

Exploring the Impact of financial deepening on economic growth with moderating ...

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Exploring the Impact of financial deepening on economic growth

with moderating role of monetary policies: Empirical evidence from Egypt

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Abstract:

This study investigates the impact of financial deepening on economic growth in Egypt, a study of the association among number of banks, deposits, loans, real interest rate and number of automated teller machines (ATMs) in Egypt.

Financial deepening can be defined as growth of financial intermediation, which promotes economic growth (Owerri,

2010), moreover economic growth can be translated into GDP (Gross Domestic Product) of the country under study.

Using data from the period 2011 until 2020, the study employs a time series analysis to investigate the causal relationship between financial deepening (as an independent variable) with its dimensions (number of banks, amount of deposits, amount of loans, real interest rate and number of ATMs) on economic growth (as dependent variable) with monetary policies as a moderator.

This time series is critical because from year 2011 to year 2014 Egypt has witnessed a period of instability either in political or monetary aspects due to the revolution that Egyptians have led to obtain their liberty and then Egypt pass into a transformation period until year 2014, and after that period and after the president election, Egypt began a new period of democracy and stability.

Financial deepening is a potential factor affecting economic growth. This study examined the effect of financial deepening on economic growth. Using data from Egypt, the result showed by evidence that some financial deepening indicators have a positive effect on economic growth in Egypt; depending on the moderate variables, the researchers noticed that the value of R-squared of independent variables increases and the fact that all the variables have become moral is indicative of the key role of the moderate variable between financial deepening and economic growth.

The results indicate that financial deepening has a positive and significant impact on economic growth in Egypt as an increase in

number of banks, deposits, loans and real interest rates leads to an increase in economic growth, but the results also show difference between the first period before revolution and the second period after revolution as for the second period from 2016 to 2020 the average ratios are higher and that the standard deviation are lower for all variables than the second period this is due to the effect of the political instability in the first period from 2011 to 2015.

Our findings also show that the quality of the regulations with political stability increase the financial deepening of Egypt.

However, this study does not take into consideration the effect of COVID-19 or other threats that affect globally the political and monetary policies.

Egypt has a regulatory framework that promotes transparency, investor protection and fair market practices; when coupled with political and monetary stability can attract local and foreign investors, it also can enhance trust and confidence in the market, leading to increase in capital inflow and improvement in financial deepening performance.

These findings suggest that policymakers should prioritize their time and effort to focus on promoting financial deepening to foster economic growth.

Overall, this study provides crucial insights to the role of financial sector for sustained economic growth especially in emerging countries like Egypt.

Keywords: Financial deepening, economic growth, monetary policies, number of banks, amount of deposits, amount of loans, real interest rate and automated teller machine.

تأثير التعمق المالي على النمو الاقتصادي في ظل الدور الوسيط للسياسات النقدية: أدلة تجريبية من مصر

ملخص

تتناول هذه الدراسة تأثير التعمق المالي على النمو الاقتصادي في مصر، ودراسة العلاقة بين عدد البنوك والودائع والقروض وسعر الفائدة الحقيقي وعدد ماكينات الصرف الآلي في مصر.

ويمكن تعريف التعمق المالي بأنه نمو الوساطة المالية، مما يعزز النمو الاقتصادي (Owerri, 2010)، علاوة على ذلك يمكن ترجمة النمو الاقتصادي إلى الناتج المحلي الإجمالي للبلد قيد الدراسة.

باستخدام بيانات الفترة من ٢٠١١ حتى ٢٠٢٠، تعتمد الدراسة على تحليل السلاسل الزمنية لفحص العلاقة السببية بين التعمق المالي (كمتغير مستقل) وأبعاده (عدد البنوك، وحجم الودائع، وحجم القروض، وسعر الفائدة الحقيقي وعدد ماكينات الصرف الآلي) على النمو الاقتصادي (كمتغير تابع) مع السياسات النقدية كمعدل.

هذه السلسلة الزمنية البالغة الأهمية لأن مصر شهدت من عام ٢٠١١ إلى عام ٢٠١٤ فترة من عدم الاستقرار سواء في الجوانب السياسية أو النقدية بسبب الثورة التي قادها المصريون للحصول على حريتهم ثم انتقلت مصر إلى فترة تحول حتى عام ٢٠١٤ وبعد تلك الفترة وبعد انتخاب الرئيس بدأت مصر فترة جديدة من الديمقراطية والاستقرار.

التعمق المالي هو عامل محتمل يؤثر على النمو الاقتصادي. وقد بحثت هذه الدراسة تأثير التعمق المالي على النمو الاقتصادي؛ حيث أنه باستخدام بيانات من مصر أظهرت النتيجة بالأدلة أن بعض مؤشرات التعمق المالي لها تأثير إيجابي على النمو الاقتصادي في مصر؛ واعتمادًا على المتغيرات الوسيطة لاحظ الباحثون أن قيمة-R

squared المتغيرات المستقلة تزداد وحقيقة أن جميع المتغيرات أصبحت معنوية تشير إلى الدور الرئيسي للمتغير الوسيط بين التعمق المالي والنمو الاقتصادي. وتشير النتائج إلى أن التعمق المالي له تأثير إيجابي وهام على النمو الاقتصادي في مصر حيث أن زيادة عدد البنوك والودائع والقروض وأسعار الفائدة الحقيقية تؤدي إلى زيادة النمو الاقتصادي، ولكن النتائج تظهر أيضًا فرقًا بين الفترة الأولى قبل الثورة والفترة الثانية بعد الثورة حيث أن الفترة الثانية من ٢٠١٦ إلى ٢٠٢٠ كانت النسب المتوسطة أعلى وأن الانحراف المعياري أقل لجميع المتغيرات عن الفترة الثانية وهذا يرجع إلى تأثير عدم الاستقرار السياسي في الفترة الأولى من ٢٠١١ إلى ٢٠١٥. كما تظهر نتائجنا أن جودة اللوائح مع الاستقرار السياسي تزيد من التعمق المالي في مصر. ومع ذلك، لا تأخذ هذه الدراسة في الاعتبار تأثير COVID-19 أو التهديدات الأخرى التي تؤثر عالميًا على السياسات السياسية والنقدية. تتمتع مصر بإطار تنظيمي يعزز الشفافية وحماية المستثمرين وممارسات السوق العادلة؛ وعندما يقترن بالاستقرار السياسي والنقدي يمكن أن يجذب المستثمرين المحليين والأجانب، ويمكن أيضًا أن يعزز الثقة في السوق، مما يؤدي إلى زيادة تدفق رأس المال وتحسين أداء التعمق المالي. وتشير هذه النتائج إلى أن صناعات السياسات ينبغي أن يعطوا الأولوية لوقتهم وجهدهم للتركيز على تحسين التعمق المالي لتعزيز النمو الاقتصادي. وبشكل عام، تقدم هذه الدراسة رؤى حاسمة حول دور القطاع المالي في تحقيق النمو الاقتصادي المستدام وخاصة في البلدان الناشئة مثل مصر. **الكلمات المفتاحية:** التعمق المالي، النمو الاقتصادي، السياسات النقدية، عدد البنوك، حجم الودائع، حجم القروض، سعر الفائدة الحقيقي وماكينات الصرف الآلي

1- Introduction:

From 1990 till now many researchers have been illustrated the importance of financial deepening on economic growth (Peter L. Rousseau, Paul Wachtel, 2011) , according to the endogenous

growth theory , there is a great contribution of financial market on economic development and it can be enhanced by increasing in saving or capital accumulation efficiency (Nicholas Apergis et al., 2007), one of the important factors that affect the economic growth is the real rate of interest, as (M.J, Fry 2014) stated that the real rate of interest has a positive impact on the economic growth, also Samuel Mbadike Nzotta (2009) states that the financial system act as a catalyst and a way to economic growth this will be done through financial institution , that attract entities who have surplus and allocate them to entities that have deficit, these entities might be household or business or enterprise or may be the government , this process has a great impact on the economic development .

Bhutta et al. (2021) refer to financial development as increase in money in circulation due to increase in the financial service provided by the financial institution to the public; in addition, economic growth will be achieved when employment and investment as part of financial deepening is attained (Ndebbio, 2004).

Furthermore, economic growth has been indirectly affected by financial institutions as their role in offering services to the public, ensure equality, creating saving opportunities and in return reduce poverty and enhance the welfare (Yordanos Gebremeskel, 2022).

The main aspect of this article is to express the impact of economic deepening in Egypt on economic development with monetary stability as a moderating role.

2- Literature Review

2.1 Financial Deepening

Financial deepening is likely to be referred to increase the role of financial institution either banks as formal channel or informal channels through providing a wide range of services (Yordanos Gebremeskel, 2022).

Dima Waleed et al., 2016 state that financial deepening means increase in the provision of services offered to the community, as it can be measured by the ratio of increasing money supply as liquid money in relation to the gross domestic product (GDP) and the money supply can enhance investors to invest this money which will lead to increase in the standard of living.

World Bank, 2016 state that the financial depth can be measured by the size of banks, financial markets and any other financial institutions that can be translated in to economic growth output.

Achieving a high level of financial deepening through enhancing saving and investment raises the country economic growth these can be done by channeling resources from risk adverse savers to risk neutral borrowers (Keshab Bhattarai, 2015); Financial deepening can be measured by the ratio of bank deposit to nominal GNP (Gross national product) that can be translated to real per capital income (Oludele A Akinboade , 2000).

Liberalization of interest rate is one of the main reasons of encouraging the people who have money surplus to invest in financial assets, which in return increases the credit supply, it also increases the cost of capital, and catalyst the importance of banks as intermediates in the economy (Feyzioğlu et al., 2009)

2.2 monetary policy :

2.2.1 The effect of monetary policy on economic growth:

Muhammad Ayub Mehar , 2022 suggests that providing credit to the private sector and managing external debt can enhance infrastructure investment, which plays a crucial role in driving GDP growth, he also added that empirical data supports the idea that a greater number of businesses utilizing bank financing for their investments, along with the overall amount of money in circulation, influence the extent of credit extended to the private sector.

Chai Thing Tan et al., 2020 examined how monetary and fiscal policies have affected the economic growth of Malaysia, Singapore and Thailand from 1980 to 2017, the results are reliable and strong as all the models produce consistent outcomes, the study's key findings show that interest rate had a detrimental effect on economic growth in the three selected countries, government spending had a negative impact on economic growth for the mentioned countries expect for Thailand had a positive impact, it is important to note that monetary and fiscal policies are interdependent and require a coherent and

sustainable policy framework to prevent potential inconsistencies.

Adams, Robert (2022) decompose credit card profitability into its main sources—the credit function, the transaction function, and fees—and they present three main findings. First, they find that, on average, the credit function makes up approximately 80 percent of the credit card profitability, while the transaction function is slightly negative. In addition, they found that fees encompass about 15 percent of credit card profitability.

Freedman (2000), shed the light on using electronic card as a part of the monetary policy, it is a service provided by central bank as a part of the development of the network money that has effect on short term rate of interest and will maintain the effect of aggregate demand and inflation.

John Hawkins (2001), analyze one of the main facilities offered by the central banks as part of the monetary policy which is E-finance that made a tremendous change in the financial system by using the tools of interest rate at the main markets, that will have an impact on the inflation and the economy as whole which can also change rapidly through the development of using credit cards, it will lead to stability for the macroeconomic trend.

2.2.2 steps taken to enhance monetary policy in Egypt:

• Stages of Liberalization of interest rate in Egypt

Real interest rate refers to lending interest rate after it has been adjusted for inflation and it is measured by the GDP deflator, and it differs from country to other. (source: World Bank data on the GDP deflator).

According to central bank of Egypt, it has been taken several corrective procedures to improve the economic health, one of the most important procedures are increasing interest rate and liberalization of Egyptian pound.

The first liberalization in Egypt was in front of the American dollar was in year 1977, and in this stage the dollar increases from 1.25 to 2.5 against Egyptian pound.

The second liberalization was in year 2003 it also increases from 3.40 to approximately 7 against Egyptian pound.

The third Liberalization was in year 2016 that reaches to 14.50 against Egyptian pound.

The fourth liberalization was in year 2022 until now.

And this period from (1977-2022) has shown a tremendous change in both prices and inflation.

• And as for the real rate of interest:

It ranges its maximum value 17.58 in 1981, and in year 2020 the real interest rate is 4.84 (source: International monetary fund, World Bank data on the GDP deflator)

2.3 The Egyptian economic growth:

Economic growth can be referred to rise in GDP, as GDP can be measured by the amount of production generated nationally or the nation total revenue (Iram & Nishat, 2009)

The Egyptian economic growth is determined by productivity and capital; capital includes human capital and physical capital which are influenced directly by both growth rates and saving volatility. (Abdelmonem Lotfy Mohamed Kamal et al., 2023).

Sedef Sen, 2023 also stated that the economic growth may be influenced by increasing interest rate as a way to control inflation which will affect in return the banking lending policy.

Financial services act as a way for financial deepening and economy progress (Calderón & Liu, 2002)

2.4 Empirical literature view on the impact of financial deepening on economic growth:

Ang, (2007) when examining the output expansion during the period 1960 till 2003 in Malaysia, he states that aggregate output is co-integrated in the long run, however they are unable to account for as a result of the complexity of the financial conditions.

Peter L. et al., 2011 in his study on 84 country using cross-sectional and panel data from year 1960 until year 2004 has shown macroeconomic indicators, he found that the financial deepening excess in the developed countries is zero and rising slowly but in the developing countries it has no effect as it will

lead to rapid growth in banking credit and will this lead to its weakness and will also cause inflation.

Also, Bhutta et al., 2021 conduct his study on 42 countries from the period 2000 until 2016 to show the effect of financial deepening on financial stability with nominal exchange rate it was found that excessive financial deepening leads to financial instability and the financial deepening has a significant positive relationship with nominal exchange rate when spillover effect on other countries.

In the same context, Dima Waleed (2016) on study on Jordan over the period from 1992 till 2014 he found that financial deepening has no significant effect on economic growth on the short run , but there is a significant effect on the long run and also he stated that there is a bidirectional causal relationship between financial deepening and economic growth when the amount of credit is a variable to the financial deepening , but there is a one way causal relationship from economic growth to financial deepening when amount of deposits and money supply are variables to financial deepening.

3- The research problem:

Egypt has passed along the past centuries with many ups and downs in its economy due to mismanaged either in its economy or political issues.

Due to the scarcity of researches discussing the impact of financial deepening on economic growth, this research will try to

investigate the impact of financial deepening on economic growth concentrating on financial intermediaries on the last decade from 2011 to 2020, but due to Egypt special conditions in this period due to some political events that happened , from year 2011 till year 2014, Egypt had endured through a period of revolution and disorder from a political and monetary issues that in turn has affected the economic growth, then from the period 2014 until now the position has changed after election and we contemporary are living a period of stability and development. Accordingly, In this study we try to crystallize a conclusion concerning: **First:** the impact of financial deepening in Egypt with some of its dimensions (number of banks, amount of deposits, amount of loans, real rate of interest and number of ATM) on economic growth, **Second:** Do the monetary policies in Egypt from year 2011 till year 2020 moderates this relationship.

4-The research questions:

A. What is the Impact of financial deepening on economic growth?

B. Do monetary policies moderate the relationship between financial deepening and economic growth?

5-The research hypotheses:

H₁: Number of banks has a positive and significant impact on economic growth

H₂: Amount of deposits has a positive and significant impact on economic growth

H₃: Amount of loans has a positive and significant impact on economic growth?

H₄: ATM has a positive and significant impact on economic growth.

H₅: Real rate of interest has a positive and significant impact on economic growth

H₆: Financial deepening has a positive and significant impact on economic growth

H₇: Monetary policies moderate the relationship between financial deepening and economic growth.

6- Proposed Model:

The researcher proposed a model after reviewing many studies that tackles the financial deepening as independent variable (its dimensions: number of banks, amount of deposits, amount of loans , real rate of interest and number of ATM) and its effect on economic growth as a dependent variable, and in this study the researcher moderates monetary policies as a part of political events between financial deepening and economic growth due to the changes of policies during this period in Egypt, and its effect on the relation between financial deepening and economic growth.

As J.u.J Onwumere, (2012) stated when examining the effect of financial deepening on economic growth in Nigeria, he puts in to consideration government policy and he found in his study that government policy is responsible for promoting capital market

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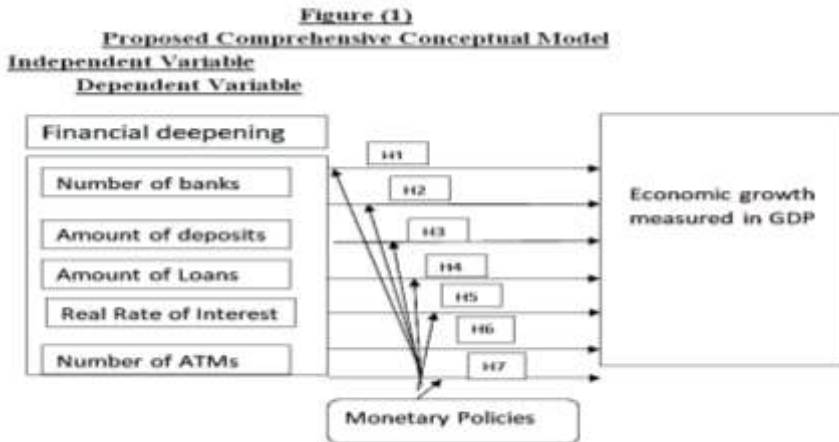
and capital accumulation that in return will enhance economic growth.

Also, Sedef Sen, (2023) shows in his study on 46 country that are middle income countries from the period between 1996 till 2020, that government ideology is an important factor and has a different impact on the effect of financial deepening on economic growth.

Furthermore, Ujam Pluchukwu Julliet, (2021) in his study in Nigeria from the period 2009 until 2019 taking the dimensions money supply, credit to private sector , saving and time deposit of commercial bank for the independent variable (financial deepening), he found that financial deepening has non-significant impact on the country economic growth.

However, Kevin Willams (2019), discuss the effect of financial deepening on economic growth and intermediate the political institutions between them, he realize that credit market deepening decrease the economic growth in the developing countries and that the democratic institutions reduce this effect.

6.1 The proposed research model:



7. Methodology and data used

7.1 Type of data used:

The data used are secondary data obtained from Egyptian national account data, financial report of central bank of Egypt from the year 2011 to year 2020, international monetary fund measured by the GDP deflator

7.2 The empirical study from Egypt:

7.2.1 Number of branches in Egypt from year 2011 to 2020

Table (1)

Years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of branches	3573	3610	3650	3710	3766	3882	4009	4155	4298	4451

Source: financial report of central bank of Egypt

From the previous data table 1, it was noticed that the number of branches of banks in Egypt has increased with a slow rate from year 2011 till year 2015 with 1%, 1.1%, 1.6%, 1.5% respectively, but from the year 2016 till the year 2020 it has increased with a high rate as following 3%, 3.27%, 3.64%, 3.44%, 3.56%.

And as for the whole period it increases by 24.57% from the year 2011 until the year 2020. (Prepared by the researchers)

7.2.2 Amount of deposits in banks in Egyptian pound from the year 2011 to the year 2020: Table (2)

Years	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Total deposits (in million)	1366.2	1187.0	1429.4	1734.2	2116.1	3027.81	3553.6	3992.7	4686.9	4400

Source: financial report of central bank of Egypt

From the previous data table 2, it was noticed that there is increase in the amount of deposits from year 2011 to year 2015 as follows -13.13%, 20.4%, 21.3%, 22% respectively, and from the year 2016 to year 2020 as follows, 43%, 17.3%, 12.35%, 17.4%, -6.12% respectively, and as for the whole period it increases as a whole by 222.11% from the year 2011 until the year 2020, (Prepared by the researchers).

7.2.3 Amount of Loans in banks in Egyptian pound from the year 2011 to the year 2020: Table (3)

Years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total loans (in millions)	474139	506736	549120	587852	717999	942727	1426457	1629664	1854326	2200381

Source: financial report of central bank of Egypt

From the previous data table 3, it was noticed that the increase in the amount of loans from year 2011 to year 2015 as follows 6.87%, 8.36%, 7.05, 22.14% respectively, and from the year 2016 to year 2020 as follows 31.3%, 51.3% ,14.2% , 13.8% 18.7% respectively, And as for the whole period it increases as a whole by 364% from the year 2011 to the year 2020, (Prepared by the researchers).

7.2.4 Real rate of interest in Egyptian pound from the year 2011 to the year 2020: Table (4)

Years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of ATM	-0.56	-6.26	3.29	0.41	1.54	6.92	-3.87	-2.56	2.20	4.84

Source: international monetary fund measured by the GDP deflator

From the previous data table 4, it makes a rapidly changes but for the whole period it increases as a whole by 964% from the year 2011 to the year 2020 (Prepared by the researchers).

7.2.5 Number of ATM in Egypt from year 2011 to 2020: Table (5)

Years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of ATM	9220	10320	10940	12060	13700	15690	17710	18720	20070	22060

Source: open data-world bank -Egypt

From the previous data table 5, it was noticed that the increase in the amount of ATM from year 2011 to year 2015 as follows 11.9%, 6%, 10.2%, 13.6% respectively, and from the year 2016 to year 2020 as follows 14.5%, 12.9 %, 5.7 %, 7.2%, 9.9% respectively.

And as for the whole period it increases as a whole by 139.26% from the year 2011 to the year 2020 (Prepared by the researchers).

7.2.6 Total GDP in Egypt: Table (6)

Years	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
No. of ATM	1.382	1.555	1.997	2.153	2.581	2.952	4.165	4.448	4.871	4.765

Source: financial report of central bank of Egypt

From the previous data table 6, it was noticed that the Egypt GDP changes from year 2011 to year 2015 as follows 12.5%, 28.4%, 7.8%, 19.9% respectively, and from the year 2016 to year 2020 as follows, 14.4%, 41.3%, 6.8%, 9.5%, - 2.2% respectively, And as for the whole period it increases as a whole by 244.79%

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from the year 2011 to the year 2020.(Prepared by the researchers)

7.2.7 Monetary policies, inflation, profitability and liquidity in Egypt: Table (7)

Table NO (7): Inflation, profitability and liquidity

Years	Inflation Rate	Profitability Ratio %	Liquidity Ratio%
2011	10.06	2.6	10
2012	7.11	13.9	44.5
2013	2.2	14.5	57.5
2014	9.47	18.9	65.7
2015	11	24.4	60.7
2016	10.2	30.9	69.5
2017	23.5	21.5	53.01
2018	20.9	19.2	40.2
2019	11.9	22.4	46.4
2020	5.7	14.9	52.8

Source: Inflation rate percentage (2023) , ORECD I library organization (www.orecd-ilibrary.org)

8- Data analysis:

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Before beginning with the estimations and analysis, a brief discussion of descriptive statistics is provided below. This is essential in either quantitative or qualitative research in order to understand the nature of data before engaging in any analysis.

Table 8: The descriptive statistics

Type	Number of banks	Amount of deposits	Amount of Loans	Real Rate of Interest	Number of ATMs	GDP
Mean	3910.4	2882.541	1088940	0.595	15049	3086900
Median	3824	2571.955	830363	0.975	14695	2766500
Max.	4451	5731.5	2200381	6.92	22060	4871000
Min.	3573	1187	474139	- 6.23	9220	1382000
Jarque-Bera	0.98	.882	1.138	0.32	0.814	1.087
Prob.	0.58	0.39	0.56	0.85	0.67	0.55

GDP, deposits and Loans are in millions

Table 8 signifies descriptive statistics for our study for the data of Egypt. Number of banks has means value of 3910.4 that indicating the annual of number banks, amount of deposits has the mean value of 2882.541, the amount of loans has an average of 1088940, real Rate of Interest has average of 0.595, number of ATMs has means value of 15049, GDP has an average of 3086900.

To study the impact of political events on financial deepening in comparison between 2011 to 2015 and 2016 to 2020, see Table 9

Table 9: The descriptive statistics

Variable	period	Minimum	Maximum	Mean	St. Deviation
Number of banks	2011 to 2015	3573	3766	3661.8	77.28
	2016 to 2020	3882	4451	4159	225.74
Amount of deposits	2011 to 2015	1187	2116.10	1566.58	365.1
	2016 to 2020	3027.81	5731.50	4198.50	1050.88
Amount of Loans	2011 to 2015	474139	717999	567169.2	94617.61
	2016 to 2020	942727	2200381	1610711	471054.76
Real Rate of Interest	2011 to 2015	-6.26	3.29	-.3160	3.618
	2016 to 2020	-3.87	6.92	1.5060	4.65
Number of ATMs	2011 to 2015	9220	13700	11248	1713.22
	2016 to 2020	15690	22060	18850	2402.84
GDP	2011 and 2015	1382000	2581000	1933600	479291.98
	2016 to 2020	2952000	4871000	4240200	771624.71

Show that the second period from 2016 to 2020 is that the average is higher for all variables and that the standard deviation is lower for all variables in the second mutation because of the influence of political policies in the first period from 2011 to 2015.

For normality test

As for the Jarque-Bera results, the null hypothesis state that the variable is normally distributed, and the alternative implies otherwise. In that regard all variables are normally distributed, all values greater than 0.05.

Although there are other unit root testing methods in econometrics, this study employed the robustly serving Augmented Dicky-fuller (ADF) test in conjunction with Phillips Peron (PP) approaches. The sequence of integration for each variable included in the study was ascertained using the two approaches. While the pre-test of the unit root is not necessary for the ARDL, it is crucial to test both stationary and non-stationary data in the variables to make sure the variables are not integrated in an order greater than two.

Table 10: Summary of the ADF Unit Root Test

variables	Differencing	P-value	Decision
Number of banks x_1	Level	0.027	Stationary
Amount of deposits x_2	Level	0.0008	Stationary
Amount of Loans x_3	Level	0.227	Not Stationary
	1st Differencing	0.023	Stationary
Real Rate of Interest x_4	Level	0.006	Stationary
Number of ATMs x_5	Level	0.139	Not Stationary
	1st Differencing	0.043	Stationary
GDP y	Level	0.03	Stationary

Where y : GDP x_1 : Number of banks x_2 : Amount of deposits x_3 : Amount of Loans x_4 : Real Rate of Interest

x_5 : Number of ATMs

x_6 : political events

The unit root test results shown in table 1 & 2 reveals that number of banks, amount of deposits, real Rate of Interest and GDP are stationary at level as its p-value is less than 0.05 at level. On the other hand, amount of loans and number of ATMs are stationary at first differencing. The data were differenced according to their order of integration and used for the OLS regression.

Correlation matrix.

Table 11: Correlation matrix

Variables		1	2	3	4	5	6	7
1	x_1	Corr. 1						
		Sig.						
2	x_2	Corr. 0.231	1					
		Sig. 0.494						
3	x_3	Corr. 0.989	0.332	1				
		Sig. 0.001	0.323					
4	x_4	Corr. 0.255	0.205	0.193	1			
		Sig. 0.449	0.545	0.571				
5	x_5	Corr. 0.987	0.200	0.972	0.249	1		
		Sig. 0.001	0.556	0.001	0.46			
6	x_6	Corr. -.634	0.141	0.559	-0.44	-0.71	1	
		Sig. 0.036	0.679	0.044	0.178	0.016		
7	y	Corr. 0.972	.200	0.966	0.164	0.986	-0.700	1
		Sig. 0.001	0.045	0.001	0.629	0.001	0.017	

The researcher wanted to establish the correlation between variables used in the study. Correlation coefficients were calculated at 0.05 level of significance. There was a statistically

significant positive correlation between number of banks, amount of deposits, amount of loans and number of ATMs with GDP.

Political events was negative and statistically significant with GDP ($r = -0.77$) and there was positive statistically insignificant correlation between real Rate of Interest with GDP at alpha 0.05

Regression analysis.

For **test first hypothesis**, say that number of banks has a positive and significant impact on economic growth.

Table 12: ANOVA table

variables	r	r^2	r^2 <i>adjusted</i>	ANOVA		coefficient	Prob.
				F	P - <i>value</i>		
number of banks	0.972	0.944	0.938	151.661	0.000	3.51	0.001

The r-squared value of 0.944 indicates that about 94.4 percent of the changes in GDP can be explained by the number of banks in the financial deepening variables. The p-value of the F-statistic is less than 0.05. This shows that the overall relationship between financial deepening (number of banks) and GDP is significant. For this we will accept H1 number of banks has a positive and significant impact on economic growth

the second hypothesis

Table 13: ANOVA table

variables	r	r^2	r^2 <i>adjusted</i>	ANOVA		coefficient	Prob.
				F	p -value		
Amount of deposits	0.200	0.400	-0.67	145.27	0.555	0.613	0.045

The r-squared value of 0.40 indicates that about 40 percent of the changes in GDP can be explained by the Amount of deposits in the financial deepening variables. The p-value of the F-statistic is less than 0.05. This shows that the overall relationship between financial deepening (Amount of deposits) and GDP is significant. For this we will accept H1 Amount of deposits has a positive and significant impact on economic growth

the third hypothesis

Table 14: ANOVA table

variables	r	r^2	r^2 <i>adjusted</i>	ANOVA		coefficient	Prob.
				F	p -value		
Amount of Loans	0.966	0.934	0.926	22.851	0.001	2.149	0.001

The r-squared value of 0.934 indicates that about 93.4 percent of the changes in GDP can be explained by the Amount of Loans in the financial deepening variables. The p-value of the F-statistic is less than 0.05. This shows that the overall relationship between

financial deepening (Amount of Loans) and GDP is significant. For this we will accept H1 Amount of Loans has a positive and significant impact on economic growth

the fourth hypothesis

Table 15: ANOVA table

variables	<i>r</i>	<i>r</i> ²	<i>r</i> ² <i>adjusted</i>	ANOVA		coefficient	Prob.
				F	<i>p</i> -value		
Real Rate Interest	0.164	0.027	-0.081	0.25	0.629	0.322	0.629

The r-squared value of 0.027 indicates that about 2.7 percent of the changes in GDP can be explained by the Real Rate Interest in the financial deepening variables. The p-value of the F-statistic is greater than 0.05. This shows that the overall relationship between financial deepening (Real Rate Interest) and GDP is insignificant. For this we will accept H0 Amount of deposits has in significant impact on economic growth

The fifth hypothesis

Table 16: ANOVA table

variables	<i>r</i>	<i>r</i> ²	<i>r</i> ² <i>adjusted</i>	ANOVA		coefficient	Prob.
				F	<i>p</i> -value		
number of ATMs	0.986	0.972	0.969	309.596	0.000	2.97	0.001

The r-squared value of 0.972 indicates that about 97.2 percent of the changes in GDP can be explained by the number of ATMs in the financial deepening variables. The p-value of the F-statistic is less than 0.05. This shows that the overall relationship between financial deepening (number of ATMs) and GDP is significant. For this we will accept H1 number of ATMs has a positive and significant impact on economic growth

the sixth hypothesis

Table 17: ANOVA table

variable	coefficient	Prob.
Number of banks	41.39	0.01
Amount of deposits	6.104	0.044
Amount of Loans	1.818	0.619
Real Rate of Interest	43.3	0.809
Number of ATMs	21.16	0.035
R- squared	0.651	
Adj. R-squared	0.621	
Prob.	0.001	

Table (17) indicates that model explains only 65.1% of the variations in economic growth (GDP), but amount of loans and real rate interest insignificant. According to table (10) the overall

significant of model was 0.001 and this means that financial deepening shows significant on GDP in Egypt.

The seventh hypothesis

Seventh hypothesis: monetary policies moderate the relationship between financial deepening and economic growth.

We study the effect of monetary policies on inflation, liquidity and profitability as moderate variables in the effect between financial deepening and economic growth.

Table 18: ANOVA table

variable	coefficient	Prob.
Number of banks	0.985	0.000
Amount of deposits	8.125	0.011
Amount of Loans	3.071	0.025
Real Rate of Interest	0.74	0.000
Number of ATMs	1.95	0.045
inflation	-0.75	0.015
liquidity	0.55	0.000
profitability	1.05	0.035
R- squared	0.875	
Adj. R-squared	0.766	
Prob.	0.001	

Table (18) indicates that model explains only 87.5% of the variations in economic growth (GDP), financial Deepening tend to rise as businesses thrive, and economic growth ensues, and this one came up through increase R- square from 65% to 87.5%. According to table (18) the overall significant of model was 0.001 and this means that financial deepening shows significant on GDP in Egypt.

First, it was verified that the moderate variables would affect the independent variables as well as the dependent variable. After confirmation, the regression test was performed and we concluded that when considering the moderate variables inflation, liquidity and profitability, the model found that R-squared had increased and that most of the variables had become moral, and this indicated the effect of the moderate variables in the relationship between financial deepening and economic growth.

As a result, financial Deepening tend to rise as businesses thrive, the rule of law is upheld, and economic growth ensues. Political stability further encourages long-term investment strategies, contributing to the upward trajectory of financial deepening. In essence, a well-functioning government and monetary policies stability are crucial factors that can instill trust, attract capital, and foster growth in financial deepening, reflecting the overall health and optimism in the national economy.

9. Results:

- There is a statistically significant relationship (positive relationship) between number of banks and economic growth, Therefore, increasing the number of banks in the banking sector will lead to positive results on the economic growth.
- There is a statistically significant relationship (positive relationship) between amount of deposits and economic growth, Therefore, as the volume of deposits increases, this will lead to an improvement in economic growth
- Amount of loans has a positive impact on economic growth, Therefore, the greater the volume of loans (loans for investment and development), the greater economic growth.
- Real rate of interest has significant impact on economic growth; therefore, monetary policies must include great scrutiny in setting the interest rate, which will in turn affect economic growth.
- Number of ATMs has a positive impact on economic growth; therefore, increasing the number of ATMs will positively affect economic growth.
- Financial deepening has impact on GDP in Egypt, that is, financial deepening (the number of banks, the size of deposits, amount of Loans, the interest rate, and the number of ATMs machines) will all affect economic growth.

- Economic growth is reflected in seventh hypothesis; the results showed that some financial deepening indicators have a positive effect on economic growth in Egypt.

10- recommendation:

Recommendation	Who are responsible for implementation	How to implement	Duration of implementation
Increase number of banks	Ministry of economy and Central Bank of Egypt	Studying the banking market and the best ways to increase the number of banks while facilitating the procedures for new banks to enter the banking market	Over the course of 6 months
Increase Amount of deposits	Central Bank of Egypt	Study current interest rates and the best method to attract depositors to provide the necessary cash for investment	3 months after increase number of banks.
Expanding the methods of granting development loans and investment purposes	Monetary policies of the ministry of Economy and the Central Bank of Egypt with the assistance of the ministry of Investment	<ul style="list-style-type: none"> - Establishing investment policies that help attract foreign and local investment - Review all monetary policies for the investment services - Facilitating granting of loans, taking into account the safety factor 	3 months
Complete control over interest rates based on market studies and the economic situation in the light of the investment and development expansion plan	Ministry of economy and Central Bank of Egypt	Consider setting interest rates that help and attract depositors to increase their deposits, as well as setting special interest rates for	3 months

		investment projects and encouraging investors to borrow when needed to increase investment projects and thus economic growth.	
Increase number of ATMs	Central Bank of Egypt with banks operating in Egypt	Giving incentive rewards to banks to increase the number of ATMs machines by reducing custom duties on these machines. Encouraging placing these machines in places with large purchases, such as malls and others.	From 3 to 6 months.
Monetary policies stability	The Central Bank of Egypt	To achieve a sound monetary and banking system and price stability within the context of general economic policy of the state, in accordance with the Central Bank and banking system law.	1 month

11. Conclusion and future research direction:

11.1. Conclusion:

First when we study the effect of amount of deposits as a part of the effect of financial deepening on economic growth, we find that the amount of deposits is very important factor as it can lead to increase the rate of demand to credit which in turn increase the opportunity of investment and will positively affect the financial long term stability.

But there is an important factor that moderate this relationship which is monetary policy as it acts as a moderator that provide an encourage environment to operate in effective and confident financial system that deepen the financial system through attracting more and more deposits.

Second as for the effect of amount of loans on economic growth, a good financial system that has the ability to offer credit can increase the amount of investment and consumption that in return will lead to economic expansion.

As for the effect of monetary policies stability it will reduce the effect of uncertainty that is associated with borrowing and provides a solid platform for investors to expand in both domestic and foreign long term commitments.

Third the real rate of interest is an evidence for the efficiency of the financial intermediation as it proofs that the amount of money is adjusted for the true cost of borrowing and accounted for inflation.

Monetary policy stability guarantees a conducive climate for confidence market that encourages a long term investment to maintain a resilient economic growth.

Fourth another indicator for the effect of financial deepening on economic growth is increasing the number of ATM in Egypt, which ensures the expansion of financial services with a good ready infrastructure that facilitate the access to banking services.

And of course political and monetary stability leads to a trusting environment among investors that encourage them to use all the banking services.

Fifth, it is recommended that policy makers should carefully choose the relevant financial deepening indicators that capture the extent of stability or fragility in the Egyptian financial system and increase the development surveillance of selected financial deepening indicators.

Sixthly, a well-functioning government and monetary policies stability are crucial factors that can instill trust, attract capital, and foster growth in financial deepening, reflecting the overall health and optimism in the national economy.

11.2. Future research implication

Future researches could focus on the study of other countries to see if the results will vary from country to another and identify its unique challenges and opportunities, Moreover, Future researches need to explore other dimensions of independent variables on economic growth, and also the effect of stock market on economic growth as it is considered very important mean for raising capital and is a major contributor to economic growth.

12. Empirical contribution

This study investigated the moderating impact of monetary policies as a part of political policies, and our study finds the positive impact of the monetary policy indicators on the financial deepening. In stable environment, macroeconomics measures can be consistently implemented and enforced, ensuring that they have a more significant impact on economic and social outcomes. Stability also fosters confidence among investors and the general population, facilitating the acceptance and adherence to the monetary and political policies to promote the overall success. Additionally, monetary stability often leads to more predictable policymaking, aligning with attaining long-term objectives and thus magnifying their positive effects on a country's development.

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