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ASSESSING THE RELATIONSHIP BETWEEN SAVINGS ANDTHE ECONOMIC GROWTH OF OMAN

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Abstract:

Gross domestic savings have an effect on the country's economic growth, which is measured by GDP, in practically all countries. The purpose of this research is to investigate into the relationship between Oman's Gross Domestic Savings and Gross Domestic Product, as well as their impact on each other. This study utilizes annual GDS and GDP time series data from 1998 to 2019, collected from National Statistical and Information Centre, Oman. Stationarity was tested at the level and at first difference using econometric tools such as ADF and PP Unit root. To look into the long-term relationship between the variables, Johansen's cointegration test was used. The Granger causality test was used to determine the direction of the GDP-GDS link. The findings revealed that the two variables have a long-term link, although the direction of the relationship cannot be anticipated.

Key words: GDP, GDS, Unit Root, VAR, Cointegration, Causality.

INTRODUCTION

Economic growth is regarded as one of themost significant characteristics for any country since it allows individuals' living standards to rise. It is defined as the economy's ability to raise the productivity of services and goods in comparison to prior periods of time. Many studies conducted around the world have shown that countries that have built up fixed capital over time have been able to attain higher and longer-term economic growth and development than other countries. When economic growth is stable, instability is generated by the saving tendency on the one hand, and an imbalance between labor growth, natural resource discovery, and technical progress on the other (Kivanc,2015). Savings arerequired for the accumulation and also the formation of capital that can be used for technological innovation helping the economy in large scale production and enhancement of specialization with increased labor productivity resulting in increased GDP. According to Harrod- Domar model, savings acts as a major factor of growth.

Oman, a member of the Gulf Cooperation Council (GCC), has an economic structure that is comparable to that of the other GCC countries. The country is classified as a middle-income country with an economy entirely based on oil (hydrocarbon resources). Crude oil and natural gasaccounted for roughly 73 % of the country's total revenue in 2017. As such a significant part of Oman's GDP is made up of the revenues earned from the export of oil and related products. The national savings data reports that the savings is decreasing year after year. The savings from December 1980 to 2020 averaged 1979.293 million OMR . The savings was all time high during 2013 recording an amount of 13,110.600 million OMR. Oman's GDP is significantly affected by the fall in prices of the oil in the world market as it is fully dependent on the oil revenues (George, L. et.al., 2021).

RESEARCH OBJECTIVES:

The main objective is to assess the relationship of savings on the economic growth of Oman. In specific the study aims to

1. Analyze the stationarity of the GDP and GDS time series.
2. Investigate the co-integration between GDP and GDS
3. Identify short run and long run relationship between GDP and GDS

RESEARCH HYPOTHESIS:

1. H0: The time series of GDP and GDS are not stationery (Series have a unit root)
2. H0: There is no co-integration between GDP and GDS.
3. H0 : There is no causal relationship between GDP and GDS

LITERATURE REVIEW

Savings and economic growth are considerably related. In Kosovo, deposits have a significant beneficial impact on economic growth because savings influence investment, production, and employment, resulting in high sustained economic growth. There is no necessity to rely on foreign direct investment, if a country's national savings rate is high and the risk of FDI volatility is low enough (Ribaj & Mexhuani, 2021). Changes in aggregate domestic savings in Income, money supply, and price corrected 73.3 percent of the disequilibrium. GDS in Ethiopia are influenced in the short and long run by the age dependency ratio, real exchange rate, real interest rate, real GDP domestic product, foreign capital inflow, and money supply (Beshir,2017).

The MENA countries showed a strong

relationship between trade openness and domestic investment on economic growth but the association between the foreign aid and economic growth is negative in a study made by Sabra & Eltalla (2016). Using the ARDL model, Jagadeesh (2015) demonstrated that there is a substantial relationship between savings and economic growth. Domestic savings and economic growth have a substantial link in Ethiopia and Uganda, but this link is not applicable in Kenya. In Ethiopia and Uganda, the Gross Domestic Product causes Gross Domestic Savings and vice versa meaning that economic expansion accelerates GDS and increase in the gross domestic savings has an impact on the economic growth (Worku & Elias, 2015). In Iran savings had a positive and significant impact on total and non-oil economic growth and savings. There is a long-term causal relationship between savings and economic growth, as well as savings and non-oil economic growth, and that these relationships are bidirectional (Najarzadeh, et.al., 2014). The results of the co-integration model and Granger's Causality test revealed that in developed, developing, and transition nations, there is a one-way causal relationship between GDS and GDP, but no such association existed in rich and developing nations (Misztal, 2011). The long run association between the GDS and GDP existed in Morocco but there was no such evidence in Tunisia as per the studies made by Abu Al-Foul (2010) using the co- integration model. In Morocco, the causality between economic growth and savings showed a bidirectional while the causality was unidirectional in the case of Tunisia.

METHODOLOGY

Sources of data and details of variables

The two variables used in this study are the gross domestic savings (GDS) and the gross domestic product (GDP) of Oman. Annual time series data from 1998 up to 2019 for GDS and GDP collected from the National Statistical and Information Centre, Oman has been used for analysis purpose. The study intends to disclose the cointegration relationship between the two variables. Augmented Dickey Fuller test (ADF) and Phillips Perron test (PP) has been applied to examine the stationarity of the time series. Unit root test is applied to check whether there exists a variation in the statistical property of the time series. When analyzing the unit root test of the series using ADF and PP test, if the series possess a unit root then the series is not considered as stationery and the vice versa. VAR Lag Order Selection criteria is used to choose the relevant number of

Lags. Johansen's cointegration test was applied to examine the long run relationships to estimate the impact of (GDS) on the (GDP). Granger causality test is utilizedto test the data' robustness and to determine the nature of the GDS-GDP causal link. Eviews 10 software was used for the computations.

RESULTS AND DISCUSSIONS

1. Unit Root test (ADF)

In order to avoid the spurious regression situation, variables need to be stationery orcointegrated. ADF test is used to check thestationarity of the variables.

Table 1

A) Augmented Dickey Fuller Unit Root Test for Gross Domestic Product(GDP) at level and at 1st Difference

	At level		At 1st Difference	
	t-Statistic	Probability *	t-Statistic	Probability *
GDP	-0.998905	0.9226	-4.968939	0.004
GDS	-1.688861	0.7200	-4.640425	0.0075

Source: Author's calculation

H0 : The time series of GDP and GDS are not stationery (there is a unit root)

Table 1 revealed the computed probability value 0.9226 and 0.7200 for GDP and GDS respectively which is greater than

0.05 at 95% confidence level, the null hypothesis is accepted, which means that the series possess a unit root and therefore is non-stationery at level or not integrated at order 0.

Further at the 1st difference or order one, the computed P value 0.0040 and 0.0075 for GDP and GDS respectively which is less than 0.05 at 95% confidence level, with 0 lag length based on SIC, thus the null hypothesis is rejected and alternate hypothesis is accepted which means the series does not possess a unit root and therefore the series is stationery at first difference or it is integrated at first order.

B) Phillips-Perron Unit Root Test

In order to confirm the stationarity of the time series of GDP and GDS Phillips-Perron unit root Test was also applied.

Table 2

Phillips-Perron Unit Root Test for Gross Domestic Product at Level

	At level		At 1st Difference	
	t-Statistic	Probability *	t-Statistic	Probability *
GDP	-0.998905	0.9226	-4.968912	0.0040
GDS	-1.688861	0.7200	-4.766536	0.0059

Source: Author's calculation

H0 : The time series of GDP and GDS are not stationery (there is a unit root)

The computed probability value 0.9226 for GDP and 0.7200 for GDS shown in table 2 above is more than 0.05 at 95%

confidence level, indicating that a unit root exists and hence the null hypothesis is accepted, which means that the series is non- stationery at level or not integrated at order 0.

At the first difference, the computed Probability value 0.0040 for GDP and 0.0059 for GDS indicated in table 2 above is less than 0.05 at 95% confidence level, hence the null hypothesis is rejected, and the alternate hypothesis is accepted, which means that the series does not possess a unit root and therefore the series is stationery at first difference or it is integrated at first order.

2) VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria have been used to select the appropriate number of lags. Before performing the Johansen Cointegration and Granger Causality tests, the lag length should be estimated.

Table 3: VAR Lag Order Selection Criteria

	Log GDS		LogGDP	
	Lag 0	Lag 1	Lag 0	Lag 1
LogL	-19.2675	0.842532	-15.43328	13.37366
LR	NA	36.38950*	NA	51.85249*
FPE	0.403503	0.065411*	0.302866	0.018787*
AIC	1.930234	0.110235*	1.643328	-1.137366*
SC	1979973	0.209713*	1.693115	-1.037792*
HQ	1.941029	0.131824*	1.653047	-1.117928*

Source: Author's calculation

In the Table 3 above, it is observed that the lag length of one is best for both LogGDS and LogGDP at 5% level under the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criteria (SIC) and Hannan- Quinn Information Criterion (HQ).

3) Johansen Cointegration Test

Since the series are integrated at 1st order, it is necessary to establish a long run relationship between the variables GDP and GDS using the Johansen CointegrationTest

Table 4Johansen Cointegration Test

Hypothesized No. of CE (s)	Eigen Value	Trace			Maximum Eigenvalue		
		Trace statistic	Critical value at 5%	Probability **	Max Eigen Statistic	Critical value at 5%	Probability **
None *	0.634826	20.67845	12.32090	0.0016	20.14765	11.22480	0.0011
At most 1	0.026191	0.530798	4.129906	0.5288	0.530798	4.129906	0.5288

Source: Author's calculation

H0: There is no co-integration (No long run relationship between variables)

In the table 4 above, Unrestricted Cointegration Rank Test (Trace) we see that probability value is less than .05 at 5% level and hence we reject the null hypothesis. We also can reject the null hypotheses looking at the trace statistic and critical value. Since Trace statistic is greater than the critical value, the null hypotheses is rejected.

Similarly, in the case of Unrestricted Cointegration Rank Test (Maximum

Eigenvalue) the probability value is less than .05 at 5% level and hence we reject the null hypothesis. We also can reject the null hypotheses looking at the Max-Eigen statistic and critical value. Since Max- Eigen Statistic is greater than the critical value, the null hypotheses is rejected.

4) Granger Causality Test

Table 5Granger Causality Test

	F- Statistic	Probability
GDP does not Granger cause GDS	0.01821	0.9820
GDS does not Granger cause GDP	0.01115	0.9889

Source: Author's calculation

H0: There is no causal relationship between GDP and GDS

In the table 5 Granger Causality Test, the probability values are greater than 0.05 which is insignificant. Hence, we accept the null hypotheses and conclude that thereis no causal relationship between the variables GDS and GDP

Conclusion

The analysis reveals that the time series of GDP and GDS is integrated at the first order as both the series has a unit root at the 1st difference indicating that the series are stationery at the first order. The lag length of one was determined using the VAR Lag Order Selection Criteria. There is a cointegration between savings and economic growth in Oman, implying that the two variables have a long-run link and is integrated in a linear fashion, as confirmed by the Johnsen co-integration test. Even if there are short-term shocks that impact the movement of individual series, they will eventually converge with time in the long run. The Granger causalitytest proved that there is no causal relationship between savings and economic growth, and hence the relationship's type and direction cannot be predicted. This is due to the fact that Oman's GDP is heavily reliant on oil earnings and also GDP depends on various other factors like natural resources, infrastructure and physical capital, population, human capital, technology and law. In order to achieve long-term economic growth, the country mustlikewise shift its reliance from oil to other sectors. Maintaining appropriate savings in today's tough global economy is critical for a country's economic prosperity. Government policies should be designed to mobilize household savings, which can then be judiciously invested in initiatives that improve the country's income, resulting in additional economic expansion.

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