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Exchange Rate and Gross Domestic Saving Is There a Relation? Empirical Evidence from Egypt

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Abstract

Given the significance of gross domestic savings in funding investments, reducing the burden of external debts, and servicing these debts on the current account balance, this study examined the degree of the long-term relationship between the exchange rate and gross domestic savings in Egypt from 1980 to 2022. The current account balance, fixed capital formation, exchange rate, and terms of trade were the four explanatory factors used in this study, while the dependent variable was gross domestic savings. Using Eviews 12's vector error correction (VEC), the analysis discovered a statistically significant long-term relationship between gross domestic savings and the four explanatory variables. Additionally, it discovered a statistically significant inverse relationship between Egypt's nominal exchange rate and gross domestic savings, showing that a one-unit increase in the exchange rate (the depreciation of the Egyptian pound) results in a 0.5863 drop in gross domestic savings as a percentage of GDP. This highlights the significance of exchange rate stability in Egypt as a way to boost gross domestic savings. A statistically significant positive relationship between the terms of trade index and gross domestic savings was also discovered by the study; for every unit rise in the terms of trade index, gross domestic savings as a percentage of GDP increased by 0.0872. However, the current account balance, fixed capital formation, and gross domestic savings as a proportion of GDP were found to be statistically inversely related. The study's conclusions suggest that in order to boost Egypt's gross domestic savings, it is critical to stabilize the country's nominal exchange rate and focus on enhancing terms of trade.

Keywords: Egypt, gross domestic saving, exchange rate, terms of trade, Vector Error Correction

1. Introduction

Recent years have seen a rise in interest in researching the factors that influence gross domestic saving, particularly in developing countries. This is because these nations' over-reliance on foreign savings has been criticized for having a detrimental effect on both domestic savings and debt, which has impeded long-term growth plans. The notion that the domestic currency's appreciation as a result of funding the current account deficit lowers the expected rate of profit in the tradable goods sector, which in turn causes domestic savings to decline and be replaced by foreign savings, has been embraced by many economists (Bresser-Pereira, Luiz, & Paulo, 2007).

Other economists have adopted another idea, which is real exchange rate levels may exert an important influence on growth through their impact on savings and then capital accumulation (Yeyati, Sturzenegger, & Gluzmann, 2013). They claim that a decrease in the real exchange rate tends to increase the domestic saving rate, and that a higher saving rate stimulates growth through increased capital accumulation or the so-called capital accumulation channel, and they cited those countries that achieved high sustainable growth rates showed at the same time a decline in real exchange rates and an increase in domestic savings rates. For example, China - South Korea - Malaysia - Thailand and Chile. Conversely, countries in which the real exchange rate has risen have both gross domestic saving and growth rates, as in Mexico before 1995 (Montiel & Serv én, 2008).

Also Dooley, Folkerts Landau, and Garber (2004) argue that the depreciation of the real exchange rate has long been an essential element of the export-led development strategy pursued by many Asian countries, including China, as the high savings rates in these countries are at least partly due to exchange rate policies, where a low real exchange rate works to shift aggregate demand from traded goods to non-traded goods, which requires an

increase in the real interest rate to maintain internal balance, and a high real interest rate works to restrict aggregate demand partly by increasing the domestic saving rate. Others believe that there is a relationship between a decrease in the real exchange rate and an increase in the domestic saving rate, as a decrease in the real exchange rate leads to a decrease in real wages, which stimulates companies to increase investment and increase their savings to finance additional investment and thus increase overall saving (Levy-Yati & Steurzinger, 2007a).

Paolo Galli has introduced an additional concept (Paulo & Marcos, 2011), which is that the path of domestic and foreign saving depends on the real exchange rate. Assuming that jobs are sufficiently flexible, a decrease in the real exchange rate may lead to an increase in the level of income by increasing exports and investments and reducing consumption relative to the gross domestic product, and thus Increasing domestic savings and reducing foreign savings, an overvalued real exchange rate may lead to consumer-led growth paths with current account deficits and declining levels of saving.

The problem of the study lies in the successive decline in the gross domestic savings in Egypt as a percentage of the gross domestic product, as is clear from the figure (1), as it reached its peak in 1992 at 35.9 %, while in 2021 it reached 10.9%. The study also derives its importance from the importance of local savings in financing investment and alleviating the burden of the external public debt on the current account balance from the installments and interest of these debts, which negatively affect many macroeconomic variables, including the rise in the exchange rate (devaluation of the Egyptian pound), as is clear from the following Figure 2 (Elhendawy, 2022).

The remainder of this study is structured as follows: The literature review is presented in Section 2. Model estimation and technique are presented in Section 3. The results and conclusion are finally presented in section 4.

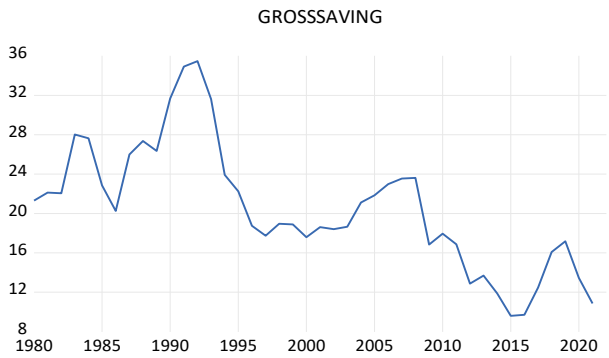

Figure 1. Egyptian gross domestic saving/GDP %

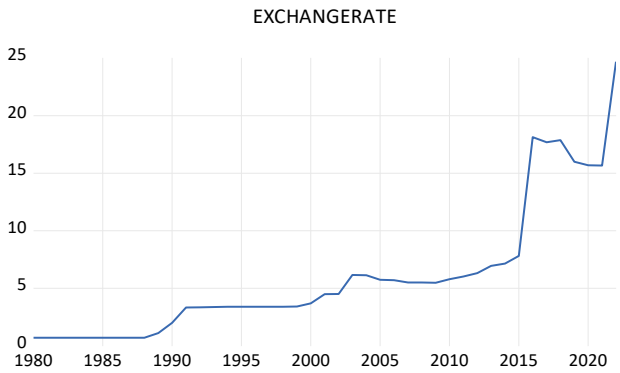

Figure 2. Egyptian nominal exchange rate

2. Literature Review

Bresser-Pereira, and Paulo (2007) studied the relationship between the level of the real exchange rate, foreign savings, and domestic savings in Brazil. They concluded that there is a long-term stable relationship between the exchange rate and domestic savings, and that the relative reductions of the real exchange rate positively and significantly affected domestic savings in the period 1994-2013 AD. Due to the local currency's gain as a result of funding the current account deficit, the tradable goods industry's expected profit rate decreased, which in turn caused domestic deposits to decline and be replaced by foreign savings.

In their analysis of the relationship between real exchange rates and domestic savings in emerging countries, Paulo and Marcos (2011) provided a theoretical explanation of how competitive exchange rates can prevent consumption booms brought on by currency overvaluation and how, in the short term, they encourage investment, exports, profits, and domestic savings. They discovered a relationship between domestic savings as a proportion of GDP and actual exchange rates. They underlined that when real wages increase without corresponding productivity advances, the economy is led along unsustainable growth trajectories that eventually result in a balance of payments crisis. On the one hand, other competitive exchange rates boost the profitability of exports and investments, particularly in the industrial sector. This raises the economy's overall productivity over time and permits real wages to rise sustainably.

The impact of an undervalued currency on the different components of GDP was estimated by Levi and Federico (2013). They came to the conclusion that devaluation has a greater effect on capital accumulation and domestic savings in developing nations than it does on the tradable sector (increasing exports and import substitution). They ascribed this to Díaz Alejandro's (1965) theory that an undervalued exchange rate shifts resources from those with low incomes to those with higher incomes, who are more likely to conserve.

3. Methodology

The study assesses the relationship between exchange rate and gross domestic savings in Egypt for the period 1980 to 2022. The study relies on gross savings as the dependent variable, while the explanatory variables were current account, gross capital formation, exchange rate, and terms of trade. The methodology is based on Vector Error Correction (VEC) using Eviews 12.

$$GROSSSAVING = \alpha + \beta 1\ CURRENTACCOUNT + \beta 2\ CAPITALFORMATION + \beta 3\ EXCHANGERATE + \beta 4\ \text{TERMS} + \varepsilon \quad (1)$$

Where:

GROSSSAVING: Gross savings (% of GDP).

Gross savings are calculated as gross national income less total consumption, plus net transfers.

CURRENTACCOUNT: Current account balance (% of GDP).

Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income.

CAPITALFORMATION: Gross capital formation (% of GDP). (Formerly gross domestic investment).

EXCHANGERATE: Exchange Rates, National Currency Per U.S. Dollar, End of Period.

TERMS: Net barter terms of trade index (2015 = 100).

ε: White-noise error term.

The data obtained from the World Development Indicators: (https://databank.worldbank.org/source/world-development-indicators).

4. Empirical Results

4.1 Data Descriptives

Table 1. Descriptive statistics for the variables of the study

	GROSSSAVING	CURRENTACCOUNT	CAPITALFORMATION	EXCHANGERATE	TERMS
Mean	20.80923	-1.017643	21.31497	5.317805	137.1618
Median	20.25940	-1.770739	19.50108	3.690000	136.3843
Maximum	35.47563	9.010952	33.11688	18.13000	220.0000
Minimum	9.593465	-9.644242	13.64319	0.700000	93.11501
Std. Dev.	6.280282	3.864202	5.798884	4.924496	34.56062
Skewness	0.425398	0.629612	0.674278	1.538222	0.708066
Kurtosis	2.891564	3.530806	2.161126	4.546904	2.798094
Jarque-Bera	1.256669	3.190137	4.308953	20.25642	3.495581
Probability	0.533480	0.202895	0.115964	0.000040	0.174158
Sum	853.1784	-41.72335	873.9136	218.0300	5623.632
Sum Sq. Dev.	1577.678	597.2823	1345.082	970.0265	47777.46
Observations	41	41	41	41	41

Descriptive statistics for the study variables are shown in Table 1. It is evident that the data for all variables follow the normal distribution of the Jarque-Bera test, where the null hypothesis was accepted, except for the exchange rate. The data are normally distributed, and all the study variables have probabilities greater than 0.05 except the exchange rate variable, which has a probability of < 0.05.

4.2 Stationarity Tests

The results of the time series stability test are presented in Table 2, and the group unit root test will be used. As the LLC, IPS, and both Fisher tests reject the null of a unit root, it is evident that all the variables are stable and that there is no unit root present. This allows us to perform co-integration of the study variables.

Table 2. Unit root test findings summary

Group unit root test: Summary				
Series: GROSSSAVING, CURRENTACCOUNT, CAPITALFORMATION, EXCHANGERATE, TERMS				
Sample: 1980-2022				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0 to 1				
Newey-West automatic bandwidth selection and Bartlett kernel				
Obs	Cross-sections	Prob.**	Statistic	Method
Null: Unit root (assumes common unit root process)				
199	5	0.0000	-9.83344	Levin, Lin & Chu t*
Null: nit root (assumes individual unit root process)				
199	5	0.0000	-9.71157	Im, Pesaran and Shin W-stat
199	5	0.0000	96.0516	ADF - Fisher Chi-square
200	5	0.0000	106.733	PP - Fisher Chi-square

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

4.3 Co-Integration Test

From Table 3 which shows the results of Co- integration test, it is clear that there is one model for the Co-integration of study variables that enables us to use the Vector error correction model to estimate the long-term relationship between Gross savings, Current account balance, Gross capital formation, Exchange Rates, and Terms of trade.

Table 3. Cointegration test results

Sample (adjusted): 1982-2020
Included observations: 39 after adjustments
Trend assumption: Linear deterministic trend
Series: GROSSSAVING CURRENTACCOUNT CAPITALFORMATION EXCHANGERATE TERMS
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.688230	90.13684	69.81889	0.0005
At most 1	0.459741	44.68269	47.85613	0.0964
At most 2	0.235828	20.67015	29.79707	0.3785
At most 3	0.217923	10.18063	15.49471	0.2671
At most 4	0.015124	0.594343	3.841465	0.4407

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level.
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.688230	45.45415	33.87687	0.0014
At most 1	0.459741	24.01254	27.58434	0.1343
At most 2	0.235828	10.48952	21.13162	0.6978
At most 3	0.217923	9.586284	14.26460	0.2405
At most 4	0.015124	0.594343	3.841465	0.4407

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level.
* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

4.4 Vector Error Correction (VEC)

According to equation (2) and Table 5, the following outcomes of the long-term relationship between gross domestic savings, current account balance, gross capital formation, exchange rates, and terms of trade were estimated:

$$GROSSSAVING = 6.768 - 0.677 CURRENTACCOUNT - 0.6770\ CAPITALFORMATION - 0.5863\ EXCHANGERATE + 0.0872\ \text{TERMS} + \varepsilon \quad (2)$$

It is evident from the estimated relationship in model (2) and tables (4 and 8) that there is a significant long-term relationship between gross domestic savings, current account balance, gross capital formation, exchange rate, and terms of trade for Egypt in the years 1980-2022, especially since the error correction coefficient in this relationship is negative (-0.57) and significant .The error correction coefficient, which indicates the rate of adjustment at which the model will return to equilibrium following any shocks, demonstrates the convergence of short-term dynamics towards long-term equilibrium. In the direction of long-term equilibrium, an adjustment coefficient of 0.57 percent was discovered.

Furthermore, there is a statistically significant negative relationship between Egypt's nominal exchange rates and gross domestic savings. Specifically, during the study period, for every unit drop in the nominal exchange rate (a gain in the value of the Egyptian currency), gross domestic savings as a percentage of GDP grew by 0.586. This shows how important stable currency rates are to increasing gross domestic savings in Egypt. Furthermore, it was discovered that, in the long run, the terms of trade had a statistically significant positive impact on gross domestic savings, were for every unit rise in the terms of trade index, gross domestic savings as a percentage of GDP increased by 0.0872, Indicating the importance of the terms of trade for gross domestic saving in Egypt. Additionally, the results indicated a significant long-term inverse relationship between the current account balance and fixed capital formation, respectively, and gross domestic savings as a proportion of GDP.

Table 4. VEC estimates

Vector Error Correction Estimates					
Sample (adjusted): 1984-2020					
Included observations: 37 after adjustments					
Standard errors in ( ) & t-statistics in [ ]					
Cointegrating Eq:	CointEq1				
GROSSSAVING(-1)	1.000000				
CURRENTACCOUNT(-1)	-0.677069				
	(0.15630)				
	[-4.33192]				
CAPITALFORMATION(-1)	-1.739910				
	(0.10919)				
	[-15.9347]				
EXCHANGERATE(-1)	-0.586373				
	(0.12454)				
	[-4.70839]				
TERMS(-1)	0.087222				
	(0.01445)				
	[6.03749]				
C	6.768101				
Error Correction:	D(GROSSSAVING)	D(CURRENT ACCOUNT)	D(CAPITAL FORMATION)	D(EXCHANGERATE)	D(TERMS)
CointEq1	-0.571858	-0.640630	0.331031	-0.012902	-0.630897
	(0.13621)	(0.10456)	(0.14317)	(0.14668)	(0.84683)
	[-4.19845]	[-6.12679]	[2.31220]	[-0.08796]	[-0.74501]
D(GROSSSAVING(-1))	0.054023	0.132736	0.228316	-0.019731	1.660088
	(0.19001)	(0.14586)	(0.19972)	(0.20462)	(1.18132)
	[0.28432]	[0.91001]	[1.14320]	[-0.09643]	[1.40529]
D(GROSSSAVING(-2))	-0.428786	-0.063419	0.060427	-0.042004	0.441020
	(0.15595)	(0.11972)	(0.16392)	(0.16794)	(0.96957)
	[-2.74952]	[-0.52974]	[0.36864]	[-0.25011]	[0.45486]

D(CURRENTACCOUNT(-1))	-0.017440	-0.560493	-0.032925	-0.144117	-1.597397
	(0.26633)	(0.20446)	(0.27994)	(0.28682)	(1.65585)
	[-0.06548]	[-2.74139]	[-0.11761]	[-0.50247]	[-0.96470]
D(CURRENTACCOUNT(-2))	0.370626	-0.234071	-0.100327	-0.038642	-0.823482
	(0.22363)	(0.17167)	(0.23506)	(0.24083)	(1.39035)
	[1.65733]	[-1.36347]	[-0.42682]	[-0.16045]	[-0.59228]
D(CAPITALFORMATION(-1))	-0.132515	-0.676541	0.122363	-0.119973	-0.848753
	(0.26715)	(0.20508)	(0.28080)	(0.28770)	(1.66092)
	[-0.49604]	[-3.29888]	[0.43577]	[-0.41701]	[-0.51101]
D(CAPITALFORMATION(-2))	0.048358	-0.092058	0.159318	-0.061830	-0.496814
	(0.23561)	(0.18087)	(0.24765)	(0.25374)	(1.46486)
	[0.20524]	[-0.50896]	[0.64331]	[-0.24368]	[-0.33915]
D(EXCHANGERATE(-1))	0.253887	0.027406	0.219114	-0.040089	-0.012268
	(0.19940)	(0.15307)	(0.20959)	(0.21474)	(1.23970)
	[1.27327]	[0.17904]	[1.04545]	[-0.18669]	[-0.00990]
D(EXCHANGERATE(-2))	0.252802	-0.005861	0.194242	0.057215	0.426479
	(0.19469)	(0.14946)	(0.20464)	(0.20966)	(1.21042)
	[1.29850]	[-0.03921]	[0.94921]	[0.27289]	[0.35234]
D(TERMS(-1))	-0.000774	0.063144	-0.125887	0.006390	0.457265
	(0.03470)	(0.02664)	(0.03648)	(0.03737)	(0.21576)
	[-0.02229]	[2.37023]	[-3.45120]	[0.17097]	[2.11937]
D(TERMS(-2))	0.128938	0.062383	-0.012106	-0.019955	0.162971
	(0.04122)	(0.03164)	(0.04333)	(0.04439)	(0.25627)
	[3.12811]	[1.97149]	[-0.27943]	[-0.44955]	[0.63594]
C	-0.534040	-0.027521	-0.664975	0.317598	-0.503324
	(0.35793)	(0.27477)	(0.37622)	(0.38546)	(2.22534)
	[-1.49202]	[-0.10016]	[-1.76751]	[0.82394]	[-0.22618]
R-squared	0.705789	0.764702	0.474151	0.050998	0.322474
Adj. R-squared	0.581316	0.665153	0.251676	-0.350503	0.035828
Sum sq. resids	91.49136	53.91759	101.0807	106.1069	3536.502
S.E. equation	1.875873	1.440053	1.971730	2.020157	11.66273
F-statistic	5.670188	7.681643	2.131258	0.127018	1.124991
Log likelihood	-70.61417	-60.56721	-72.50800	-73.43002	-140.0525
Akaike AIC	4.348114	3.819327	4.447790	4.496317	8.002763
Schwarz SC	4.865247	4.336459	4.964922	5.013450	8.519896
Mean dependent	-0.383697	-0.074560	-0.448256	0.394211	-1.291352
S.D. dependent	2.899784	2.488631	2.280530	1.739591	11.87939
Determinant resid covariance (dof adj.)		6634.337			
Determinant resid covariance		994.8240			
Log likelihood		-389.0400			
Akaike information criterion		23.89684			
Schwarz criterion		26.69798			
Number of coefficients		65			

4.5 Assess the Model's Quality

Tables 5 and 6 show the results of the researcher's test of the residual serial correlation, which was used to evaluate the model's quality. The test found no residual serial correlation between the errors, supporting the null hypothesis that random errors are independent. For the null hypothesis, which assumes the research variables are homoscedastic and rejects heteroskedasticity, the heteroskedasticity test shown in Table 7 has been approved.

Additionally, it is demonstrated in table 8 and the Wald Test results in table 9 that the long-run coefficient c (1) is negative (-0.517) and that all study variables are significant, leading us to conclude that the model is credible and acceptable.

Table 5. Autocorrelation VEC Residual Portmanteau Tests

VEC Residual Portmanteau Tests for Autocorrelations
Null Hypothesis: No residual autocorrelations up to lag h
Sample: 1980-2022
Included observations: 38

Lags	Q-Stat	Prob.*	Adj Q-Stat	Prob.*	df
1	4.067539	---	4.177473	---	---
2	13.08719	---	13.69822	---	---
3	36.49142	0.8130	39.10852	0.7188	45

*Test is valid only for lags larger than the VAR lag order.
df is degrees of freedom for (approximate) chi-square distribution after adjustment for VEC estimation (Bruggemann, et al. 2005).

Table 6. VEC Residual Serial Correlation LM Tests

VEC Residual Serial Correlation LM Tests
Sample: 1980-2022
Included observations: 38

Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	27.54217	25	0.3294	1.126833	(25, 64.7)	0.3414
2	24.86976	25	0.4697	0.998796	(25, 64.7)	0.4818
3	33.33769	25	0.1228	1.420431	(25, 64.7)	0.1309
Null hypothesis: No serial correlation at lags 1 to h						
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	27.54217	25	0.3294	1.126833	(25, 64.7)	0.3414
2	52.43114	50	0.3799	1.038678	(50, 58.1)	0.4422
3	91.93420	75	0.0895	1.232788	(75, 37.7)	0.2426

*Edgeworth expansion corrected likelihood ratio statistic.

Table 7. Heteroskedasticity Test

EC Residual Heteroskedasticity Tests (Levels and Squares)
Sample: 1980 2022
Included observations: 38

Joint test:		
Chi-sq	df	Prob.
350.7912	330	0.2065

Individual components:					
Dependent	R-squared	F(22,15)	Prob.	Chi-sq(22)	Prob.
res1*res1	0.820758	3.122069	0.0136	31.18879	0.0923
res2*res2	0.601510	1.029188	0.4881	22.85740	0.4098
res3*res3	0.538441	0.795389	0.6949	20.46076	0.5542
res4*res4	0.248321	0.225242	0.9992	9.436194	0.9907
res5*res5	0.713278	1.696159	0.1476	27.10457	0.2073
res2*res1	0.771299	2.299440	0.0506	29.30934	0.1362
res3*res1	0.779433	2.409392	0.0420	29.61846	0.1280
res3*res2	0.598659	1.017033	0.4980	22.74905	0.4160
res4*res1	0.274847	0.258422	0.9979	10.44417	0.9818
res4*res2	0.414465	0.482619	0.9413	15.74968	0.8281
res4*res3	0.525960	0.756496	0.7309	19.98649	0.5839
res5*res1	0.490382	0.656082	0.8203	18.63451	0.6678
res5*res2	0.605545	1.046687	0.4742	23.01070	0.4011
res5*res3	0.706452	1.640863	0.1633	26.84518	0.2172
res5*res4	0.355987	0.376884	0.9815	13.52751	0.9174

Table 8. Statistical significance of the model in the long run

Dependent Variable: D(GROSSSAVING)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Sample (adjusted): 1983-2021
Included observations: 39 after adjustments
D(GROSSSAVING) = C(1)*(GROSSSAVING(-1) - 0.677068700322*CURRENTACCOUNT(-1) - 1.73991014018* CAPITALFORMATION(-1) -0.586372861996*EXCHANGERATE(-1) + 0.0872222599815*TERMS(-1) + 6.76810133628) + C(2)*D(GROSSSAVING(-1)) + C(3) *D(GROSSSAVING(-2)) + C(4)*D(CURRENTACCOUNT(-1)) + C(5)* D(CURRENTACCOUNT(-2))+ C(6)*D(CAPITALFORMATION(-1)) + C(7)*D(CAPITALFORMATION(-2)) + C(8)*D(EXCHANGERATE(-1)) + C(9)*D(EXCHANGERATE(-2)) + C(10)*D(TERMS(-1)) + C(11) *D(TERMS(-2)) + C(12)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.517994	0.152297	-3.401214	0.0021
C(2)	0.133250	0.212233	0.627848	0.5354
C(3)	-0.221693	0.158161	-1.401692	0.1724
C(4)	0.074555	0.298877	0.249451	0.8049
C(5)	0.059472	0.225361	0.263897	0.7939
C(6)	-0.203054	0.293494	-0.691849	0.4949
C(7)	0.067042	0.265614	0.252404	0.8026
C(8)	0.259798	0.224821	1.155578	0.2580
C(9)	0.193134	0.216655	0.891434	0.3806
C(10)	-0.040436	0.036279	-1.114574	0.2749
C(11)	0.138662	0.045248	3.064522	0.0049
C(12)	-0.356254	0.396689	-0.898068	0.3771
R-squared	0.645573	Mean dependent var		-0.287254
Adjusted R-squared	0.501177	S.D. dependent var		3.060704
S.E. of regression	2.161696	Akaike info criterion		4.627323
Sum squared resid	126.1691	Schwarz criterion		5.139188
Log likelihood	-78.23280	Hannan-Quinn criter.		4.810976
F-statistic	4.470846	Durbin-Watson stat		1.917845
Prob(F-statistic)	0.000731			

Table 9. Wald test result

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	-3.401214	27	0.0021
F-statistic	11.56825	(1, 27)	0.0021
Chi-square	11.56825	1	0.0007

Null Hypothesis: C(1)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1)	-0.517994	0.152297

Restrictions are linear in coefficients.

5. Conclusion

This study investigated the extent of the long-term relationship between the exchange rate and gross domestic savings in Egypt during the period 1980-2022 due to the importance of gross domestic savings in financing investment and alleviating the burden of external debts and servicing these debts on the current account balance. This study relied on four explanatory variables: the current account balance, fixed capital formation, exchange rate, and terms of trade, with gross domestic savings as a dependent variable. The study relied on the vector error correction (VEC) in Eviews 12, and the study found a statistically significant long-term relationship between the four explanatory variables and gross domestic savings. It also found an inverse statistically significant inverse relationship between the nominal exchange rate and gross domestic savings in Egypt, as an increase in the exchange rate by one unit (depreciation of the Egyptian pound) leads to a decrease in gross domestic savings as a percentage

of GDP by 0.5863, which indicates the importance of exchange rate stability in Egypt as a means of improving gross domestic savings. The study also found a statistically significant positive relationship between the terms of trade index and gross domestic savings, whereby the terms of trade index increased by one unit and gross domestic savings as a percentage of GDP increased by 0.0872. While the study found a statistically significant inverse relationship between the current account balance and fixed capital formation and gross domestic savings as a percentage of GDP. Based on the results reached by the study, it recommends the importance of stabilizing the nominal exchange rate in Egypt and paying attention to improving the terms of trade to increase gross domestic savings in Egypt.

Competing Interests

The author declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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