRGDPJ – (0.0287*GDS_ + 5.5452				

The results reported in table 4 indicate that the model (short-run) is significant and positive which indicates that the coefficient of the co-integration equation is 0.083 or 8% and significant statistically. Moreover, the independent variable is statistically significant and has a positive impact on Jordan's economic growth in the short run.

5 Discussion

The current research aims to investigate the impact of the domestic savings of Jordan on the economic growth of the country. As reported by the previous research, the relationship between these variables varies across economies and especially in poor and rich economies depending on their need for capital and further investments. However, it is reported that poor and emerging economies always need FDI to flourish in their industries and sectors, [17], hence domestic savings are among the attractive sources to attract FDI in the country, [6]. Hence, in this regard, the current regard also investigated the impact of gross domestic savings on the gross domestic product of the country. The analysis is done through the autoregressive distributed lag which indicates that the two variables not only indicate a strong positive and significant relationship with each other in the long run; while it is revealed to be significant and positive in the short term. The results indicate that the domestic savings (estimated through the gross domestic savings of the country) have a significant positive impact on the economic growth (measured through the gross domestic product) of the country. Moreover, it is found that GDS not only significantly influences the GDP in the long run but also significantly positively influences the GDP in the short run but it also significantly positively influences the GDP in the short run as well.

Therefore, the findings indicate that the increase in the level of domestic savings causes an increase in the economic growth of the country. These findings are similar to the findings of, [8], [6], who also reported the positive relationship between domestic

savings with the economic growth of countries. Hence, the results indicate that although the level of contribution of GDS to GDP is already quite significant i.e. 0.635%, the Jordanian government must focus on introducing policies in the economy that should promote savings among the public. The government must have a major focus on the enhancement of domestic savings in the economy, which leads to the accumulation of capital in the economy, [8]. Such accumulated capital is a significant source of economic development through making investments in different sectors. Researchers indicate that domestic savings, [7], are a significant source of capital accumulation that enhances the level of investments in the country which causes a significant increase in the economic growth of the country, [3]. Similarly, the positive relationship between GDS and GDP in Jordan also indicates that domestic savings cause a significant increase in the economic growth of Jordan, but such contribution should be further enhanced by developing a better understanding of the benefits of domestic savings among the public. Emerging and developing economies like Jordan always lack the required sources for their economic development, and they have to make efforts for the provision of foreign direct investment for the accomplishment of most of their targeted projects or outcomes. Hence, the trend of enhanced domestic savings will contribute significantly in this regard, because the such accumulation of capital also attracts foreign investors to make investments in such economies, [2].

6 Conclusion

To evaluate the effect of Jordanian economic growth along with domestic savings this current research has investigated the relationship between gross domestic savings (GDS) and the gross domestic product (GDP) of Jordan. The data is collected from official data sources of the World Bank. The evaluation of the relationship through the ARDL approach indicates that gross domestic savings significantly positively contribute to the gross domestic product (GDP). Moreover, the relationship is found to be significant in the long and short run. Hence, the presence of short and long-run relationships between domestic savings and the economic growth of the country indicates that the domestic savings of the public in Jordan significantly contribute to the economic development of Jordan. Therefore, the government

must focus on the promotion of domestic savings and must introduce different plans that must promote savings among the public. Current research is a significant contribution to Jordanian economic literature and also contributes significantly to the knowledge of the think tanks and concerned government authorities in Jordan so that they can design their policies accordingly. Economic development is essential for each country; therefore, factors identified as significant contributors to economic growth must be prioritized by the Jordanian government.

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