Stock Market Influence on Domestic Savings in Egypt: Structural Modelling Dynamics

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Journal of Business Research

Faculty of Commerce -Zagazig University

Volume 46 - Issue 2 April 2024

link: https://zcom.journals.ekb.eg/

Abstract:

The increasing domestic resources gap and its potential negative impacts on macroeconomic variables and economic stability in Egypt exerted significant pressure on providing necessary finance to support economic growth and achieve acceptable levels of prosperity. This raises the critical question about the role of financial markets in acting as intermediaries in aggregating domestic savings, especially the stock market. Thus, this study seeks to examine the role of the Egyptian stock exchange in mobilizing domestic savings using a structural equation model SEM and a path analysis approach through monthly data from 2015 to 2023. A system of four structural equations was constructed to investigate the role the stock market could play in mobilizing domestic savings amid the dynamics of financial markets. The study found a positive role that the stock exchange could play compared to the banking sector in mobilizing savings and the mechanism of its influence on changes in nominal and real interest rates and the inflation rate. The model incorporated the crowding-out effect that could occur in markets and the different impacts of various groups' ability to bear risks. This contributes to our understanding of financial markets and their mechanism of influence, supporting their pivotal role in financial intermediation, leading to improved opportunities for economic growth and financial stability.

Keywords: Domestic Savings, Stock Market, Economic growth, Structural Equation Model.

Jel Classification: E29, G12, O49, C32

Introduction:

Mobilizing domestic savings is pivotal in fostering economic growth and stability within developed and emerging economies. Egypt, as one of the leading MENA and emerging economies, is striving to solve its financing problems, especially considering the high rates of foreign debt and the difficulty of obtaining sufficient financing considering its low credit rating, which calls on it to consider encouraging domestic savings to fill this gap seriously. Central to this financial landscape is the stock market, acting as a proposed catalyst for the efficient allocation of domestic savings alongside the banking sector.

Despite the recognized importance of the stock market as a financial intermediary and an alternative to saving in the banking sector, a lack of research delves explicitly into its role in mobilizing domestic savings within the context of the Egyptian economy. Existing literature has extensively explored the finance-growth nexus and the impact of the stock market on economic growth, albeit with a global perspective. However, to the best of our knowledge, the empirical literature has not addressed the essential role of the stock market in mobilizing domestic savings. However, (Elmosalamy & Metawie, 2018) emphasized the weaker position of the stock market compared to other markets, such as real estate and gold. Additionally, (Mishra & Modi, 2016; Quartey & Gaddah, 2007; Zhang, Liu, & Xie, 2020) asserted that developed capital markets can mobilize domestic savings and allocate funds more efficiently, contributing to economic growth.

Furthermore, the stock market is expected to accelerate economic growth by boosting domestic savings and enhancing the quantity and quality of investment. Economists blame falling domestic savings and investments for investment weakness, especially in developing nations. Due to substantial domestic savings and investments, Southeast Asia, China, and India have recovered (Naga, 2012).

Financial markets development, especially capital markets, can enhance economic activity through different channels, including energizing the business community, encouraging capital recycling, and limiting direct and indirect international investment (AbdElgany, 2020). Given the humble domestic saving1 rate that reached just 10.85% of GDP in 2021, a warning signal has been raised since developing countries are recommended to mobilize about 20% of GDP according to the International Development Strategy. Moreover, global financial markets witnessed a move towards increased interest rates led by advanced economies to confront the post-COVID-19 pandemic and Russian-Ukrainian conflict, which led to a large-scale outflow of capital from emerging markets including Egypt, which was severely affected by these circumstances, since the domestic market witnessed a dramatic increase in the annual inflation rate reaching 21.3%, and a sharp devaluate of the Egyptian pound by about 50% since Feb. 2022 according to the central bank of Egypt. This situation emphasized the necessity of continuing reforms to confront long-term challenges and strengthen the state's role in creating a supportive climate for economic activity led by the private

[1] Compulsory and voluntary.

sector. Recent domestic and external financial imbalances in Egypt made the mobilization of domestic savings crucial to restore balance (Mansur, Walid, Ahmed, & Ahmed, 2021).

In conclusion, this study aims to offer a thorough analysis to bridge the current knowledge gap of the complex interplay between the stock market and domestic savings mobilization within the unique landscape of Egypt. This research addresses the following question: "What specific mechanism and determinants influence the mobilization of domestic savings through the Egyptian stock market, and how do these dynamics contribute to the country's economic growth?"

Delve into multifaceted analysis encompassing the financial markets' unique characteristics, investor behavior, participation patterns, market liquidity and performance impact, and the broader macroeconomic environment. Through examining these aspects, the research endeavors to provide actionable insights for policymakers, market regulators, investors, and financial institutions, facilitating informed decisions aimed at enhancing the role of the Egyptian stock market in mobilizing domestic savings for economic growth.

Literature Review:

Several pieces of literature, including theoretical and empirical, have clarified the importance of savings in achieving growth. The early Harrod-Domar model identified investment as the primary means of fostering economic growth; the basic tenet of Lewis's (1955) traditional theory was that saving more would hasten economic growth. Moreover, the neoclassical Solow

(1956) model contends that an increase in the saving rate increases the steady-state production more than the increase in investment since the induced gain in income increases saving, which increases investment. On the other hand, from the middle of the 1980s, there have been new growth theories proposed by Barro (1990), Lucas (1988), and Romer (1986, 1990) affirm the idea that long-term economic growth is driven by the accumulation of human and physical capital and that high rates of saving and investment are significant because of their robust and positive correlation with the GDP growth rate, as stated by endogenous growth theories.

Classicalists believe that saving and investing automatically tend to be equal. Keynes contends that saving is a function of income rather than the interest rate and that higher saving does not result in lower interest rates and higher investment. Neoclassical economic theory of saving focuses on individual utility as a function of consumption, where the Swedish School's (Lindberg-Lendal-Ohlin-Myrdal) proposals for creating the Keynesian balance between saving and investing through the commodity market were given. The most well-known economic psychologist George Katona discovered that willingness and ability to save are the two criteria that determine how much money is saved, and empirical studies contain the relationship between the stock market and savings has been examined in different contexts, providing valuable insights into the potential impact of the stock market on domestic savings. This supports the supply-leading hypothesis since the causality runs from financial sector development to economic variables.

There is a consensus among economists that the stock market is crucial to the growth of an economy (Adjasi & Biekpe, 2006; Zervos & Levine, 1999). Since McKinnon's pioneering study in 1973, research has stressed the crucial part that capital markets play. Understanding the relevance of savings in stock market development and their empirical relationship to economic growth is crucial. Academic literature, such as the research of (Adjasi & Yartey, 2007; Cherif & Gazdar, 2010; Naceur, Ghazouani, & Omran, 2011) highlighted the growing connections between savings and stock market development. The relationship between stock market expansion and economic expansion has received recognition in literature over time (Safdari, Mehrizi, & Elahi, 2011). As a result, development economists have long emphasized resource mobilization for national development. That has led to substantial consideration of saving and investing in economic growth (Demirgüç-Kunt & Levine, 1996).

Financial institutions exist to provide the intermediary with the job of collecting the nation's distributed funds and directing them to the stock market for investments and, ultimately, economic growth. As a result, as investors sought higher returns and businesses sought more affordable capital, the development of the financial sectors followed a trend that started with banks serving as the resources for savings and investments (Kibuthu, 2005). The financial system functions as the mechanism that permits households to deposit their savings securely (Ebele, 2016). Most people are often anticipated to have short-term liquidity demands lower than the total deposit amount. Consequently, some of these savings might be set aside for investments. That

has led to substantial consideration of saving and investing in economic growth (Demirgüç-Kunt & Levine, 1996).

Several studies have affirmed this relationship, including (Adjasi & Yartey, 2007; Effiong, Odey, & Nwafor, 2019; Sahoo & Dash, 2013) argued that a well-functioning stock market can attract domestic savings and provide finance for investment. However, domestic saving is subject to many different determinants directly and indirectly, for instance, interest rate, inflation rate, and institutional and physiological elements. These elements should be considered in investigating the relationship between the stock market and domestic savings. (Aizenman, Cheung, & Ito, 2016; Kolasa & Liberda, 2015) using the dynamic system and GMM approaches affirmed that interest rate has a negative impact on savings; this conclusion was subsequently supported by (Aizenman et al., 2016) in their investigation of 135 countries. However, these results remain under a related underlying assumption of a bank-based economy since, in market-based economies, the low-interest rate would stimulate asset markets through the inverse relationship between interest rates and asset price. Moreover, savings are influenced by the inflation rate since a high inflation rate hinders domestic efforts to gather more savings (Esmail, 2014; Kemboi & Tarus, 2012). Hence, high macroeconomic stability would encourage domestic savings. Otherwise, economic policy uncertainty EPU inhibits the incentives for investment and savings. (Batabyal & Killins, 2021) illustrated that increased uncertainty courage investors to apply a "risk-off" approach. In the same vein, currency devaluation impacts domestic savings, reducing the value of domestic savings and expected profits (Bresser-Pereira,

Araújo, & Gala, 2014; Zheng, Li, Huang, & Chen, 2022). Household participants increased significantly during the COVID-19 pandemic, which can be attributed to their pursuit of higher returns derived from positive economic growth expectations.

Investigating domestic savings requires considering the distinctive characteristics of the economy, including institutional and psychological factors influencing the economy. Highlighted the role of institutional quality in stimulating domestic savings. Earlier (Yartey, 2010) affirmed that political risk negatively influences savings and stock prices, (Sadik-Zada, 2023) affirmed the same results using the Nash equilibrium and Stackelberg equilibrium, where (Kim, Kim, & Han, 2018; Vaarmets, Liivammgi, & Talpsepp, 2017; Xu, Ma, Li, & Fu, 2022) concluded the impact of psychological factors in saving and investment especially religion which represent an important informal factor, the same conclusion has been introduced earlier in (Hwang, 2023). On the other hand, other literature, including (Adjasi & Yartey, 2007; Cherif & Gazdar, 2010; Naceur et al., 2011), supported the demand-following hypothesis, as economic growth and savings impact financial development positively. (Sahoo & Dash, 2013) also affirmed the existence of a humped shape between financial development and saving.

At the level of Egypt and MENA region (Andrianaivo & Yartey, 2009) emphasize the importance of understanding the growth of African financial markets, including the stock market, in promoting economic development; they argue that a well-functioning stock market can attract domestic savings

and channel them into productive investments. Suggesting that the Egyptian stock market has the potential to stimulate domestic savings by providing investment opportunities (Elmosalamy & Metawie, 2018) studied the predictors of investors' participation in the Egyptian stock market. They found that various factors, such as financial literacy, risk perception, and confidence in the regulator, influence individuals' investment decisions to participate in the stock market, implying that by addressing these factors and creating a favorable investment environment, the Egyptian stock market can attract more domestic savings. Furthermore, (Elewa & Shiukar, 2021) investigated the impact of market behavior on stock prices and trade volume in the Egyptian business context. Their findings suggest that market capitalization and net profit significantly impact stock prices and trade volume, which indicates that a prospering stock market can motivate individuals to save more by offering the potential for higher returns on their investments. Moreover, (Impavido, Musalem, & Tressel, 2003) affirmed the vital impact of contractual savings institutions, such as pension funds and life insurance companies, on securities markets on stock market depth and liquidity, especially in countries with more transparent information and market-based financial systems, which implies that the development of contractual savings institutions in Egypt could enhance the functioning of the stock market and attract more domestic savings. (Liu, Islam, Khan, Hossain, & Pervaiz, 2020; Nwanna & Chinwudu, 2016) examined the effect of financial deepening on economic growth, including stock market development. Their findings indicate that bank-based and stock-market financial deepening significantly and positively affect

economic growth, which suggests a similar relationship between the Egyptian stock market and domestic savings may exist.

In conclusion, the literature suggests that the stock market has the potential to stimulate domestic savings. Market performance, including net profits, risk potential, financial literacy, and regulator reliability, significantly stimulate savings. However, advanced market mechanisms and enhancing contractual savings institutions substantially attract more domestic savings. These factors could create a favorable environment for enhancing the role of stock markets in stimulating domestic savings.

Insights into Egypt's Landscape:

The stock market is a critical financial intermediary, playing a significant role in capital allocation and investment opportunities. Amid Egypt's economic path, characterized by persistent challenges in financing its requirements, the mobilization of domestic savings emerges as a crucial factor for restoring economic stability and growth. The following analysis explores the dynamics of Egypt's domestic savings and stock market to enhance our knowledge regarding market characteristics.

The domestic saving percentage of GDP has fluctuated over time, witnessing weak rates. However, about a decade of improvement has been achieved in the early twenties. Several variables, including the high poverty rate and humble per-capita income, may cause Egypt's low domestic saving rate. The country's low saving rate might also be attributed to the lack of access to financial services and high population growth[2]. Moreover, there is a significant budget

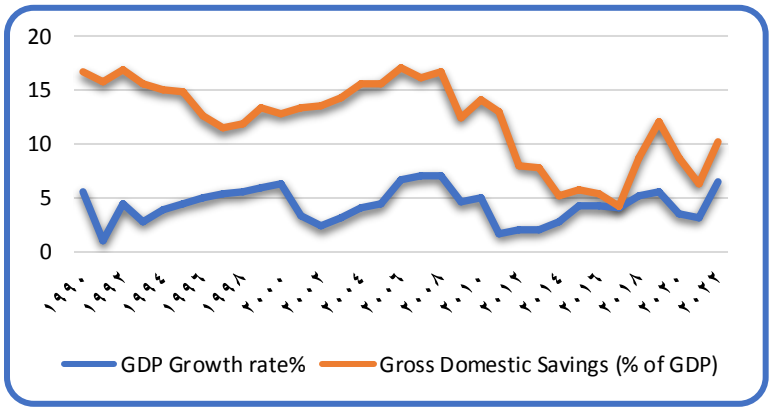
[2] Population is growing at a rate over 2% per year, which puts a strain on household budgets.

deficit, imposing more pressure to increase taxes and fees. The domestic saving rate in Egypt is relatively low compared to other countries in the region. According to the World Bank, Egypt's gross domestic saving rate was 10.2% of GDP in 2022. This is significantly lower than the average saving rate in the MENA region, which was 20.2% in 2022.

Sectoral analysis of savings shows that rural Egypt saves more than urban Egypt, which may be attributed to the higher cost of food, health, and education in cities. However, the high unemployment and age-dependency ratio rates are inversely associated with long-term savings (Abid & Afridi, 2010).

Understanding the relationship between GDP growth and savings rates is crucial. Higher savings rates can contribute to long-run economic growth. As **Figure 1** shows, there is a mix of moderate to high growth rates. The mid-twenties to 2009 represent a varied growth path. However, fluctuations arose in post-2009, showing slightly lower growth rates than the preceding years. In contrast, domestic savings percentage gradually declined over time, especially from the mid-twenties onward. Therefore, efforts should encourage individuals to save and absorb all money outside the economic cycle (Salah & Elmotaiem, 2020).

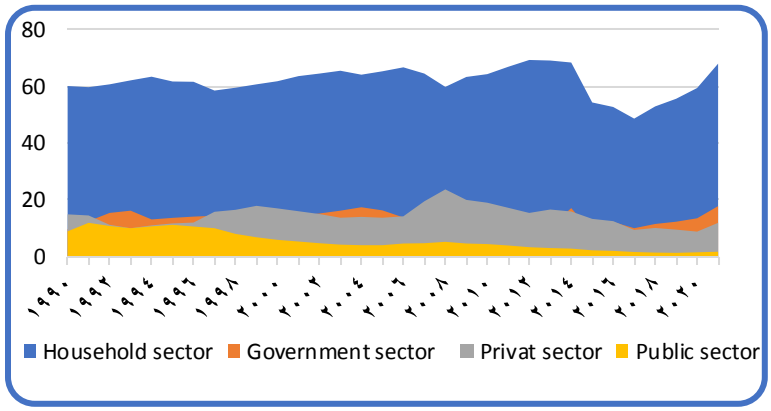
Figure 1: Gross Domestic Savings %GDP (1990-2022).



Sources: (CBE, 2023)***, Economic Review Report Different Editions.***

Given that the average gross domestic savings (as a percentage of GDP) for 1990–2010 was 22.3%, with a range of 11%–35%, the average declined by 3.6% from the prior year. The median was 20.5%, and the mean, or most often figure over time, was 16.8%. This is due to the short-term unfavorable direct impacts of the World Bank and International Monetary Fund's policies, which include higher prices, decreased subsidies, and more unemployment.

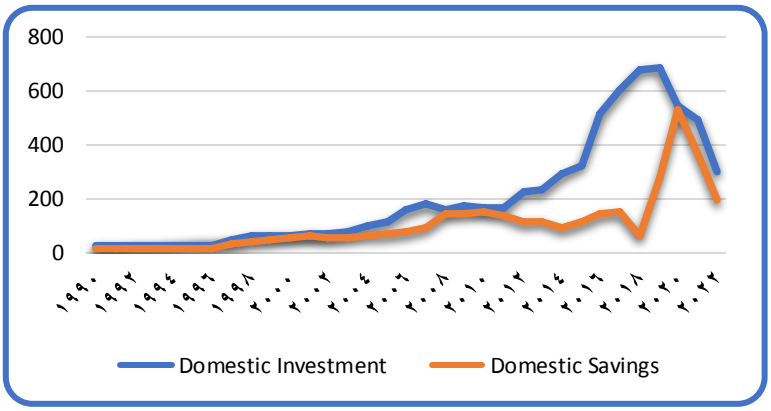
Figure 2: Composition of Domestic Savings in Egypt (1990-2020)



Sources: (CBE, 2023)***, Economic Review Report Different Editions.***

Concerning the composition of the domestic savings, **Figure 2** shows that household savings comprised about 58% - 70% of total domestic savings from 1990 to 2020. The annual participation rate is modest and variable, but 2014 saw the highest rate due to the issuing of new Suez Canal project certificates. In 2020, the domestic savings as a percentage of GDP grew again due to the high interest on banks' deposits. In most investigated years, private business savings equalled government deposits due to modest, unpredictable, and negative growth rates. The public business contribution has slowed and declined.

Figure 3: Domestic Investment and Domestic Savings (1990-2022)



Sources: (CBE, 2023)***, Economic Review Report Different Editions.***

Assessing the domestic resource gap is crucial to understand domestic savings better. This gap represents the difference between available resources and what's needed to sustain economic growth. It exerts significant pressure on economic stability by highlighting resource availability and demand imbalances. **Figure 3** addresses this gap, illustrating the difference between domestic savings and investment. Starting from 2011, the figure demonstrates a huge pressure on the economic stability due to the widening gap over time,

and gross domestic savings dropped 22% from 116.4 billion Egyptian pounds in 2013 to 89.8 billion in 2014. It reached 148.6 billion in 2017, rose to 530.8 billion in 2020, and fell to 193.5 billion in 2022, emphasizing the necessity of reviewing the sources of financial intermediaries alongside factors that affect them.

Evaluation of the effectiveness of tools for the circulation of funds should be based on a comparison of their efficiency for all parties involved in pulling savings from the people. This scenario necessitates a painstaking procedure to ascertain efficacy since a conflict of interest exists. Delving into detailed characteristics illustrates that, even with high-interest rates on banks' deposits, individuals may shift their investment towards other categories, including real estate, gold market, money, and capital markets, seeking more real return. However, individuals are motivated by their experiences and backgrounds. Thus, the domestic saving market could be divided into competing groups motivated differently by interest rates[3] and other markets' returns.

As a part of the financial institutions, the stock market represents a primary pillar in the financial system and an alternative option for investment in the banking sector. Investment in the stock market is mainly derived from the performance of the stock exchange, which stimulates the expected return on savings and interest rate on banks' deposits[4].

As a result, a commendable performance of the stock market is a fundamental prerequisite to mobilizing domestic savings. Stock exchange performance is assessed through various indicators, including total value traded and market capitalization ratios. Among these indicators used to measure the performance

[3] Banking sector deposits are mainly drived by real interest rate.

[4] It is expected to be an inverse relationship, according to economic literature.

of the Egyptian stock exchange is the EGX 100, which tracks the performance of the largest 100 companies listed on the Egyptian stock exchange. It reflects the overall value of the traded stocks, providing a comprehensive view of the market's performance as a whole.

Model and Variables Description

1.1 Structural Model Construction:

The study endeavors to investigate the role of the stock market as a pivotal financial intermediary in mobilizing domestic savings. Financial institutions are mainly divided into the banking sector and the non-banking financial institutions' NBFIs, which encompass the stock market. The stock market, albeit characterized by relatively higher risks due to speculative operations, contends with the banking sector, which bears almost negligible risks. This competition is significantly influenced by the prevailing interest rates, whether nominal or real, ultimately determining the most profitable sector for redirecting domestic savings. To comprehensively assess the stock market's capacity to mobilize domestic savings, it is essential to consider the dynamic nature of financing markets and the competitive landscape among their respective sectors. Achieving equilibrium within these financing markets necessitates understanding this dynamism and competition. Hence, in pursuit of the study's objective, a Structural Equation Model (SEM) comprising four equations will be constructed to encompass the complexity of potential financing markets; below is a description of each equation:

- **Domestic savings in banks equation:**

The starting point in building the bank savings model is the real interest rate, where the saver has sufficient economic rationality to determine the net

returns that he will receive from his bank investment (through savings). Thus, the bank savings model takes the following linear form:

$$DD_t = \alpha_0 + \alpha_1 RIR_t + \alpha_2 GDP_t + \alpha_3 EX_t + \epsilon_t \quad \textbf{(1)}$$

Where; DD_t is the dependent variables represented by the domestic savings in banks over time t, $(t = 1,2,..n)$, α_0 is the function's constant, RIR_t is the independent variable represented by the real interest rate in time t. α_2 & α_3 is the control variable coefficient, which represents potential determinants of savings in banks other than the real interest rate. Represented by nominal gross domestic product GDP_t and nominal exchange rate EX_t. Finally, ϵ_t is the error term.

It is expected that an increase in the real interest rate will lead to an increase in the volume of domestic bank savings because the saver compares the increase in his bank savings during the year to the nominal interest rate and the loss in the value of his savings due to the increase in the level of inflation. Therefore, increasing the real interest rate involves the saver achieving positive net real returns. Hence, we expect the sign of the coefficient α_1 to be positive.

Moreover, an increase in the GDP will lead to an increase in disposable income, whether for consumption or saving (investment), which consequently leads to an increase in savings. On the other hand, an increase in the exchange rate (a devaluation of the local currency) leads to a decrease in the purchasing power of citizens, which leads to an increase in the amount of money spent on consumption and a decrease in the amount of money going to savings. Therefore, it is expected that the sign of the parameter α_2 is positive, and the sign of the parameter α_3 is negative.

- **Stock market performance equation:**

Here, in contrast to the previous equation, the starting point in building a model for the general performance of the stock market is the nominal interest rate due to the nature of short-term investments in the stock market. Therefore, the model for measuring capital market performance takes the following linear form:

$$SMP_t = \beta_0 + \beta_1 NIR_t + \beta_2 GDP_t + \beta_3 INF_t + \beta_4 EX_t + \varepsilon_t \quad \textbf{(2)}$$

Where SMP_t represents the dependent variable, which is the performance level of the Egyptian stock exchange, β_0 represents the function constant, NIR_t represents the independent variable, which is the nominal interest rate, while the control variables are the size of the monetary gross domestic product GDP_t, the monthly inflation rate INF_t, and the exchange rate EX_t. Finally, ε_t represents the error term with its usual characteristics.

The anticipated consequence of increasing the nominal interest rate is detrimental to the stock market performance since the stock market involves mostly short-term speculation investments. Therefore, the investor's decision to compare investment in the banking sector and the stock market will depend on the nominal interest rate. Considering the inverse relationship between interest rate and bond's price, we expect a negative sign for the β_1 coefficient. On the other hand, the rise in the monthly inflation rate and the exchange rate will lead to a decrease in the purchasing power of citizens, which leads to an increase in the amount of money spent on consumption and a decrease in the amount of money directed to investment. Therefore, it is expected that β_2 is positive, where β_3 and β_4 are negative.

- **Stock market investment equation:**

This equation is the counterpart to equation 1. But unlike savings in banks, which depend on the real interest rate, investments in the stock market depend primarily on the stock market's performance. The impact of bank deposits on stock market investments will be utilized to demonstrate the dynamics of competition and displacement for deposits between the banking and non-banking sectors and to identify the influence of the real interest rate on stock market investments. Accordingly, the investment model in the stock market takes the following linear form:

$$DISM_t = \gamma_0 + \gamma_1 SMP_t + \gamma_2 DD_t + \gamma_3 GDP_t + \gamma_4 INF_t + \gamma_5 EX_t + \varepsilon_t \qquad \textbf{(3)}$$

Where $DISM_t$ represents the dependent variable represented by Egyptians' investments in the stock market, which will be affected by the level of stock market performance SMP_t, and the domestic savings in banks DD_t, in addition to the previous control variables. It is expected that stock market performance improvement will attract more domestic investments. This will encourage more investors to mobilize more savings towards the stock market in seeking short-term capital returns instead of investment in the banking sector. Hence, we expect the sign of the coefficient γ_1 to be positive.

More bank deposits could promote stock market investing. Due to a shortage of lending operations or low returns, the banking sector often invests in the stock market to create high capital returns that cover the nominal interest rate required to be paid to depositors, especially in economic recessions and quantitative easing periods. Hence, we also expect the sign of the coefficient γ_2 to be positive. Meanwhile, expectations for the control variables will not

differ from the previous equation. The sign of the parameter γ_3 is expected to be positive, and the two parameters γ_4 and γ_5 are expected to be negative.

- **Gross domestic savings equation:**

In order to ascertain the relative impact of each saving/investment vehicle on total domestic savings, this equation represents the ultimate stage in which different savings/investments are combined to ascertain the respective impact of each channel in modeling the entirety of domestic savings. Thus, the model for domestic savings adopts the subsequent linear format:

$$GDS_t = \lambda_0 + \lambda_1 DD_t + \lambda_2 DISM_t + \lambda_3 GDP_t + \lambda_4 INF_t + \lambda_5 EX_t + \varepsilon_t \qquad (4)$$

Where GDS_t represents the dependent variable, which is gross domestic savings, which will be determined based on the level of domestic bank savings DD_t and domestic investments in the money market $DISM_t$, in addition to the previous control variables. Logically, the sum of the size of the various domestic savings pools will ultimately constitute the total domestic savings of the country as a whole, and thus, this equation can be considered almost identical (due to the presence of other savings pools that were not included in the analysis). Hence, we expect the signs of the coefficients λ_1 and λ_2 to be positive. In addition, the control variables' expectations will not differ from the previous equation. The sign of the parameter λ_3 is expected to be positive, and the two parameters λ_4 and λ_5 are expected to be negative.

- **he final structural equation model:**

In brief, a four-equation system of structural equations is constructed to show how the stock market can mobilize domestic savings under the dynamics of financial markets. The model is confirmed to be described by the Auxiliary

Regression test, which showed that all external variables follow a linear form in their relationship with internal variables. The logarithmic function form was also adopted for all equations to obtain long-term elasticities of the variables and reduce dispersion in the data. Based on the comparison criteria, it is also considered the best form compared to linear or semi-logarithmic forms. Thus, the final structural model of the study becomes as follows:

$$\ln DD_t = \alpha_0 + \alpha_1 \ln RIR_t + \alpha_2 \ln GDP_t + \alpha_3 \ln EX_t + \epsilon_t \quad \textbf{(1)}$$

$$\ln SMP_t = \beta_0 + \beta_1 \ln NIR_t + \beta_2 \ln GDP_t + \beta_3 \ln INF_t + \beta_4 \ln EX_t + \varepsilon_t \quad \textbf{(2)}$$

$$\ln DISM_t = \gamma_0 + \gamma_1 \ln SMP_t + \gamma_2 \ln DD_t + \gamma_3 \ln GDP_t + \gamma_4 \ln INF_t + \gamma_5 \ln EX_t + \varepsilon_t \quad \textbf{(3)}$$

$$\ln GDS_t = \lambda_0 + \lambda_1 \ln DD_t + \lambda_2 \ln DISM_t + \lambda_3 \ln GDP_t + \lambda_4 \ln INF_t + \lambda_5 \ln EX_t + \varepsilon_t \quad \textbf{(4)}$$

The variables of the structural model are divided between internal variables (variables that are strongly determined within the model) and external variables (variables that are strongly determined outside the model). The internal variables represent domestic savings in banks, stock market performance, domestic investments in the stock market, and total domestic savings. Meanwhile, the exogenous variables represent the rest of the model variables, function constant, and dummy variables.

1.2 Data:

We utilized monthly time series data for Egypt from 2015 to 2023, totaling 105 observations[5], to power the study model, which was selected based on data availability. The following variables were also utilized:

Internal variables: the variables of total bank deposits in local currency (as a percentage of GDP), the Egyptians' total trading value on the stock market (as a percentage of GDP), and total domestic savings (as a percentage of GDP) were utilized to express the various savings vessels. The EGX100 index was also used at closing to express the Egyptian stock exchange's general performance level. It is a price index in points to measure the performance of the 100 largest companies in the stock market.

External variables: indicators of the nominal interest rate on deposits (from 6 months to one year), the real interest rate (as the result of subtracting the nominal interest rate on deposits and the annual inflation rate), the gross domestic product at current prices of the local currency, and the monthly inflation rate (%), and finally the official nominal exchange rate.

Finally, **Table A- 1** in the appendix briefly describes the variables utilized in the analysis, their codes, and data sources. In contrast, **Table 1** and

Table 2 show the statistical description and the correlation matrix between the variables, respectively.

[5] The study sample used has reasonable statistical power with a medium expected effect size, a statistical power level of 80%, a significance level of 5%, and a number of 5 variables in the equation.

Table 1 presents a brief statistical summary of the study variables, supported by

Figure A- 1 in the appendix, which reflects the time trend of the variables. Considering the internal variables, we find that the nominal interest growth rate on deposits in Egypt ranges between (7.5% - 13.5%), with a general average of 9.3% per month, but due to the high inflation rates, Egypt achieves a negative real interest rate during the study period, except for the period (2019M6 – 2022M1). The general performance of the Egyptian stock exchange (EGX100) also took a general upward trend during the period, as it rose from 1145 points at the beginning of the study period and ended at the end of the period at 4632 points.

Table 1: Descriptive Summary Statistics

	Unit	*Obs.*	*Mean*	*Median*	*Std. Dev.*	*Min*	*Max*	*Normality test*
Dependent Variable:								
Gross domestic saving	*(% of GDP)*	102	0.336	0.057	1.05	-0.013	5.7	[1668.4][a]
Independent Variables:								
Real interest rate	(%)	97	-2.918	-1.484	7.06	-20.65	7.954	[18.933][a]
Nominal interest rate	(%)	104	10.02	9.3	1.92	7.5	13.5	[9.7760][a]
Mediator variables:								
Total domestic deposits	*(% of GDP)*	100	1754.6	1061.9	1727	97.63	9948.4	[188.66][a]
SM performance	*(in point)*	100	2023.2	1738.6	1040	715.6	4631.8	[8.3199][b]
Total investments of Egyptians in SM	*(% of GDP)*	100	23.14	13.34	25.9	2.294	125.3	[102.75][a]
Control Variables:								
GDP	*(current LCU)*	100						[11.029][a]
Monthly inflation rate	*(monthly %)*	105	1.207	1.001	1.33	-3.39	6.53	[42.961][a]
Official Exchange Rate	*(LCU per US$)*	100	15.75	16.07	5.08	7.54	30.96	[10.422][a]

***Note*:** - a, b, and c indicate significance at 1%, 5%, and 10%, respectively.

Table 2: Correlation Matrix between Study Variables

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ln Gross domestic saving	**(1)**	1								
ln Real interest rate	**(2)**	0.176[c]	1							
ln Nominal interest rate	**(3)**	-0.357[a]	-0.350[a]	1						
ln Total domestic deposits	**(4)**	0.272[a]	0.491[a]	-0.765[a]	1					
SM performance	**(5)**	0.356[a]	0.099	-0.153	0.156	1				
ln Total investments of Egy. in SM	**(6)**	0.317[a]	0.413[a]	-0.843[a]	0.841[a]	0.183[c]	1			
ln GDP	**(7)**	-0.102	-0.385[a]	0.719[a]	-0.779[a]	0.323[a]	-0.785[a]	1		
ln Monthly inflation rate	**(8)**	-0.093	-0.356[a]	0.016	-0.157	0.037	-0.120	0.163	1	
ln Exchange Rate	**(9)**	0.074	-0.248[b]	0.349[a]	-0.242[b]	0.759[a]	-0.263[a]	0.704[a]	0.147	1

***Note*:** - a, b, and c indicate significance at 1%, 5%, and 10%, respectively.

Concerning the different savings pools, the total bank savings as a percentage of the monthly output accounted for the largest share compared to stock market investments, as the average percentage of bank savings reached 1062% of the monthly output compared to 13.3% for stock market investments. Meanwhile, the median gross domestic saving did not exceed 0.06% of monthly output. Finally, the monthly inflation rate ranged between (3.4% and 6.5%), with a general average of 1%. The exchange rate of the Egyptian pound was also subjected to further devaluation, which led to raising it from 7.54 pounds per dollar at the beginning of the period to 30.96 pounds per dollar at the end of the period.

Table 2 shows Pearson's zero-order correlation analysis between the study variables. Bivariate correlations are utilized for this purpose, which allows us

to verify the hypothesized relationships and confirm the presence of the multicollinearity issue and its severity.

There is a large inverse correlation between the nominal interest rate and both total savings in banks (-35%) and total domestic investments in the stock market (-84.3%), which are statistically significant at the 1% level. Likewise, with stock market performance (-15.3%), it is a weak correlation and not statistically significant. The situation completely reverses with the real interest rate, positively correlated with total bank savings (49.1%) and stock market investments (41.3%) at the 1% level. The same goes for stock market performance (0.99%) but is also not statistically significant. The stock market performance is also positively correlated at the 10% level with stock market investments (18.3%). Finally, total domestic savings is positively associated with domestic savings/investment vessels, whether banks (27.2%) or the stock market (31.7%), at the 1% level. Therefore, the correlation matrix supports all the study assumptions and the expected signals between the variables. Finally, according to Anderson (1990), these coefficients may indicate the possibility that the structural model is not subject to the problem of collinearity.

Methodology:

The study will utilize "path analysis" to estimate the study's structural model as a key part of the multivariate statistical analysis, which is unique to other models, such as multiple linear regression, in the possibility of testing mediator variables. Thus, it enables us better to understand the complex relationships and connections between economic variables. This is done by knowing the overall effects of the independent variables on the dependent and determining the direct or indirect effects through the mediating variables in the

relationship. Here, the paths will be made using one of the most famous methods for estimating structural equation models, which is the "Maximum Likelihood" method. The model parameters are estimated by maximizing the likelihood function, such that the observed data are most likely under the assumed statistical model. Maximum likelihood logic is, therefore, both intuitive and flexible and, as such, has become the dominant method of statistical inference.

The study will utilize (Baron & Kenny, 1986) three-step test: mediation occurs when i. the independent variable significantly affects the mediator, ii. and on the dependent variable in the absence of the mediator, iii. The mediator also has a significant effect on the dependent variable, iv. finally, the effect of the independent variable on the dependent variable decreases when the mediator is added to the model. Therefore, there are two types of mediation: It is "complete mediation" and occurs if the independent variable exerts its total effect on the dependent variable through the mediator. "Partial mediation" occurs if the independent variable exerts some of its influence on the dependent variable directly through the mediator and others. Here, the mediation is judged informally. Therefore, statistics-based methods will also be relied upon to formally assess mediation through the Sobel test, which takes into account the unstandardized regression coefficients and the standard error of the association between the independent variable and the mediator on the one hand and between the mediator and the dependent variable on the other hand.

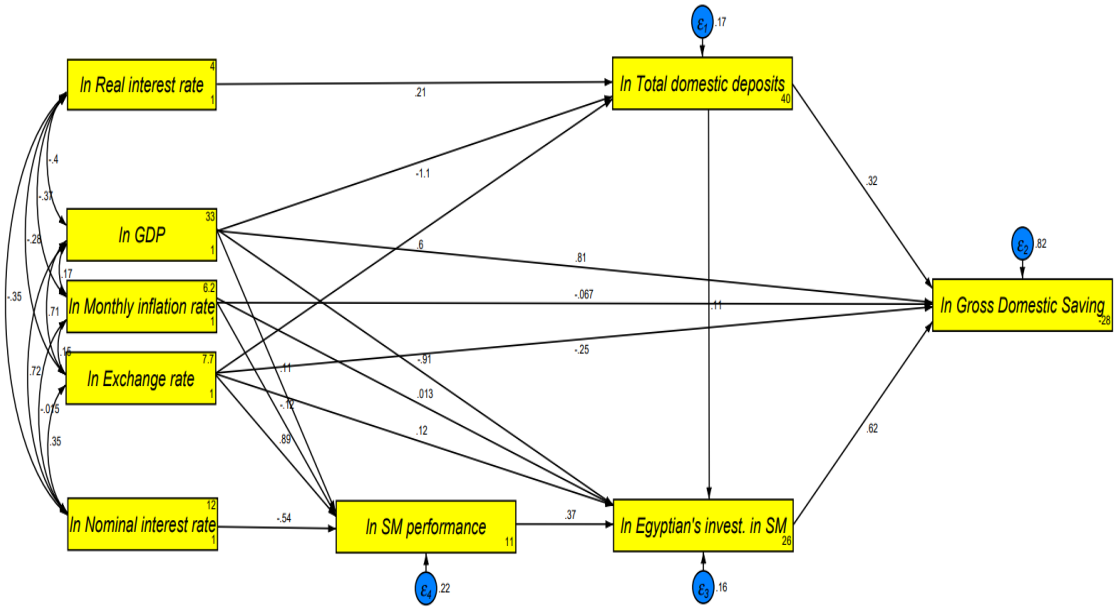
It should be noted that estimating the model using the maximum likelihood (ML) method is based on the assumption that the mean and variance of all

variables used are constant over time (constant at level I). Therefore, when included in the estimation, variables that are not stationary (those that contain a unit root) will give a spurious regression. Since then, the unit root test has become a prerequisite for standard analysis of different time series (Damodar, 2004). Therefore, the degree of stationarity of the variables was confirmed, taking the first difference of the non-static variables to transform them into stationary variables at the level. This is due to the possibility of estimating the structural model of the study.

Estimation and Results:

Figure 4 reflects the study's structural model estimated by the maximum likelihood (ML) method, and it is clear from the goodness-of-fit statistics at the bottom of the figure that the model is not appropriate (does not match the data) because most of the goodness-of-fit indicators did not fall in the appropriate range. The statistical value (χ^2) for the original model versus the saturated model and the baseline versus the saturated model was statistically significant at the 1% level, which indicates that the model is weak. The root mean square error (RMSEA) indicator, which is considered one of the most important indicators of a good fit, reached a value of (1.300), that is, greater than the standard value (0.5), which indicates that the model is weak, and this is confirmed by the (pclose) statistic, which represents the probability that The value of RESEA is less than 0.05, meaning it represents the probability that the sample observations are close to the population observations. It was statistically significant; therefore, we can accept that the model is weak at the 1% level.

Figure 4: Stock Exchange and Mobilizing Domestic Savings: SEM Result.



Path Analysis for Hypothesis

Unstandardized Estimates

Chi-square (model vs. saturated) = 1514.173, *df*= 9, Prob.= 0.000, χ^2/df= 58.24

Chi-square (baseline vs. saturated) = 15320.937, *df*= 26, Prob.= 0.000

CFI= 0.902, ***TLI***= 0.716, ***SRMR***= 0.104, ***CD***= 0.982, ***RMSEA***= 1.300, ***PCLOSE***= 0.000

AIC= 14801.057, ***BIC***= 14918.290

The value of the Tucker-Lewis index, or the so-called non-normal fit index (TLI), was less than the conventional value (0.8), and the standard root mean square residual (SRMR) index was greater than the standard value (0.09), which also indicates that the model is week. On the other hand, the comparative fit index (CFI) value was greater than the standard value, indicating that the model is appropriate. Therefore, in general, it can be concluded that the model is weak and not suitable for the actual data.

To overcome this problem, the study model will be estimated using the Robust Standard Error command, which eliminates measurement problems and makes the model match the data by adjusting the standard deviation. Therefore, we can continue the analysis to obtain the path coefficients, as shown in **Table 3**.

The results were presented as a structural model of the study using standard path coefficients, which standardize units of measurement, and thus, their coefficients reflect the relative importance of the variables, in addition to the size of the effect. The first column also displays the results of the main structural model of the study, which is consistent with **Figure 4**.

Here, it is clear from the first equation (concerning domestic bank savings) that there is a positive effect on total bank savings at 1% of the real interest rate. According to the standard regression coefficient, increasing the logarithm of the real interest rate by one standard deviation leads to an increase in the logarithm of total bank savings (as a percentage of output) by 0.2097 standard deviation on average. This confirms the high level of economic maturity among Egyptian savers, as they have sufficient awareness to compare between calculating the expected increase in their annual bank investment through deposits (represented by the nominal interest rate) and the reduction that will occur in the real value of their money in the future as a result of annual inflation. Therefore, if the expected level of inflation exceeds the expected nominal bank return, the saver will be aware enough to decide not to invest in bank deposits and move towards other investment methods, which may include investing in the stock market.

Moving to the second equation (concerning the level of performance of the Egyptian stock exchange), we find, in contrast, a negative effect of the

nominal interest rate on the level of performance of the Egyptian stock Exchange through the (EGX100) scale. Increasing the logarithm of the nominal interest rate by one standard deviation will decrease the logarithm of the overall stock market performance level by 0.5419 standard deviations on average. This is consistent with the nature of short-term investment operations (quick or instantaneous) in the stock market as a result of speculative operations, which makes the investor compare at the present moment between the expected returns from speculative operations in stocks in the stock market (with the high level of risk it entails) and the nominal bank return risk. Therefore, the high level of nominal interest compared to the expected return from stock speculation at present makes the investor in the stock market think about transferring his investments to other savings/investment vehicles. Especially since increasing the nominal interest rate leads to a decrease in bond selling prices, according to economic theory.

In the third equation (concerning the level of Egyptians' total investments in the stock market), it is clear that the level of performance of the Egyptian stock exchange positively affects the volume of Egyptians' investments in it. An increase of one standard deviation in the logarithm of the stock market performance level will lead to an increase in the logarithm of the total investments of Egyptians in the stock market (as a percentage of output) by 0.3671 standard deviations on average. This is normal because the rise in the level of (EGX100) means the success of companies listed on the stock exchange, which includes an increase in the level of the market value of these companies and, therefore, their share prices, which encourages an increased attraction of more investors to enter the financial market to benefit from the

rise in share prices, especially since profits The capital that they will obtain from speculation operations on the stock market will be within very short time, compared to the bank return with an annual return.

We also notice from the third equation that bank savings positively affect the level of investments in the stock market. Increasing the logarithm of total bank savings by one standard deviation leads to an average increase in total Egyptian investments in the stock market (as a percentage of output) by 0.1082 standard deviation on average. This means that the banking sector itself is moving towards investing in the stock market to exploit the huge volume of bank savings it has, especially in periods of economic recession, in which the banking sector suffers from the low level of foreign investments required to be financed through Egyptian lending, or from low returns (interest on lending). This is during periods of "quantitative easing" because the central banks grant the economy more money, which leads to an increase in inflation and a decrease in the real interest rate, which prompts the banking sector to increase nominal interest rates. As a result, the banking sector resorts to the stock market to achieve high capital gains that enable it to relatively cover the nominal interest rates required to be paid to depositors.

Here, two things become apparent from the results of the third equation. The first is that the size of the effect of the level of performance of the stock market in attracting investments to it is equivalent to 339% of the size of the effect of the size of bank deposits on investments in the stock market, which confirms the importance of the success of companies in the first place for investors to be attracted to them. Secondly, the volume of investments in the stock market is indirectly affected by the real and nominal interest rates. The

results of **Table 4** demonstrate this. From the first column, it is clear that there is a positive indirect effect of the real interest rate on investments in the stock market through bank deposits, equivalent to 0.3382. In contrast, we find a negative indirect effect of the nominal interest rate on investments in the stock market, equivalent to 1.0983. This means that the negative effect of the nominal interest rate on stock market investments is much greater than the positive effect of the real interest rate.

Table 3: Stock Exchange and Mobilizing Domestic Savings: SEM Result.

Endogenous variables: *Domestic deposits, SM Performance, Egyptian investments in the SM, Gross domestic saving.*

Exogenous variables: *Real interest rate, Nominal interest rate, GDP, Monthly inflation rate, Exchange rate.*

Method: *Maximum likelihood (ml) with Observed information matrix (OIM).*

	SEM (1)	***SEM (2)***	***SEM (3)***	***SEM (4)***
Domestic deposits	(Total)	(Household)	(Private sector)	(Public sector)
Egyptian investments in the stock market	(Total)	(*Individuals*)	(*Institutions*)	(*Institutions*)
▪ ***Domestic deposits equation***:				
ln Real interest rate → ln Domestic deposits	**0.2097** **[22.33]*** **	**0.1958** **[30.41]*** **	**0.0673** **[7.280]*** **	**0.0655** **[5.550]*** **
ln GDP → ln Domestic deposits	-1.1211 [-86.21]***	-1.2293 [-89.81]***	-1.1157 [-108.8]***	-0.9952 [-79.94]***
ln Exchange rate → ln Domestic deposits	0.6026 [40.94]***	0.7199 [48.81]***	0.4053 [31.18]***	0.2998 [19.56]***
Constant	40.179 [77.18]***	43.249 [75.17]***	40.049 [78.97]***	34.630 [74.69]***
▪ ***Stock Market Performance equation***:				
ln Nominal interest rate → ln SM Performance	**-0.5419** **[-33.64]*** **	**-0.5419** **[-33.64]*** **	**-0.5419** **[-33.64]*** **	**-0.5419** **[-33.64]*** **
ln GDP → ln SM Performance	0.1079 [5.770]***	0.1079 [5.770]***	0.1079 [5.770]***	0.1079 [5.770]***
ln Monthly inflation rate → ln SM Performance	-0.1168 [-12.23]***	-0.1168 [-12.23]***	-0.1168 [-12.23]***	-0.1168 [-12.23]***

ln Exchange rate → ln SM Performance	0.8878 [65.59]***	0.8878 [65.59]***	0.8878 [65.59]***	0.8878 [65.59]***
Constant	11.119 [23.67]***	11.119 [23.67]***	11.119 [23.67]***	11.119 [23.67]***
▪ ***Egyptian investments in the stock market equation***:				
ln SM Performance → ln Egyptian investments in the SM	**0.3671** **[24.71]***	**0.6059** **[31.80]***	**0.2488** **[10.19]***	**0.2934** **[11.90]***
ln Domestic deposits → ln Egyptian investments in the SM	**0.1082** **[6.200]***	**-1.0347** **[-32.05]***	**0.3012** **[9.180]***	**0.0345** **[1.320]**
ln GDP → ln Egyptian investments in the SM	-0.9121 [-37.18]***	-2.1306 [-55.87]***	-0.4426 [-10.19]***	-0.7325 [-21.69]***
ln Monthly inflation rate → ln Egyptian investments in the SM	0.0127 [1.560]	-0.0351 [-4.330]***	0.0125 [0.870]	0.0370 [2.530]**
ln Exchange rate → ln Egyptian investments in the SM	0.1221 [5.830]***	0.5456 [24.30]***	0.0430 [1.220]	0.1046 [3.080]***
Constant	25.915 [28.93]***	69.216 [52.07]***	10.368 [6.700]***	20.504 [17.47]***

Notes: - ***, **, and * are significant at the 1%, 5%, and 10% levels, respectively.

Continuous - Table (3): Stock Exchange and Mobilizing Domestic Savings: SEM Result.

	SEM (1)	***SEM (2)***	***SEM (3)***	***SEM (4)***
Domestic deposits	(Total)	(Household)	(Private sector)	(Public sector)
Egyptian investments in the stock market	(Total)	(*Individuals*)	(*Institutions*)	(*Institutions*)
▪ ***Gross domestic saving equation***:				
ln Domestic deposits → ln Gross domestic saving	**0.3155** **[8.090]***	**1.3201** **[24.83]***	**0.2350** **[5.380]***	**0.1130** **[3.320]***
ln Egyptian investments in the SM → ln Gross domestic saving	**0.6170** **[16.52]***	**0.6762** **[19.49]***	**0.1866** **[7.500]***	**0.2128** **[8.700]***
ln GDP → ln Gross domestic saving	0.8082 [16.52]***	2.1036 [23.80]***	0.1334 [2.330]**	0.0014 [0.030]
ln Monthly inflation rate → ln Gross domestic saving	-0.0666 [-3.660]***	-0.0161 [-0.920]	-0.1124 [-6.000]***	-0.1020 [-5.410]***
ln Exchange rate → ln Gross domestic saving	-0.2475 [-6.280]***	-0.9445 [-18.44]***	0.1232 [3.800]***	0.1734 [5.790]***

Constant	-28.369 [-13.12]***	-74.902 [-26.09]***	-5.9188 [-3.010]***	-0.9898 [-0.630]
	Equation goodness of fit statistics			
R-squared				
Domestic deposits equation	82.5%	92.9%	81.9%	70.4%
SM Performance equation	78.5%	78.5%	78.5%	78.5%
Egyptian investments in the SM equation	83.5%	83.9%	47.4%	46.3%
Gross domestic saving equation	17.6%	24.04%	10.2%	9.4%
Overall	**98.2%**	**99.6%**	**96.4%**	**94.9%**
Wald tests for equations (χ^2 *stat.*)				
Domestic deposits equation	(12264.3)***	(3415.9)***	(11766.1)***	(6195.2)***
SM Performance equation	(9516.7)***	(9516.7)***	(9516.7)***	(9516.7)***
Egyptian investments in the SM equation	(13310.2)***	(11223.3)***	(2351.2)***	(2246.6)***
Gross domestic saving equation	(593.87)***	(1027.8)***	(297.40)***	(269.87)***
Stability Index	0	0	0	0

Notes: - ***, **, and * are significant at the 1%, 5%, and 10% levels, respectively.

Table 4: Indirect Effects in the SEM

Indirect Paths	***SEM (1)***	***SEM (2)***	***SEM (3)***	***SEM (4)***
ln Real interest rate → ln Egyptian investments in the SM	0.3382 [5.730]***	-0.2607 [-22.60]***	0.0427 [5.700]***	0.0048 [1.280]
ln Real interest rate → ln Gross domestic saving	0.0442 [8.690]***	0.0655 [9.190]***	0.0109 [4.930]***	0.0044 [2.950]***
ln Nominal interest rate → Egyptian investments in the SM	-1.0983 [-21.20]***	-1.5651 [-24.70]***	-1.0546 [-9.840]***	-1.2481 [-11.40]***
ln SM Performance → ln Gross domestic saving	0.1658 [13.40]***	0.2931 [13.40]***	0.0343 [6.000]***	0.0460 [6.960]***
ln Domestic deposits → ln Gross domestic saving	0.0293 [5.540]***	0.0293 [5.540]***	0.0251 [5.760]***	0.0032 [1.930]

Note: *- ***, **, and * indicate significance at 1%, 5%, and 10%, respectively.*

The fourth and final equation (concerning total domestic savings), which represents the final crucible into which all the various domestic savings

vessels are poured, we find a positive effect of bank savings and investments in the stock market on gross domestic saving and the effect of investment in the stock market on total domestic saving is equivalent to twice the size of the effect of savings in Banks. An increase of one standard deviation in the logarithm of domestic investments in the stock market (as a proportion of output) will lead, on average, to an increase in the logarithm of total domestic savings (as a proportion of output) by 0.6170 standard deviations, compared to 0.3155 for an increase in the logarithm of domestic bank savings (as a proportion of output).

Therefore, this also implies that total domestic savings is indirectly affected by the real interest rate, the level of stock market performance, and the volume of bank savings. According to **Table 4**, we find a positive indirect effect of the real interest rate on total domestic savings through the channel of the volume of domestic savings equal to 0.0442. Also, the volume of domestic savings and the level of stock market performance will indirectly affect total domestic savings through the channel of the volume of investments in the stock market, equal to 0.0293 and 0.1658, respectively.

Considering the control variables, we find a positive effect of the gross domestic product on the level of stock market performance and total domestic savings, compared to a negative effect on savings/investment vessels, whether in banks or on the stock exchange. The monthly inflation rate negatively affects the level of stock market performance and total domestic savings and positively affects the volume of investments in the stock market. Finally, we find a positive effect of the exchange rate on the volume of bank savings, the

level of stock market performance, and stock market investments, as opposed to a negative effect on total domestic savings.

Finally, we find that the independent variables proposed in the model description explain 83.5% of the changes that occur in the volume of investments in the stock market, 82.5% of the changes that occur in the volume of bank savings, 78.5% of the level of stock market performance, and finally 17.6% of total domestic savings. The rest of the ratios are due to random error, which may be due to many other economic factors and variables that were not controlled in the structural model. Therefore, based on the coefficient of determination of the previous equations, it is clear that the coefficient of determination for the structural model as a whole is equivalent to 98.2%, which is a very high rate of determination and thus also reflects an excellent level of fit and good explanatory ability.

It is also clear that the value of the (chi2) test was statistically significant at the 1% level for the four equations contained in the structural study model. This indicates the rejection of the null hypothesis that the coefficients of paths other than the fixed part are zero and, thus, the acceptance of the alternative hypothesis that all coefficients of the paths of the model are not equal to zero. That is, there is statistical significance for the study model as a whole at the 1% level. Finally, the stability test in the table indicates that the model fulfills the condition of stability as a whole, as the value of the stability index was equal to zero.

Therefore, the conclusion is that the real interest rate encourages an increase in the volume of bank savings, part of which will subsequently go to

investment in the stock market through the banking sector as institutions, and this means that the improvement of the banking sector will consequently revive the money market. The Egyptian stock exchange's performance level will greatly encourage attracting more investments to the stock market (provided that the nominal interest rate is lowered, which negatively affects the level of stock market performance). The role of the stock market's performance in attracting investments is much greater than that of the banking sector in supporting the financial market. In the end, bank savings and investments in the stock market pour into the crucible of total domestic savings. This means that the performance of the Egyptian stock exchange (linked to the decline in the nominal interest rate) in the first place and the real interest rate in the second place will largely determine the ability of the money market to mobilize domestic savings.

Therefore, the structural model explains the dynamism of financial markets in Egypt, how the Egyptian stock exchange can work to mobilize domestic savings considering this dynamic environment, and what the determinants are affecting this. To further study this dynamic nature of financing markets, the structural study model will be re-estimated, but at the level of savings pools, whether for individuals or institutions, as follows:

- The second structural model uses the volume of bank savings in the household sector and the volume of investments of individual Egyptians in the stock market.
- The third structural model uses the volume of bank savings of private sector institutions and the volume of investments of Egyptian institutions in the stock market.

- Finally, the fourth structural model uses the volume of bank savings of public sector institutions and the volume of investments of Egyptian institutions in the stock exchange.

Here, the results of all paths in the three structural models were completely consistent with the primary structural model of the study regarding the total savings/investment pools, except for one direction, which is the effect of the size of bank savings on the size of investments in the stock market. It was negative in the second structural model and positive in the third structural model, while there was no effect in the fourth structural model.

Therefore, these results complete the whole picture of the dynamics of financial markets. Increasing the real interest rate will increase the volume of bank savings, whether for the family sector or public and private business sector institutions. Here, the size of the family sector's bank savings will have a significantly negative impact on the size of investments in the stock market by an amount of 1.0347 as a result of their preference for the real risk-free return that they will receive from the banking sector, which confirms the idea of crowding out here. The bank savings of the private sector will support the volume of investments in the stock market by 0.3012 as a result of their ability to bear the risks related to speculative operations on the stock market, and thus, they can invest in the stock market through investment funds managed by the banking sector. Meanwhile, public sector bank savings are not included in investment in the stock market.

Conclusion:

Current circumstances severely affecting the Egyptian economy necessitate delving into multifaceted analysis encompassing the financial markets' unique characteristics, especially capital markets, which can enhance economic activity through different channels, including domestic savings. The central research query was the impact of the Egyptian stock market on domestic savings.

The study utilized path analysis to better understand the complex relationship and connections between model variables through structural modelling to identify direct and indirect effects through intermediate variables in the relationship. With a very high determination coefficient, the study concluded that the stock market's performance in attracting investments is much more significant than that of the banking sector in supporting the financial market. In the end, bank savings and investments in the stock market pour into the crucible of total domestic savings. This means that the performance of the Egyptian stock exchange (linked to the decline in the nominal interest rate) in the first place and the real interest rate in the second place will largely determine the ability of the money market to mobilize domestic savings.

Increasing the real interest rate will increase the volume of bank savings, whether for the family sector or public and private business sector institutions. Here, the size of the family sector's bank savings will have a significantly negative impact on the size of investments in the stock market by an amount of 1.0347 as a result of their preference for the real risk-free return that they will receive from the banking sector, which confirms the idea of crowding out here. The bank savings of the private sector will support the volume of investments in the stock market by 0.3012 as a result of their ability to bear

the risks related to speculative operations on the stock market, and thus, they can invest in the stock market through investment funds managed by the banking sector. Meanwhile, public sector bank savings are not included in investment in the stock market.

Policymakers can use insights from the study to consider adjusting real interest rates strategically and apply vigorous efforts to reduce the nominal interest rate. Creating incentives for both individual and institutional investors will stimulate the mobilization of domestic savings and minimize the domestic resource gap. However, the model operates on certain assumptions about investor behavior and market dynamics, where developing these assumptions could enhance research. Hence, integrating qualitative research methods in future research could provide a deeper understanding of investor attitudes and risk perceptions that influence savings allocation.

References

AbdElgany, M. F. H. (2020). The Role of the Stock Market in Activating Investment and Increasing Economic Growth in Egypt. *Scientific Journal of Economics and Trade*(Reference in Arabic) .

Abid, S., & Afridi, G. S. (2010). Assessing the Household Saving Pattern of Urban and Rural Households in District Muzaffarabad. *Pakistan Journal of Life and Social Sciences, 2*(8), 137-141 .

Adjasi, C., & Biekpe, N. B. (2006). Stock Market Development and Economic Growth: The Case of Selected African Countries. *African Development Review, 18*(1), 144-161. doi: 10.1111/j.1467-8268.2006.00136.x

Adjasi, C., & Yartey, C. A. (2007). Stock Market Development in Sub-Saharan Africa: Critical Issues and Challenges. *IMF Working Papers, 07*(209), 1-1. doi: 10.5089/9781451867732.001

Aizenman, J., Cheung, Y.-W., & Ito, H. (2016). The Interest Rate Effect on Private Saving. *NBER Working Paper Series* .

Andrianaivo, M., & Yartey, C. A. (2009). Understanding the Growth of African Financial Markets. *African Development Review*, 41-41 .

Baron ،R. M., & Kenny, D. A. (1986). The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. doi: 10.1037/0022-3514.516.1173.

Batabyal, S., & Killins, R. (2021). Economic Policy Uncertainty and Stock Market Returns: Evidence from Canada. *The Journal of Economic Asymmetries, 24*, e00215-e00215. doi: 10.1016/j.jeca.2021.e00215

Bresser-Pereira, L. C., Araújo, E., & Gala, P .(2014) .An Empirical Study of the Substitution of Foreign for Domestic Savings in Brazil. *EconomiA, 15*(1), 54-67. doi: 10.1016/j.econ.2014.04.001

Cherif, M., & Gazdar, K. (2010). Institutional and Macroeconomic Determinants of Stock Market Development in Mena Region: New Results from a Panel Data Analysis. *International Journal of Banking and Finance, 7*(1), 139-159. doi: 10.32890/ijbf2010.7.1.8403

Damodar, N. G. (2004). *Basic Econometrics* (4th ed.): Tata McGraw Hill.

Demirgüç-Kunt, A., & Levine, R .(1996) .Stock Markets, Corporate Finance, and Economic Growth: An Overview. *World Bank Economic Review, 10*(2), 223-239. doi: 10.1093/wber/10.2.223

Ebele, N. S. (2016). Appraisal of the Effect of Savings on Stock Market Development in Nigeria. *Journal of Economics and Sustainable Development., 7*(2), 174-182 .

Effiong, C. E., Odey, F. I., & Nwafor, J. U. (2019). Globalization, Foreign Direct Investment and Industrial Sector Performance Nexus in Nigeria. *International Journal of Social Sciences and Management Research, 5*(2), 58-70 .

Elewa, M., & Shiukar, N. (2021). Firm Performance and Market Behavior During First Wave of Covid-19 in Egypt: Panel Data Analysis. *Asian Journal of Finance & Accounting, 13*(2), 1-1. doi: 10.5296/ajfa.v13i2.18846

Elmosalamy, D., & Metawie, M. (2018). Predictors of Investors' Participation in the Egyptian Stock Market: Application of Theory of Planned Behavior. *Journal of Business and Management Sciences, 6*(3), 118-125. doi: 10.12691/jbms-6-3-9

Esmail, H. A. H. (2014). Macroeconomic Determinants of Savings in Egypt Statistical Model. *International Journal of Business and Economic Development, 2*(2), 26-33 .

Hwang, I. D. (2023). Behavioral Aspects of Household Portfolio Choice: Effects of Loss Aversion on Life Insurance Uptake and Savings .*International Review of Economics & Finance*. doi: 10.1016/j.iref.2023.07.027

Impavido, G., Musalem, A. R., & Tressel, T. (2003). The Impact of Contractual Savings Institutions on Securities Markets. *Research in International Business and Finance*. doi: 102948-9450-1813/1596.

Kemboi, J. K., & Tarus, D. K. (2012). Macroeconomic Determinants of Stock Market Development in Emerging Markets: Evidence from Kenya. *Research Journal of Finance and Accounting, 3*(5), 57-69 .

Kibuthu, G. W. (2005). Capital Markets in Emerging Economies: A Case Study of the Nairobi Stock Market Exchange. *Tufts Digital Library*(April) .

Kim, H., Kim, K. T., & Han, S. H. (2018). Religious Beliefs, Religious Culture, and Households' Investment Decisions. *SSRN Electronic Journal*. doi: 10.21/39ssrn.3294220

Kolasa, A., & Liberda, B. (2015). Determinants of Saving in Poland: Are They Different from Those in Other Oecd Countries? *Eastern European Economics, 53*(2), 124-148. doi: 10.1080/00128775.2015.1033276

Liu, H., Islam, M. A., Khan, M. A., Hossain, M. I., & Pervaiz, K. (2020). Does Financial Deepening Attract Foreign Direct Investment? Fresh Evidence from Panel Threshold Analysis. *Research in International Business and Finance, 53*, 101198-101198. doi: 10.1016/j.ribaf.2020.101198

Mansur, E ،.Walid, O., Ahmed, A., & Ahmed, M. K. (2021). Econometric Analysis of Stock Market Performance During Covid-19 Pandemic: A

Case Study of Uzbekistan Stock Market. *International Journal of Advanced Computer Science and Application* .

Mishra, S., & Modi, S. B .(2016) .Corporate Social Responsibility and Shareholder Wealth: The Role of Marketing Capability. *Journal of Marketing, 80*(1), 26-46. doi: 10.1509/jm.15.0013

Naceur, S. B., Ghazouani, S., & Omran, M. M. (2011). The Determinants of Stock Market Development in the Mena Region. *SSRN Electronic Journal, 2005*. doi: 10.2139/ssrn.856385

Naga, A. A. E. (2012). The Relationship between Domestic Saving, Domestic Investment and Economic Growth During Period (1970-2012). *Faculty of Commerce Journal for Scientific Research, Alexandria University, 0971*(Reference in Arabic) .

Nwanna, I. O., & Chinwudu, C. F. (2016). The Effect of Financial Deepening on Economic Growth in Nigeria (1985 -2014). *IOSR Journal of Economics and Finance, 07*(04), 11-28. doi: 10.9790/5933-0704011128

Quartey, P., & Gaddah, M. (2007). Long Run Determinants of Stock Market Development in Ghana. *Journal of African Business, 8*(2), 105-125. doi: 10.1300/J156v08n02_07

Sadik-Zada, E. R. (2023). Resource Rents, Savings Behavior, and Scenarios of Economic Development. *Resources Policy, 81*, 103258-103258. doi: 10.1016/j.resourpol.2022.103258

Safdari, M., Mehrizi, M. A., & Elahi, M. (2011). Financial Development and Economic Growth in Iran. *European Journal of Economics, Finance and Administrative Sciences* .122-115 ،(36)doi: 10.1177/139156141001100206

Sahoo, P., & Dash, R. K. (2013). Financial Sector Development and Domestic Savings in South Asia. *Economic Modelling, 33*, 388-397. doi: 10.1016/j.econmod.2013.04.018

Salah, A., & Elmotaiem, M. A. (2020). The Effect of Savings on Economic Growth: The Case of Developing Economy Applied to Egypt. *Scientific Journal for Financial and Commercial Studies and Research, 4*(In Arabic), 88-100 .

Vaarmets, T., Liivammgi, K., & Talpsepp, T. (2017). How Do Cognitive and Non-Cognitive Abilities Influence Stock Market Participation? *SSRN Electronic Journal*. doi: 10.2139/ssrn.2909394

Xu, Z., Ma, J., Li, D., & Fu, W. (2022). Religious Beliefs and Stock Market Participation: Evidence from Urban Households in China. *Research in International Business and Finance, 63*, 101795-101795. doi: 10.1016/j.ribaf.2022.101795

Yartey, C. A. (2010). The Institutional and Macroeconomic Determinants of Stock Market Development in Emerging Economies. *Applied Financial Economics, 20*(21), 1615-162 .5doi: 10.1080/09603107.2010.522519

Zervos, S., & Levine, R. (1999). Stock Market Development and Long-Run Growth. *World Bank Policy Research Working Paper*(1582), 323-339 .

Zhang, Y., Liu, W., & Xie, L. (2020). The Nonlinear Impact of Corporate Social Responsibility on Stock Returns. *Theoretical Economics Letters, 10*(01), 17-39. doi: 10.4236/tel.2020.101002

Zheng, W., Li, B., Huang, Z., & Chen, L. (2022). Why Was There More Household Stock Market Participation During the Covid-19 Pandemic? *Finance Research Letters, 46*, 102481-102481. doi: 10.1016/j.frl.2021.102481

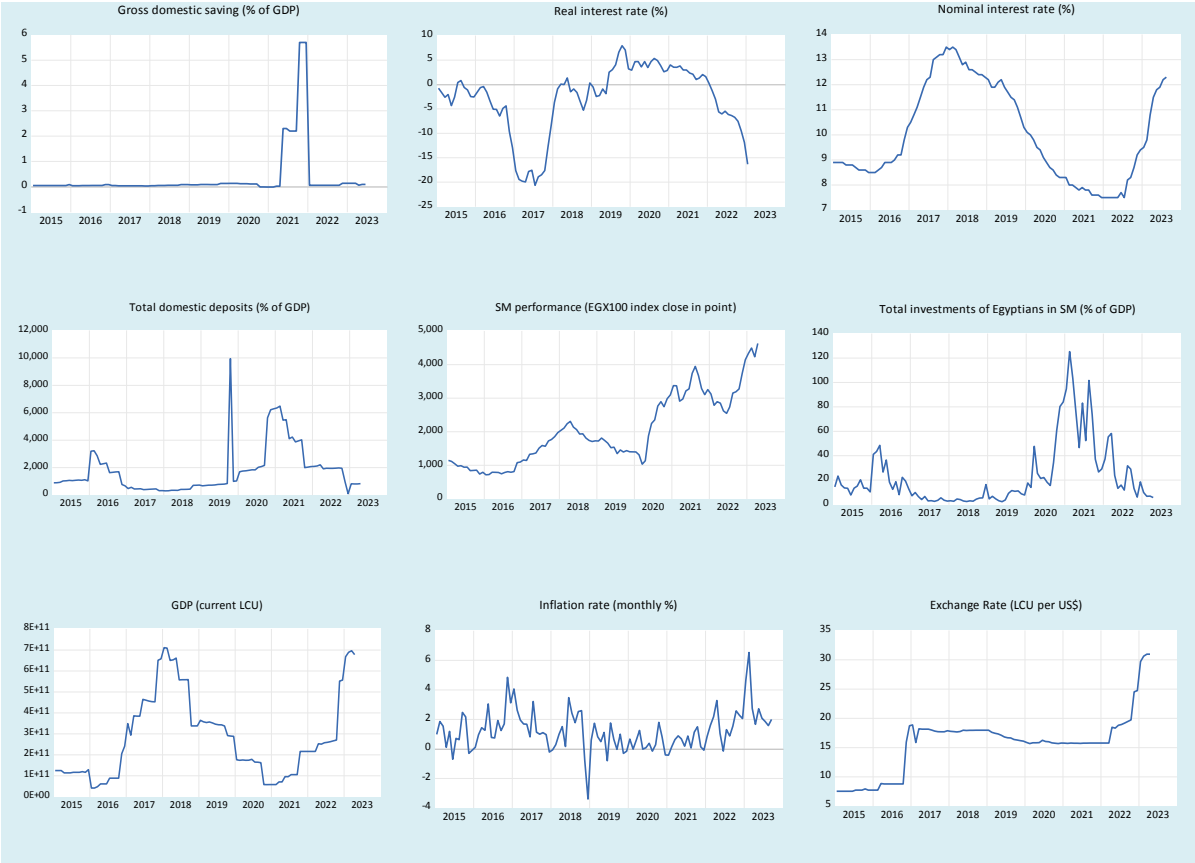
Appendix:

Table A- 1: Description of the Study Variables

Variables	*Description*	*Source*
GDS	**Gross domestic saving (% of GDP):** The portion of income that is not allocated for consumption and is usually deposited in current bank accounts or used in the short term (financial instruments, term accounts, etc.).	(CAPMAS)
RIR	**The real interest rate on deposit:** It is the difference between the nominal interest rate and the annual inflation rate, and the authors calculated it.	(Authors)
NIR	**The nominal interest rate on deposit:** It is the return on money invested in saved or deposited in the bank for a specific period through > 6 months <= 1 year	(CAPMAS)
DD	**Gross domestic deposits (% of GDP):** It is the total amount of money that is saved or deposited in the bank for a specific period by Egyptians.	(CBE)
SMP	**Value Closed points of stocks (EGX100);** expansion unit for change in price of trading instrument, and it is an important element in analyzing currencies and market movement.	(EGX Reports)
DISM	**Gross Egyptian investments in the stock market (% of GDP):** The total transactions of Egyptian investors in the stock market.	(EGX Reports)
GDP	**Gross Domestic Product:** It is the market value of all goods and services produced in aperiod (monthly).	(CBE)
INF	**Inflation Rate on General Consumer Price (monthly change):** An increase in the general level of prices of goods and services. Inflation is measured as the monthly growth rate of the consumer price index.	(CAPMAS)
EX	**The official exchange rate (LCU per US$, period average) refers to the exchange rate determined by national authorities or** the rate determined in the legally sanctioned exchange market.	(CBE)

Sources**:** - CAPMAS: Central Agency for Public Mobilization and Statistics; - EGX Reports: The Egyptian Exchange; - CBE: Central Bank of Egypt.

Figure A- 1: Study Variables Trend during (2004M1-2022M12)



تأثير سوق الأوراق المالية على المدخرات المحلية في مصر: ديناميكات النمذجة الهيكلية

المستخلص:

شكل اتساع فجوة الموارد المحلية في مصر وتأثيراتها السلبية المحتملة على كلٍ من المتغيرات الاقتصادية الكلية والإستقرار الاقتصادي ضغوطاً كبيرة على توفير التمويل اللازم لدعم النمو الاقتصادي وتحقيق مستويات مقبولة من الرخاء. ويثير هذا التساؤل الحاسم حول الدور الذي تلعبه الأسواق المالية كوسيط مالي في تجميع المدخرات المحلية، وخاصة سوق الأوراق المالية. ومن هنا تسعى هذه الدراسة إلى بحث دور البورصة المصرية في تعبئة المدخرات المحلية وذلك باستخدام نموذج المعادلات الهيكلية SEM ومنهج تحليل المسار path analysis وهذا من خلال بيانات شهرية من 2015 إلى 2023. وقد تم إنشاء نظام من أربع معادلات هيكلية لدراسة الدور الذي يمكن أن تلعبه سوق الأوراق المالية في تعبئة المدخرات المحلية وسط ديناميكيات الأسواق المالية. وتوصلت الدراسة إلى الدور الإيجابي الذي يمكن أن تلعبه البورصة مقارنة بالقطاع المصرفي في تعبئة المدخرات وآلية تأثرها بالتغيرات في أسعار الفائدة الاسمية والحقيقية ومعدل التضخم. وقد دمج النموذج تأثير المزاحمة الذي يمكن أن يحدث في الأسواق والتأثيرات المختلفة لقدرة الفئات المختلفة على تحمل المخاطر. وهذا يساهم في فهمنا للأسواق المالية وآلية تأثيرها، ودعم دورها المحوري في الوساطة المالية، مما يؤدي إلى تحسين فرص النمو الاقتصادي والإستقرار المالي.